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AUTHORS: Nemchinova, I. I., Fedorov, Vikt. K. SOV/20-121-1-48/55

TITLE: On the Problem of Sex Relation Among the Progeny of Mice Endowed With Different Functional Properties in Their Nervous Systems (K voprosu o sootnoshenii polov v potomstve u myshey s razlichnymi funktsional'nymi svoystvami nervnoy sistemy)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr 1, pp. 169 - 171 (USSR)

ABSTRACT: The physiological differences between the male and female individuals of either sex have been investigated in many papers. In recent time for the first time investigations were carried out which are to clarify the influence of the nervous system on the sex relation of the progeny. Thus, it was proved (Refs 3,4) that this relation may be changed conditional-reflexly within considerable limits. Unfortunately, this communication was confirmed neither by the author himself nor by other researchers. In the present paper the authors give facts on this. The second author paid special attention to the problem of the mobility of the nervous processes in his many years' investigations of the higher nervous activity of rodents (Ref 6).

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This mobility anables the animal to adapt itself perfectly to the environmental conditions. According to I.P.Pavlov this property of the nervous system is characterized by the velocity of the substitution of the cortical processes of the nerves-stimulation and inhibition - and may be determined by means of various methods. One of these methods is the mutual reformation of the conditional reflexes. Mice of different oncological lines were subjected to the investigation: A and C_3HA of high sensitivity to cancer which furnish a rather high percentage of spontaneous ulcers (Refs 2,5), and C_{57} which are less sensitive to cancer and homozygote with respect of the lacking of the "milk factor". It was proved earlier (Ref 7) that the mobility of the nervous processes of females of a high sensitivity to cancer is greater than of females which are less sensitive to cancer. The mean velocity of the reformation of the conditional reflexes in the case of 91 females of the line A amounts to $2,7 \pm 2,19$ experiments, in the case of 57 females of the line C_3HA to $19,5 \pm 0,91$ experiments, and in the case of 163 females of the line C_{56}

to only 15,4 ± 0,86 experiments. With reference to these obvious differences between the lines of different sensitivity to cancer the authors counted how many male and female descendents existed in order to clarify the connection between the degree of mobility and the sex relation of the progeny (Table 1). On the strength of this material it was assumed that the females with higher mobility produce more males, whereas the more inert parents produce more females. This was confirmed statistically by further investigations. There are 2 tables and 7 Soviet references.

ASSOCIATION: Institut fiziologii im. I.P.Pavlova Akademii nauk SSSR (Institute of Physiology imeni I.P.Pavlov, AS USSR)

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On the Problem of Sex Relation Among the Progeny of Mice SOV/20-121-1-48/55
Endowed With Different Functional Properties in Their Nervous Systems

1. Sex--Genetic factors 2. Sex--Statistical analysis 3. Nervous system --Physiological effects 4. Nervous system--Physiology 5. Cancer--Physiological factors

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Certain errors in the optical and electric method of analysis of harmonics. Izv. KPI 26:517-528 '57. (MIRA 11:6)

1. Kafedra teoreticheskikh osnov elektrotekhniki Kiyevskogo politekhnicheskogo instituta.
(Spectrum analysis)

NEMCHINOVA, N.M.

From the history of molecular acoustics. Ist. i metod. est. nauk 2:279-283 '63. (MIRA 16:11)

NEMCHINOVA, Ye.Ye.

Karst of several desert regions of Uzbekistan. Izv.Uzb.fil.Geog. ob-va 6:60-69 '62. (MIRA 15:8)
(Uzbekistan—Karst)

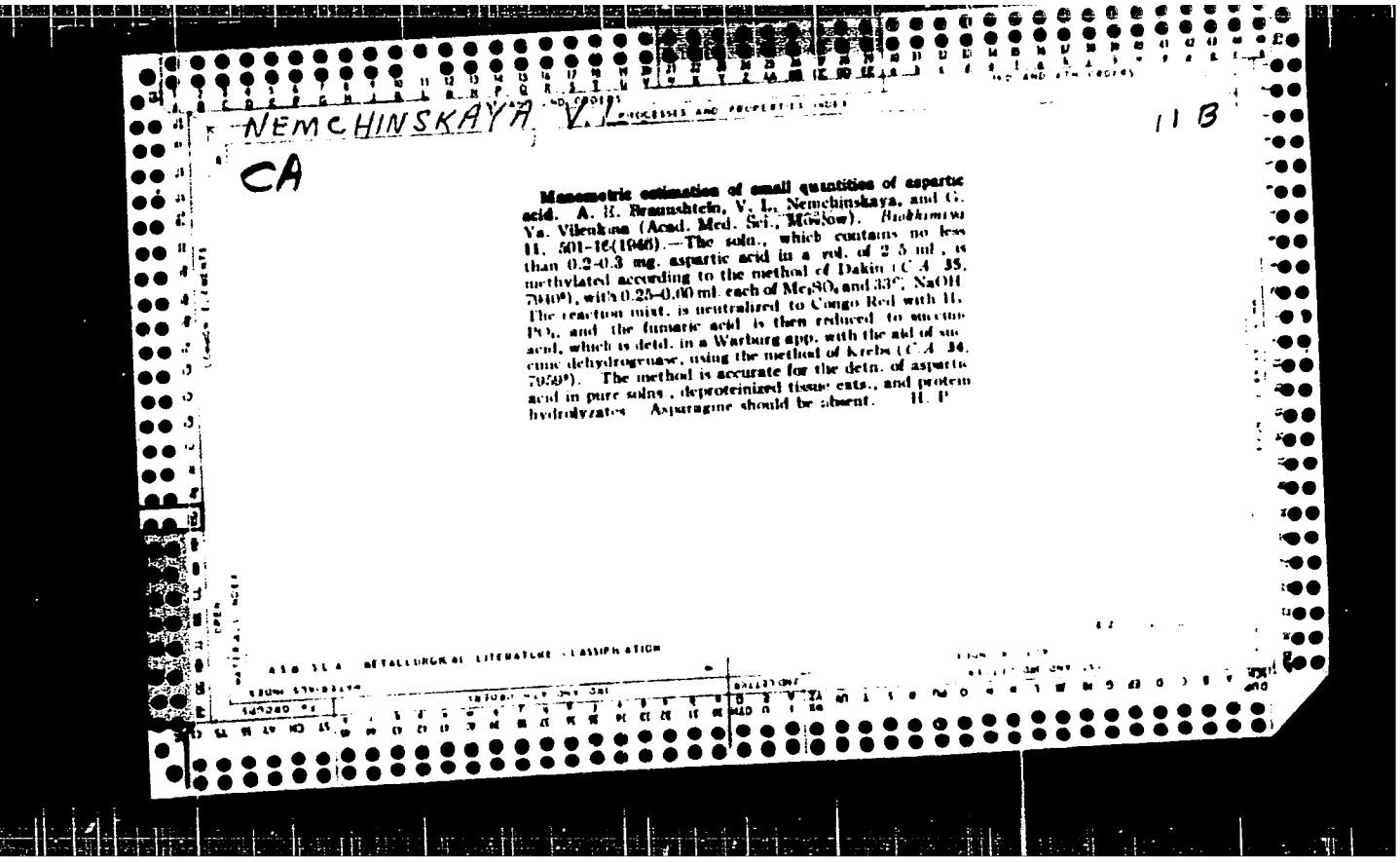
NEMCHINOVA, Ye.Ye.

Bibliography on the karst of Uzbekistan and adjoining regions.
Izv.Uzb.fil.Geog.ob-va 6:183-184 '62. (MIRA 15:8)
(Bibliography--Uzbekistan--Karst) (Uzbekistan--Karst--Bibliography)

NEMCHINOVA, Z.F.

Gleyey dark-colored turf soils in Northwestern Russia developed on carbonate rich and noncarbonate deposits. Pochvovedenie no.4:34-41 Ap '65. (MIRA 18:6)

1. TSentral'nyy muzey pochvovedeniya imeni Dokuchayeva.

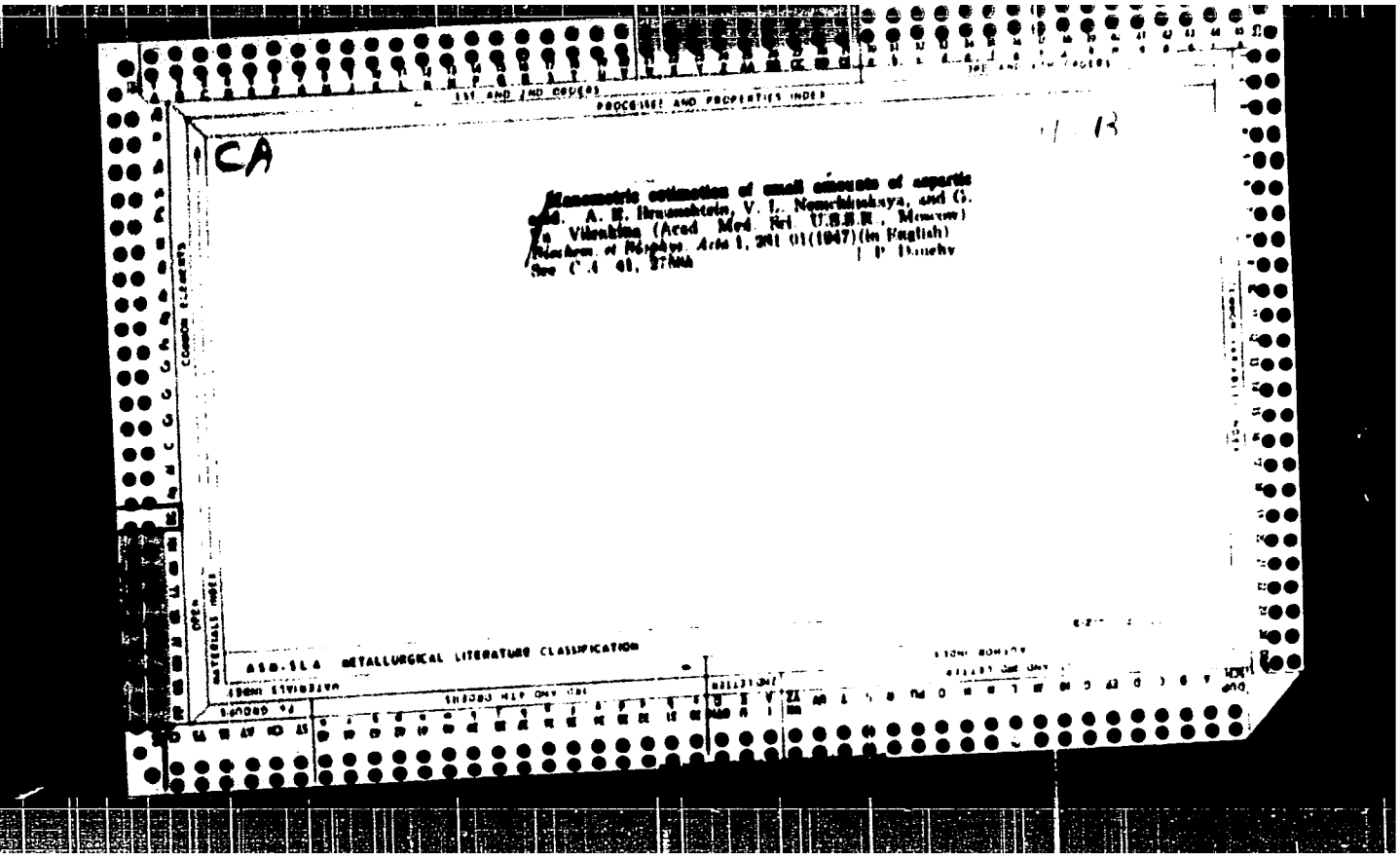


NEMCHINSKAYA, V. L.

CA

11 B

Manometric estimation of small quantities of aspartic acid. A. E. Braunshtein, V. L. Nemchinskaya, and G. Ya. Vilenkina (Acad. Med. Sci., Moscow). *Biokhimiya* 11, 501–16(1946).—The soln., which contains no less than 0.2–0.3 mg. aspartic acid in a vol. of 2.5 ml., is methylated according to the method of Dakin (*C.A.* 35, 7040⁹), with 0.25–0.60 ml. each of $MeSO_4$ and 33% NaOH. The reaction mixt. is neutralized to Congo Red with H_2SO_4, and the fumaric acid is then reduced to succinic acid, which is detd. in a Warburg app. with the aid of succinic dehydrogenase, using the method of Krebs (*C.A.* 34, 7059⁹). The method is accurate for the detn. of aspartic acid in pure solns., deproteinized tissue exts., and protein hydrolyzates. Asparagine should be absent. H. P.



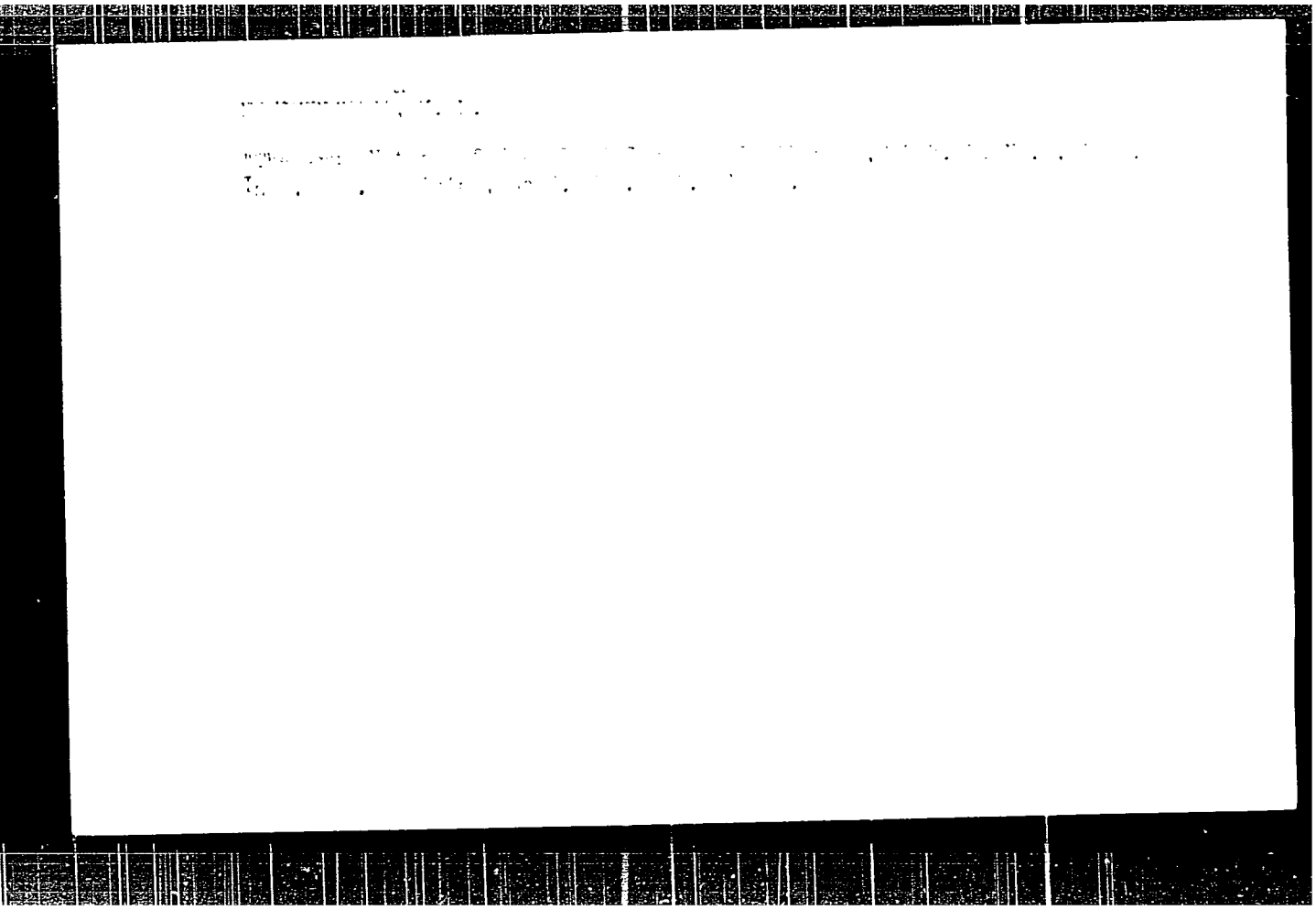
NEMCHINSKAIA, V. L.

V. M. Karasik and V. L. Nemchinskaia, Gasometric investigations of the iodine azide and iodobicarbonate reactions. P. 1228.

It is found that the coefficient CO_2N_2/CNS lies within the limits of the Rupp coefficient which introduces a considerable limitation to the idea about the catalytic role of the sulfide bound sulfur in the iodine azide reaction.

All Union Sanitary Chemical Institute

SO: Journal of General Chemistry (USSR) 18. (80) No. 7 (1948).



11A

CA

Enzymic depolymerization of deoxyribonucleic acid of nucleoproteins. V. L. Neuchitskaya (Inst Exptl Med., Acad Med Sci., Leningrad) Biokhimiya 15, 478-84 (1950); cf. Mayer and Green, C.A. 44, 3858h. Pan creatic depolymerase, free from proteolytic enzymes, decomp. free, polymerized desoxyribonucleic acid (I), as well as I in combination with a nucleoprotein. In both cases, the decomps. is accompanied by the liberation of nucleotides. About 100 times as much enzyme is required to decomp. I bound to a protein as free I. The amt of enzyme which decomp. free I completely, depolymerizes 30–40% of bound I. Pancreatic depolymerase decomp unagglutinated cell nuclei isolated from rat liver and lung by extn with 8.5% sucrose at pH 7 H. Priestley

1907

CA

True nature of the so-called structural proteins. V. S. Shapot and V. L. Nemchinskaya. *Doklady Akad. Nauk S.S.S.R.* **70**, 465-8(1950); cf. Bensley and Hoerr, *C.A.* **29**, 6284; **33**, 700; Banga and Szent-Györgyi, *C.A.* **36**, 788.—Nuclear nucleoprotein from calf thymus or avian erythrocytes is devoid of adenosinetriphosphatase (I) properties, but acquires them on contact with a liver ext., contg. this enzyme, in *M* NaCl soln., followed by pptn. by diln. Similar complex formation occurs on addn. of liver catalase or potato I. The latter enzyme is of purely cytoplasmic origin. The structural proteins (references cited) are artifacts from the complexing of cytoplasmic and nuclear elements, confirmed by enzymic studies as well as by analyses. G. M. Kosolapoff

NEMCHINSKAYA, V.L.; SHAPOT, V.S.

Interrelation of enzyme processes in the digestion of nucleoproteins by pancreatic juice. Biokhimiya 18, 210-22 '53. (MLRA 6:4)
(CA 47 no.16:8132 '53)

1. Inst. Exptl. Med., Leningrad.

NEMCHINSKAYA, V.L.

MANOYLOV, S.Ye.; NEMCHINSKAYA, V.L.; ALIYEVA, A.Z.; MYTAREVA, L.V.

Problem of the possibility of the mutual transformation of nucleic acids [with summary in English]. Biokhimiia 22 no.6:1013-1018 N-D '57. (MIRA 11:2)

1. Tsentral'nyy nauchno-issledovatel'skiy rentgeno-radiologicheskiy institut Ministerstva zdravookhraneniya SSSR, Leningrad.
(NUCLEIC ACIDS, metabolism,
mutual conversion in various organs (Rus))

T

USSR/Human and Animal Physiology (Normal and Pathological). Metabolism. Metabolism of Lipids.

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79226.

Author : Nemchinskaya, V.L.
Inst :
Title : Mechanism of Synthesis and Acidification of Fatty Acids in Tissues of an Animal Organism.

Orig Pub: Uspekhi sovren. biol., 1957, 44, No 1, 37-54.

Abstract: Review. The mechanism is discussed of β-acidification of fatty acids, participation of the cycle of tricarboxylic acids, acetyl KoA and the role of different ferments - thioforase, ethylene-reductase, carotonase, β-ketothiolase in the intermediate metabolism of fatty acids. The problem of the integration of fat and carbohydrate metabolism is investi-

Card : 1/2

EXCERPTA MEDICA Sec 2 Vol 12/2 Physiology Feb 59

526. INTERACTION OF ATP WITH DYES (Russian text) - Braun A. D. and Nemchinskaya V. L. Lab. of Cytochem., Inst. of Cytol., Acad. of Scis of the USSR, Leningrad, USSR - BIOKHIMIYA 1958, 23/3 (359-365) Graphs 7 Tables 3

ATP interaction with basic dyes (toluidine blue, methylene blue, neutral red, Nile blue) and with an acid dye (Congo red) was studied. ATP alters the mode of diffusion of the dyes through cellophane and into gelatin and affects the spectral properties of the dye solutions in the visible range. The absorption spectrum is shifted to the long wave range (bathochrome shift) while the intensity of absorption increases (hyperchrome change of staining). These changes are more pronounced the higher the ATP concentration. It is suggested that in virtue of complex formation ATP causes disaggregation of the dyes. (II, 1)

NEMCHINSKAYA, V. L., SOKOLOVA, V. I., and BRAUN, A. D. (USSR)

"Release of Proteins Amino Acids and Carnosine from Resting and Excited Skeletal Muscles (read by title)."

Report presented at the 5th International Biochemistry Congress, Moscow, 10-16 Aug 1961

NEMCHINSKAYA, V.L.

Aminopherases in isolated cell nuclei. TSitologiia 3 no.3:327-333 My-Je '61. (MIRA 14:6)

1. Laboratoriya biokhimii kletki Instituta tsitologii AN SSSR, Leningrad.
(TRANSAMINASES) (CELL NUCLEI)

NEMCHINSKAYA, V. L.

"Synthesis of Pyridine Nucleotide Coenzymes in the Cell." pp. 50

Institute of Cytology AS USSR Laboratory of Cell Biochemistry

II Nauchnaya Konferentsiya Instituta Tsitologii AN SSSR. Tezisy Dokladov (Second Scientific Conference of the Institute of Cytology of the Academy of Sciences USSR, Abstracts of Reports), Leningrad, 1962 88 pp.

JPRS 20,634

BRAUN, A. D. and NEMCHINSKAYA, V.L.

"Change in the Properties of Isolated Cell Nuclei of the Thymus Gland outside the Body and under the Influence of Stimuli." pp. 6

Institute of Cytology AS USSR Laboratory of Cell Biochemistry

II Nauchnaya Konferentsuya Institute Tsitologii AN USSR. Tezisy Dokladov (Second Scientific Conference of the Institute of Cytology of the Academy of Sciences USSR, Abstracts of Reports), Leningrad, 1962 88 pp.

JPRS 20,634

NEMCHINSKAYA, V.L.; BRAUN, A.D.

Changes in the characteristics of isolated cell nuclei in the course of survival and during the action of stimuli. TSitologiia 4 no.4:409-417 Jl-Ag '62. (MIRA 15:9)

1. Laboratoriya biokhimii kletki Instituta tsitologii AN SSSR, Leningrad.

(CELL NUCLEI)

NEMCHINSKAYA, V.L.

Intracellular localization of nicotinamide-adenine dinucleotide phosphate synthesis. Biokhimiia 28 no.6:951-957 N-D'63 (MIRA 17:1)

1. Institute of Cytology, Academy of Sciences of the U.S.S.R. Leningrad.

NEYFAKH, S.A.; NEMCHINSKAYA, V.L.; GAYTSKHOKI, V.S.; GANELINA, L.Sh.

Participation of mitochondria in the control of the glycolysis of the cell nucleus. Dokl. AN SSSR 154 no.5:1202-1205 F'64. (MIRA 17:2)

1. Institut eksperimental'noy meditsiny AMN SSSR i Institut tsitologii AN SSSR. Predstavleno akademikom N.M. Sisakyanom.

BRAUN, A.[illegible]; BULYCHEV, A.G.; GANELINA, [illegible]; NEMCHINSKAYA, V.[illegible];
N[illegible]ETAYEVA, N.M.

Effect of injuring factors on intracellular structures. (MIRA 18:9)
TSitologiia 7 no.4:494-500 Jl-Ag '65.

NEMCHINSKAYA, V.L.; GANELINA, L.Sh., BRAUN, A.D.

Possible role of histones in controlling glycolysis in the thymus nuclei. Biokhimiia 30 no.1:31-38 Ja-F '65.
(MIRA 18:6)

1. Laboratoriya biokhimii kletki Instituta tsitologii AN SSSR, Leningrad.

NEMCHINSKIY, A.B., inzh.

Efficiency of traveling enterprises in the construction industry.
Stroi. i dor. mash. 10 no.10:34-37 O '65. (MIRA 18:10)

[redacted], L. I.

Krasil'shchikov, V. M. and [redacted], A. I., "[redacted] geneous structures," Trudy Tsentr. nauch.-issled. [redacted] SSSR), No. 6, 1948, p. 10-14.

SO: U-3850, 14 June 53, (Letopis 'Zhurnal'nykh Statey, No. 1, 1949).

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21781 NEMCHINSKIY, A. L. Metodika opredeleniya prokalivayemosti stali. V sb: Problemy konstruktsionnoy stali. M-L., 1949, s. 87-101.

SO: Letopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949

NEMCHINSKIY, A. L.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 364 - I

BOOK Call No.: TN672.V8

Author: NEMCHINSKIY, A. L.
Full Title: THERMAL PENETRABILITY OF STEEL
Transliterated Title: O prokalivayemosti stali

Publishing Data
Originating Agency: All-Union Scientific Engineering and Technical Society of Machine Builders. Urals Branch.
Publishing House: State Scientific and Technical Publishing House of Machine Building Literature ("Mashgiz")
Date: 1950 No. pp.: 15 No. of copies: 3,000

Text Data
This is an article from the book: VSESOYUZNOYE NAUCHNOYE INZHENERNO-TEKHNICHESKOYE OBSHCHESTVO MASHINOSTROITELEY. URAL'SKOYE OTDELENIYE, THERMAL TREATMENT OF METALS - Symposium of Conference (Termicheskaya obrabotka metallov, materialy konferentsii) (p.359-373), see AID 223-II

Coverage: The author presents a review and analysis of the work of other investigators (French, Blanter and Grossman) on the characteristics of tempering of various steel articles. The relative penetration of tempering (thermal penetrability) is presented by different investigators in a different

O prokalivayemosti stali

AID 364 - I

manner. The depth of tempering is generally related to either the cooling velocity of the central core or to the coefficient of heat transmission (French), or to the cooling velocity of a spherical specimen or thin plate of standard size (Blanter) or to "ideal critical dimensions" (the maximum diameter of cylinder or thickness of plate for through tempering at instant of cooling), [Grossman]. The penetration of tempering in this case is indicated by the hardness corresponding to the structural zone of 50% martensite and 50% pearlite.

On the basis of his experiments the author proposes the use of the "effective coefficient of heat transmission" for characterization of the action of the surrounding medium on tempering of steel articles of different cross section. 7 charts and 2 tables.

Purpose: For scientific workers
Facilities: None
No. of Russian and Slavic References: [illegible] (1933-49)
Available: Library of Congress.

2/2

NEMCHINSKIY, A. L.

Teplovye raschety termicheskoi obrabotki [Heat calculations in heat treatment]. Leningrad, Sudpromgiz, 1953. 104 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 11 February 1954

NEMCHINSKIY, A.L.

Category : USSR/Solid State Physics - Mechanical properties of crystals and poly crystalline compounds E-9

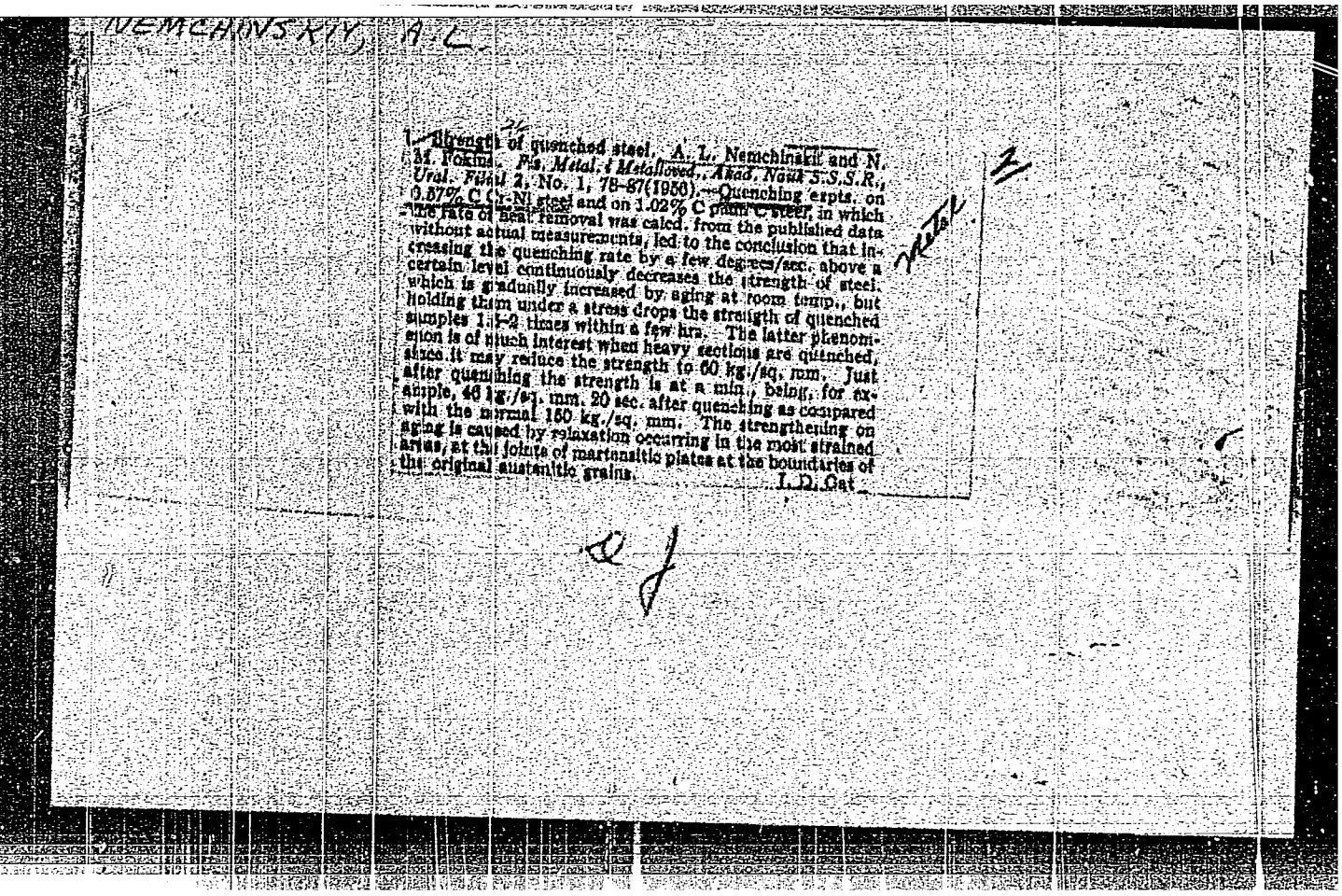
Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 1374

Author : Nemchinskiy, A.L., Fakina, N.M., Shimelevich, I.L.
Inst : Centr. Scientific Res. Inst., MSP, USSR
Title : On the Mechanical Properties of Steel with Austenite-Martensite Structure

Orig Pub : Metallovedeniye i obrabotka metallov, 1956, No 1, 30-35

Abstract : The investigation concerned the influence of the qualitative relationship between austenite and martensite on the mechanical properties of steel containing 0.2 -- 0.86% carbon. The specimens were hardened in air from 900 or 1150°, depending on the composition; the amount of martensite was determined by metallographic and magnetic methods. The quantitative ratio of the phases was changed by alloying the steel with Mn, Ni, and Cr and by cold working. It is shown that increasing the amount of martensite in low carbon steel raises the yield point and the ultimate strength, the sharpest increase being observed at the start of the transformation. Scott's suggestion, that the abrupt change in the yield point in the martensitic transformation is caused by formation of a martensite skeleton, is not confirmed. In high and medium carbon steels, a relatively small degree of martensitic transformation (10 -- 20%) is enough to destroy the plasticity completely.

Card : 1/1



NEMCHINSKII, A. L.

Strength of quenched steel. A. L. Nemchinskii and N. M. Fokina. *Fiz. Metal. i Metalloved., Akad. Nauk S.S.S.R., Ural. Filial* 2, No. 1, 78-87(1956).—Quenching expts. on 0.87% C Cr-Ni steel and on 1.02% C plain C steel, in which the rate of heat removal was calcd. from the published data without actual measurements, led to the conclusion that increasing the quenching rate by a few degrees/sec. above a certain level continuously decreases the strength of steel, which is gradually increased by aging at room temp., but holding them under a stress drops the strength of quenched samples 1.5–2 times within a few hrs. The latter phenomenon is of much interest when heavy sections are quenched, since it may reduce the strength to 60 kg./sq. mm. Just after quenching the strength is at a min., being, for example, 40 kg./sq. mm. 20 sec. after quenching as compared with the normal 150 kg./sq. mm. The strengthening on aging is caused by relaxation occurring in the most strained areas, at the joints of martensitic plates at the boundaries of the original austenitic grains. I. D. Gat

137-58-5-10068

NEMCHINSKIY, A.L.

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 169 (USSR)

AUTHOR: Nemchinskiy, A.L.

TITLE: An Experimental Investigation of Crack Formation During Quenching (Eksperimental'noye issledovaniye treshchinoobrazovaniya pri zakalke)

PERIODICAL: V sb. Metallovedeniye. Leningrad, Sudpromgiz, 1957, pp 17-41

ABSTRACT: Upon examing the effect of C content, the dimensions of specimens (S) of simple and complex shape, the temperature of the water, and the presence of dissolved and emulsified substances. the author suggests that the cracks (Cr) forming on cylindrical S be classified as types I and Ip II, III, and IV. Type I Cr are those arising on a single water quenching (Q) of small and medium-sized S. These Cr are observed after the water Q and are located along the longitudinal axis of the S. On oil Q, Cr of type I are encountered only in large S made of steel of high C content but may be seen in S of smaller size also, if the steel is of lower quality. These C are shallow. Directionally they may be either longitudinal or transverse, and when large in

An Experimental Investigation of Crack Formation During Quenching

number they form a network. Water temperature has a major influence upon the length of the zone in which these Cr are found. On Q in hot water these Cr form in S of considerably larger size than on cold-water Q. Cr of type Ip are those forming on repeated heat treatment. If the steel is highly brittle, Cr of this type form in S of small diameter (3 mm). Type II Cr form in large S of high-carbon steel on water Q. They start within the piece and may be either longitudinal or transverse in orientation. On repeated Q these Cr appear in S of smaller diameter. Type III Cr are edge cleavage Cr observed on water Q. They appear after the 2nd and subsequent Q and start on the end surfaces at a distance of 10 to 20% of the radius from the edge. Cylindrical S 20 or 30 mm in diameter, of medium-carbon steel, have the greatest tendency to form Cr of this type. Such Cr do not form in S that are < 10-15 mm in diameter. If the metal is of low strength, edge cleavages may occur in S of very large size i.e., of 100-mm diam. Type IV Cr are those observed on water Q of large cross-section items of medium-carbon steel, and constitute transverse Cr progressing from the edge of the S. A table is presented showing the technical steps taken to eliminate quenching Cr.

1. Steel--Fracture 2. Steel--Cooling 3. Water--Temperature effects N.T.

Card 2/2

NEMCHINSKIY, A.L. 137-58-5-10069

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 169 (USSR)

AUTHOR: Nemchinskiy, A. L.

TITLE: The Resistance of Steel to Quenching Cracks (Soprotivlyayemost' stali obrazovaniyu treshchin pri zakalke)

PERIODICAL: V sb.: Metallovedeniye. Leningrad, Sudpromgiz, 1957 pp 42-69

ABSTRACT: The effects of chemical composition, phase constitution (quantitative ratio of austenite to martensite during transformation), rate of cooling on quenching (Q), recovery time after Q, delayed failure, repeated Q, and the test mediums on the strength of quenched steel are examined. This makes it possible to clarify the dynamics of the resistance of steel to brittle failure. The following conclusions are drawn from the results of the investigations: If the rate of cooling in the martensitic interval exceeds 10^{o}C/sec, the strength of very thin water-quenched specimens is only one-half to one-third that of steel slowly quenched in oil. The increase in the strength of quenched steel in the process of recovery occurs over a period of several days at decreasing speed, and the speed at which this occurs depends upon the rate

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The Resistance of Steel to Quenching Cracks

of cooling on Q. If the rate of cooling on Q is slow, no increase in strength after Q is observed. The phenomenon of delayed failure is characteristic both of steels that have been cooled rapidly and of those that have had slow cooling on Q. It may be taken, approximately that when a load is applied for a long time failure may occur on stresses representing only 40 or 50% of the average strength found on short-term loading. On oil Q, the strength of the specimens is not dependent upon the number of times the treatment is repeated. On water Q the strength remains constant in some cases, while in others it declines. Repeated Q in water, when the final Q is in oil, does not change the nature of the effect of repeated Q on the strength of steel (as compared with final Q in water). Reduction in the time interval between repeated Q to 3 sec (instead of a day) diminishes the loss of strength by medium-carbon steel and completely prevents loss of strength on the part of high-carbon steel. A study of the effect of the test medium shows that sharply quenched steel containing 0.25% and more C is very sensitive to the test medium. The strength of specimens quenched in oil and air shows either no change on testing in boiling water or is diminished to a smaller degree than with specimens quenched in water. In conclusion, the conditions of quench cracking are investigated by comparing the strength of the quenched steel with the internal stresses upon water and oil Q. Bibliography: 29 references. 1. Steel--Chemical properties
Card 2/2 2. Steel--Cooling 3. Steel--Fracture

N. T.

Nemchinskiy, A.L.

AUTHOR: Kachanov, L.M. and Nemchinskiy, A.L.

TITLE: On a method of determining th fracture strength. (Ob odnom sposobe opredeleniya soprotivleniya otryvu)

PERIODICAL: "Fizika Metallov i Metallovedenie" (Physics of Metals and Metallurgy), 1957, Vol. IV, No. 1 (10), pp. 151-160 (U.S.S.R.)

ABSTRACT: Existing methods of testing the fracture strength of ductile metals, particularly of low carbon steel, have a number of disadvantages. In earlier work (Zav. Lab., 1952, Vol.XVIII, 1381), one of the authors described results of fracture tests carried out with cylindrical specimens of high strength steel containing a thin transverse layer of a steel to be investigated; the strength figures were obtained on the assumption that the load distribution was uniform. It was later found that this was not the case, and in this paper formulae are derived which enable one to calculate the real ratio of these stresses. It was found dilatometrically that carbon steel had a linear contraction of 0.228% on cooling down from +20 to -190 °C, whilst hardened chromium-nickel steel containing 0.3% C contracted under the same conditions by 0.236%. This slight difference of 3.5% in the thermal expansion of the two steels affect appreciably the results of the investigations. The authors carried out experiments with specimens which were manufactured by forge welding of a packet consisting of two sheets of chromium-nickel steel with an

On a method of determin...

NEMCHINSKIY, A. L.

AUTHOR: Nemchinskiy, A. L. 126-1-16/40

TITLE: On the impeded disruption of hardened steel. (O zamedlennom razrushenii zakalennoy stali).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.1, pp. 110-112 (USSR)

ABSTRACT: According to the conceptions originally put forward by Griffith, A. (Ref.1) and expanded by Orowan, E. (Refs.2 and 3) and other authors, the catastrophic propagation of a brittle crack begins when the elastic energy liberated during the growth of the crack becomes larger than the enery spent on the propagation of the crack. According to literary data (Ref.7) the energy condition is not always applicable. For instance, experiments have shown that a started brittle fracture of low carbon structural steel will not continue if the stresses are lower than 10 kg/mm^2 whereby the critical stress does not depend on the length of the crack, i.e. a result which is contradictory to the energy condition of fracture but is in agreement with the force or activation conditions of fracture. Slow fracture of hardened steel begins with a slow growth of a crack by means of a mechanism described by Shurakov, S. (Ref.8) in which the plastic

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On the impeded disruption of hardened steel. 126-1-16/40

flow plays an important role; when the length of one of the cracks reaches a critical value a second (Griffith) fracture mechanism will begin to develop. The brittle fracture of hardened steel should have some features distinguishing it from the brittle fracture of annealed low carbon steel due to the smaller value of the work A and also due to the possibility of existence of defects which were "ready" (prior to plastic deformation), i.e. micro-cracks in the martensite. In hardened steel the austenite and the martensite lamellae are usually much smaller than the ferrite grain in low carbon hardened steel and, therefore, a higher minimum strength can be anticipated for such steel as a result of the force (activation) condition of fracture. For verifying the here expressed views two series of tests were carried out on specimens of 1.5 x 7 x 80 mm of the steel 5XHM. The results of the first series have already been published (Ref.9). The tests consisted in determining the curves of slow fracture of specimens hardened from 850°C in water and in oil; the obtained results are graphed in Fig.1. In the second series of experiments, the same type of specimens were hardened from 850°C in

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On the impeded disruption of hardened steel. 126-1-16/40

water from 1 to 5 times; following that, half of the specimens were additionally hardened from 850°C in oil. The obtained results are graphed in Figs. 2 and 3. The existence was observed of two sections (inclined and horizontal) on the curve of slow fracture of hardened steel and this is attributed to the fact that disruptions in these are due to differing conditions; on the slope section the thermodynamic conditions are the predominant ones, whilst in the horizontal section the activation conditions are predominant. Coincidence of the magnitudes of the minimum strength values during increase in the length of a crack, as a result of various causes (long duration loading and repeated hardening), confirms experimentally the views expressed by the author. There are 3 figures and 9 references, 2 of which are Slavic.

SUBMITTED: June 18, 1956.

AVAILABLE: Library of Congress.

Card 3/3

Nemchinskiy, A.L.

AUTHORS: Moroz, L. S., Dr. Tech. Sc.; Nemchinskiy, A. L., Cand. Tech. Sc.; Pashkov, P. O., Dr. Tech. Sc., Prof.; Shurakov, S. S., Cand. Tech. Sc.; and Bendryshev, O. L., Cand. Tech. Sc., Head of the Central Factory Laboratory (Tsentral'naya zavodskaya laboratoriya)

TITLE: Brittle Breakdown of Steel and Steel Parts (Khrupkiye razrusheniya stali i stal'nykh detaley)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, No. 1, pp. 123-125 (U.S.S.R.)

ABSTRACT: The first four of the above authors present a review of the book, "Brittle Breakdown of Steel and Steel Parts" by Ya. M. Potak, which contains 389 pages and is published by OBORONGIZ, dated 1955. These critics find that the author used much material based on his own investigations. They state that the book fills a need in the metallurgical industry and contains little that merits criticism. The author listed last above, Bendryshev, makes a separate review and finds that the book will acquaint wide circles of

Card 1/2

factory engineers and technicians with the technical principles involved in the breakdown of steel. There is 1 Slavic reference.

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE:

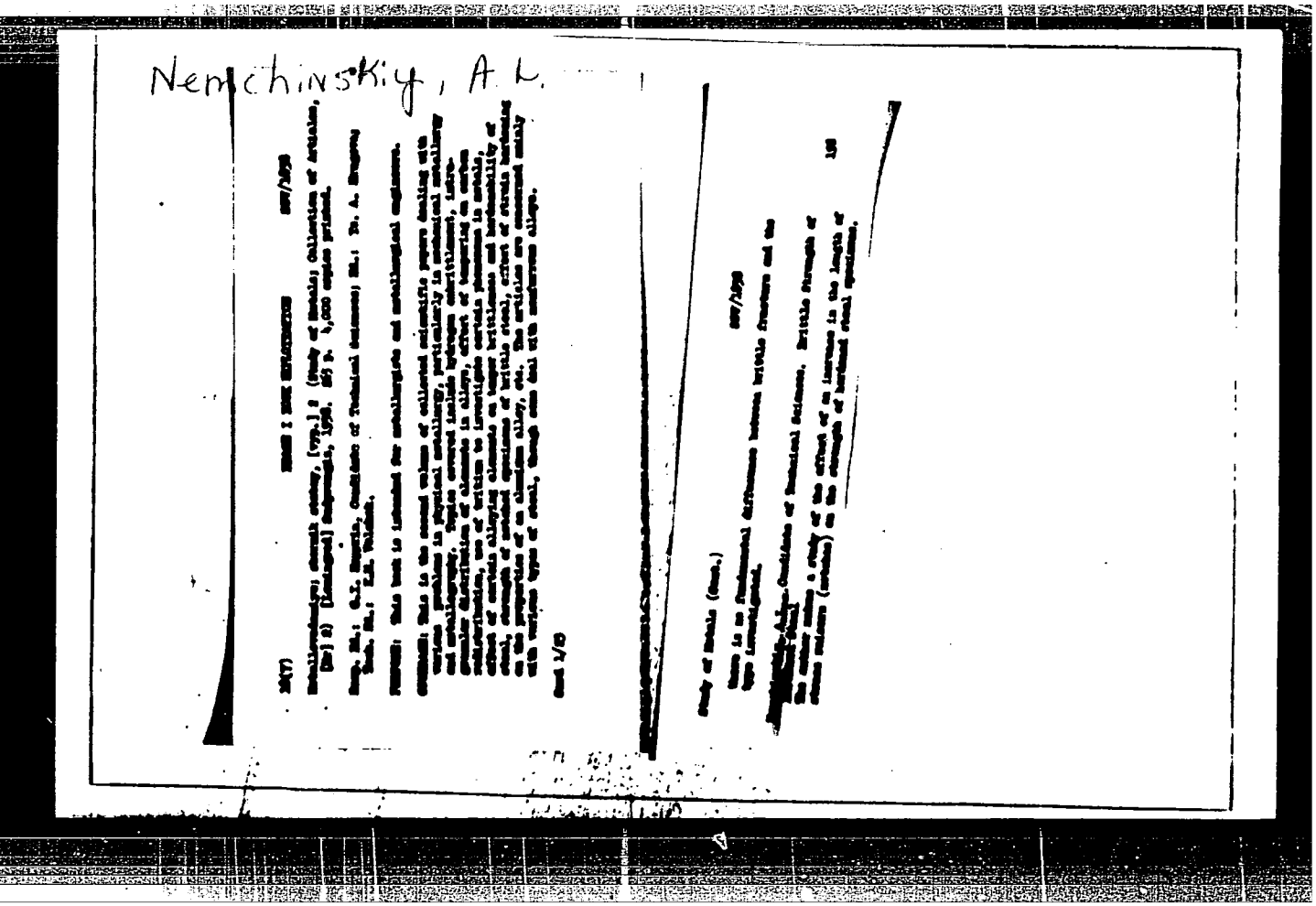
Card 2/2

MEMCHINSKIY, A.L., kand.tekhn.nauk

A mechanical source of weld strengthening in high-strength steel welding. Svarka 1:95-102 '58. (MIRA 12:8)
(Steel, Structural--Welding) (Strains and stresses)

NEMCHINSKIY, A.L., kand.tekhn.nauk

Effect of defects on the strength of welded joints. Svarka 1:126-143 '58. (MIRA 12:8)
(Welding--Testing) (Metals--Defects)



Nemchinskiy, A. L.

KHACHINSKIY, A.L., kand.tekhn.nauk

Brittle strength of hardened steel. Metallovedenie 2:198-208 '58. (MIRA 13:9)

(Steel—Brittleness)

NEMCHINSKIY, A. L., Doc of Tech Sci -- (diss) "Formation of Boarded Cracks," Leningrad, 1959, 22 pp (Leningrad Polytechnical Institute im M. I. Kalinin) (KL, 1-60, 121)

NEMCHINSKIY A. L.

PHASE I BOOK EXPLOITATION SOV/3752

Metallovedeniye; sbornik statey, No. 3 (Physical Metallurgy; Collection of Articles, No. 3), Leningrad, Sudpromgiz, 1959. 390 p. 3,200 copies printed.

Ed.: G. I. Kapyrin, Candidate of Technical Sciences; Literary and Tech. Ed.: N. I. Kerumenko.

PURPOSE: This collection of articles is intended for scientific personnel at research and educational institutions and industrial plants and also for advanced students.

COVERAGE: The articles report the results of investigations of 1) the effect of various factors on the susceptibility of constructional and heat-resistant steels and titanium alloys to brittle failure at various temperatures under various conditions of loading (long-time, short-time, cyclic, noncyclic) 2) alloying, structure, and condition of alloys as related to their mechanical properties, and 3) corrosion resistance and evaluation of stainless and heat-resistant steels. The articles are accompanied by numerous Soviet and non-Soviet references. No personalities are mentioned.

Lev'yalov, A. S., Doctor of Technical Sciences, Professor. Nature of Steel-Embrittlement Processes During Heating and the Effect of Alloying Elements on Them 3

Teplova, Ye.D., Candidate of Technical Sciences; N. S. Teplov, Engineer; and Ye. A. Mironenko, Technician. Effect of Nickel and Copper on Thermal Brittleness of Chrome-Molybdenum-Vanadium Constructional Steel 39

Moros, L. S., Doctor of Technical Sciences; and T. B. Mingin, Engineer. Mechanism of Hydrogen Embrittlement in Steel 51

Glikman, L. A., Doctor of Technical Sciences, Professor; N. N. Kolgatin, Engineer; V. P. Teodorovich, Candidate of Chemical Sciences; and V. I. Deryabina, Engineer. Change in Mechanical Properties of Certain Steels Under the Action of Hydrogen at High Temperatures and Pressures 58

Moros, L. S., and Yu. D. Khesin, Engineer. Investigation of the Mechanism of Hydrogen Embrittlement of Titanium and Its Alloys 74

Sakhin, S. I., Candidate of Technical Sciences. Role of Intermediate Structures in the Heat Treatment of Medium-Alloy Constructional Steel 88

Gol'dshteyn, L. Ya., Engineer. Stability of Structures and Properties of Tempered Steel 106

Nemchinskiy, A. L., Candidate of Technical Sciences. Microscopic and Macroscopic Cracks in Quench-Hardened Steel 113

Chernetsov, V. I., Engineer. Sensitivity of Titanium and Its Aluminum Alloys to Brittle Failure Under Nonrepetitive Loading 136

Chechulin, B. B., Candidate of Technical Sciences. Investigation of the Relationship Between Size of Specimen and Development of the First Failure Crack in Testing Steel for Mechanical Properties 158

Pashkov, P. O., Doctor of Technical Sciences, Professor. Some Observations on the Strength of Metals as Related to Their Microstructure 166

Shurakov, S. S., Candidate of Technical Sciences. Investigation of the Initial Portions of Stress-Strain Diagrams and Relaxation of Stresses for Quench-Hardened Steel 198

Card 2/4

NEMCHINSKIY, A.L., kand.tkehn.nauk

Microscopic and macroscopic cracks in hardened steel. Metallovedenie 3:118-135 '59. (MIRA 14:3)
(Steel—Metallography)

L 2103-66 EWT(m)/EWP(w)/EPF(c)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD

ACC NR: AP5025599 (U) UR/0129/65/000/010/0045/0046
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45
42
B

AUTHOR: Kanchinskiy, A. L.; Frey, T. F. 44,55

TITLE: Defects encountered on nitriding austenitic manganese and manganese aluminum steels

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 10, 1965, 45-46, and top half of insert facing p. 40

TOPIC TAGS: nitriding, austenitic steel, manganese steel, hardness, brittleness

ABSTRACT: The nitriding of austenitic Mn and Mn-Al steels involves three types of defects, differing in their external appearance. The first type of defects is due to the crumbling of the grains of the nitrided layer (crumbling of individual grains, until complete disintegration). The second type of defects is the formation of cracks along grain boundaries in the nitrided layer, sometimes visible only on the microsection. The defects of the third type consist in the "peeling" of the surface of the nitrided layer. To determine the causes of these defects, the authors investigated steels containing 17% Mn, 0.5% C, and 0, 1, and 3% Al. In addition, specimens with different sizes of the austenite grain were examined. Nitriding regime: heating to 640°C in ammonia current; 2) exposure to 640°C for 10 hr in the presence of 40-60% dissociation of ammonia; 3) heating to 680°C for 20 hr (85-95% dissociation

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of ammonia); 4) cooling to 620°C for 10 hr in absence of ammonia; 5) cooling at the rate of 30°C/hr in absence of ammonia. The case depth was determined by microstructural examination, and hardness and brittleness -- according to the imprints of the Vickers-device pyramid under loads of 5 and 30 kg. Findings: coarse-grained structure of the nitrided layer of austenitic Mn-Al steel causes crumbling; hence, a fine-grained structure is desirable and so the regimes of hot and cold working should be correspondingly adjusted. As for the second type of defects (cracks along grain boundaries), this can be prevented by making the system more airtight during cooling. As for the third type of defects -- peeling -- this can be prevented by barring the access of ammonia during the post-nitriding cooling. Orig. art. has: 1 table.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM HT

NO REF SOV: 002 OTHER: 000

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L 21599-66 EWT(l)/EWT(m)/EEC(k)-2/EWG(n)/T-2/EWA(h)/EWP(t) IJP(c) TT/WW/JD/JG/AT

ACC NR: AP6007082 SOURCE CODE: UR/0057/66/036/002/0324/0330

AUTHOR: Baksht, F. G.; Moyzhes, G. Ya.; Nemchinskiy, V. A.

58

ORG: none

B

TITLE: On the removal of energy from a plasma of a thermionic converter through the diffusion of excited atoms and resonance radiation

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 2, 1966, 324-330

TOPIC TAGS: thermionic converter, cesium plasma, arc discharge

ABSTRACT: This is the third article in a series of theoretical studies of a thermionic converter using the arc mode in a Cs plasma (See: Baksht, F. G., and B. Ya. Moyzhes, Zh. TF, 35, 266, 1965; Moyzhes, B. Ya., F. G. Baksht, and M. G. Melikiya, Zh. TF, 35, 9, 1965). In the first two papers, the importance of correctly evaluating the energy losses in the plasma was stressed because of the sensitivity of the ion-generation function to changes in the electron temperature, the latter being derived from the energy balance equation. In the present paper, the energy corresponding to the resonance lines is shown to be insignificant in comparison to the energy given off by the electrons in the ionization process. This confirms the authors' earlier assumptions that losses due to radiations cannot substantially affect the electron temperature in the plasma. Much larger losses, of the order of one-third of those due to ionization,

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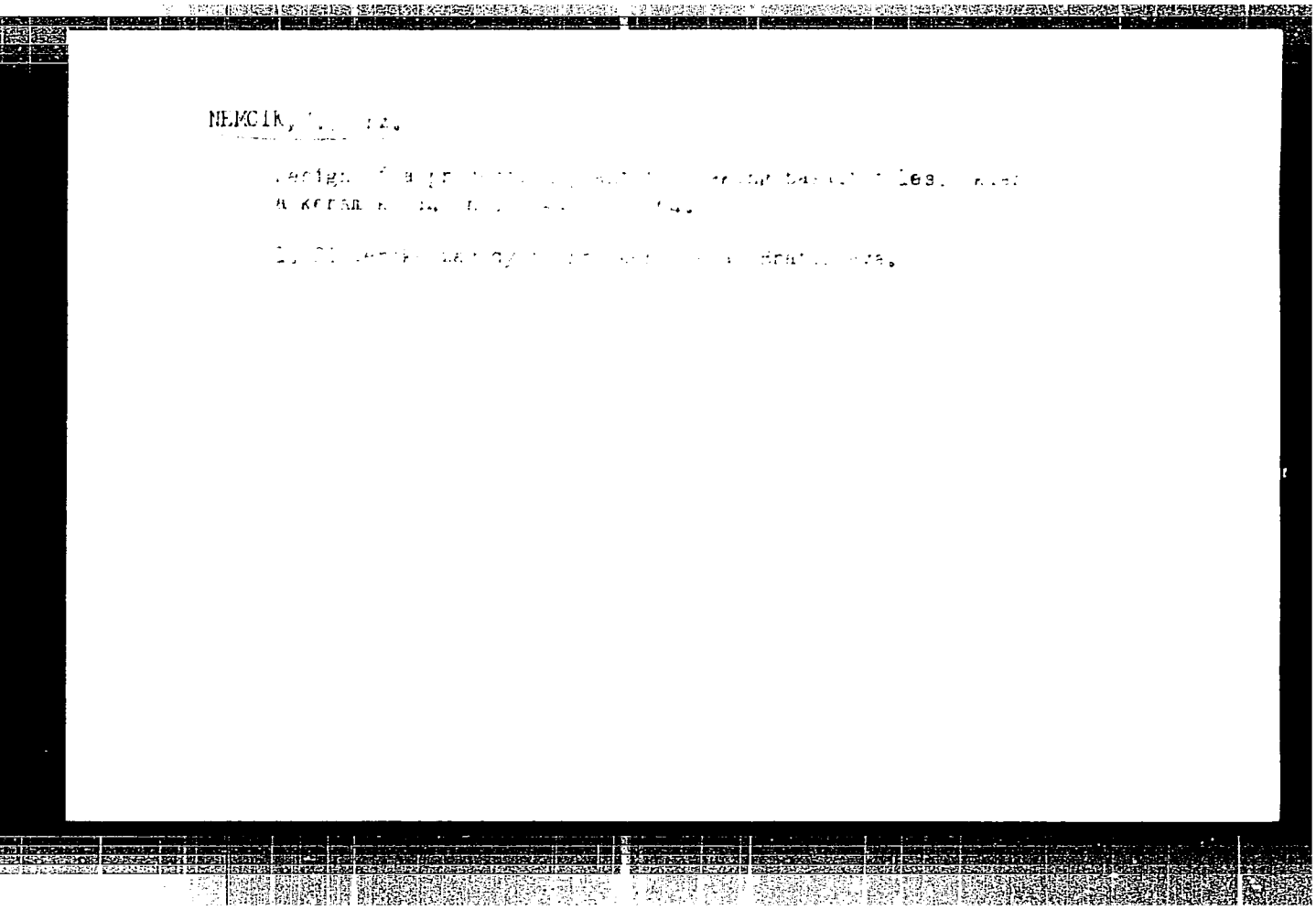
are caused by the drifting of the excited atoms onto the electrodes. The losses caused by the diffusion of excited atoms within the volume of the plasma are too small to be considered. Orig. art. has: 31 formulas, 1 figure, and 1 table. [ZL]

SUB CODE: 10/ SUBM DATE: 22Jun65/ ORIG REF: 005/ OTH REF: 004/ ATD PRESS: 4218

Card 2/2

FEDCHENKO, Ivan Kirillovich, doktor tekhn. nauk; PETROV, G.N., doktor tekhn. nauk, retsenzent; NEMCHUNOVA, O.A., red. izd-va; PISARENKO, M.G., inzh., red.izd-va; ROZUM, T.I., tekhn. red.

[High-voltage engineering; specific problems] Tekhnika vysokikh napriazhenii; spetsvoprosy. Kiev, Gostekhizdat USSR, 1963. 319 p. (MIRA 17:3)



Nemcik, S.

Disk valve. p. 218. PAPIR A CELULOSA. (Ministerstvo lesu a drevarskeho prumyslu) Praha. Vol. 9, no. 10, Oct. 1954

SOURCE: EEAL - LC Vol. 5 No. 10 Oct. 1956

MELCH, A.

"Impermeability to water of certain rocks in the foundations of dams planned in Slovakia."

GEOLOGICKE PRACE; SPRAVY, Bratislava, Czechoslovakia, No. 4, 1958.

Monthly list of EAST EUROPEAN ACCESSIONS INDEX (EEAI), Library of Congress, Vol. 8, No. 9, August, 1959.

Unclassified.