ACCESSION NR: AT4007036 TABLE 1 ENCLOSURE: 01

Results of corrosion test of titanium alloys AT in boiling acids

Grade of the alloy	Testing medium	K, g/m^2 hour	II;mm/year	Point of stability
		ACETIC ACID		
AT-3	Acid	0.007	0.0133	4
AT-3	Vapor	0.003	0.0057	3
AT-4	Acid	0.01	0.019	4
AT-4	Vapor	0.003	0.0057	3
AT-8	Acid	0.007	0.00133	2
AT-8	Vapor	0.004	0.0076	3
		FORMIC ACID		
AT-3	Acid	0.0008	0.00152	2
AT-3	Vapor	0.002	0.0038	2
AT-4	Acid	0.002	0.0038	2
AT-4	Vapor	0.005	0.0095	3
AT-8	Acid	0.004	0.0076	3
AT-8	Vapor	0.005	0.0095	3

Remark: all samples underwent uniform corrosion

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L 15667-65 EWT(m)/EWA(d)/EWP(v)/EWP(t)/EWP(k)/EWP(b) Pf-4 ASD-3/AFFTC/ESD-3/IJP(c)/ASD(f)-2/ASD(m)-3/AFMDC MJW/JD/HW/HM/WB/MLK

ACCESSION NR: AT4048067 S/0000/64/000/000/0166/0174

AUTHOR: Tavadze, F. N.; Lashkhi, T. A.

TITLE: Investigation of the use of titanium alloys in the food industry

SOURCE: Soveshchaniye po metallurgii, metallovedeniyu i primeneniyu titana i yego splavov. 5th, Moscow, 1963. Metallovedeniye titana (Metallography of titanium); trudy* soveshchaniya. Moscow, Izd-vo Nauka, 1964, 166-174

TOPIC TAGS: titanium alloy, titanium alloy stability, aluminum containing alloy, titanium alloy corrosion, food industry, organic acid, stainless steel, alloy steel / steel 1Kh18N9T

ABSTRACT: Titanium alloys are new materials which are being introduced in different branches of industry to spare costly ferrous metals. The present paper continues earlier investigations by the authors of the possibility of using titanium alloys of the AT series for food industry machinery. Previous tests showed high corrosion resistance of AT alloys in various media. Tests were therefore made with weld seams of AT3 and AT8 alloys in two solutions: KI (2% tartaric acid, 2% citric acid, 0.5% malic acid, 2% acetic acid, 2% dextrose, 4% common salt, 3% oxalic acid, 1% lactic acid, total acidity 2.7%, pH 0.81, and VI (3% tartaric acid, 1% citric acid, 1.5% acetic acid, 12% ethyl alcohol, 0.6% methyl

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L 15667-65
ACCESSION NR: AT4048067

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alcohol, 0.3% tannin, 1% dextrose, total acidity 1.22, pH 1.80). Simultaneously, 1Kh18N9T stainless steel and an experimental chromium-manganese steel were tested. The tests included determination of weight loss and hydrogen evolution, measurement of electrical potential, plotting of polarization curves and measurement of pH after corrosion. The tests indicated that the corrosion rate in oxalic acid and tartaric acid is less than 0.13 mm/year. In oleic, tartaric, acetic and lactic acids, corrosion was zero. Solution Kl caused stronger corrosion, especially at the beginning of the tests. Chemical analysis of the test solutions indicated that titanium ions did not pass into solution, only Al and Fe being dissolved. During the tests, the AT8 alloy showed less corrosion resistance than the AT3 alloy. This was verified by study of microsections. Chemical analysis of the tests solutions showed that AT8 alloys lost more ions. Tests of AT2 alloys in 10% formic acids also showed high stability. It is concluded that AT3 and AT8 alloys at room temperature show the highest possible corrosion stability in oleic, oxalic, tartaric, acetic and lactic acids, as well as in Kl and Vl solutions. The corrosion tests were confirmed by electrochemical studies which showed that the electrical potentials became positive as time passed. The protective film on the Ti alloys became denser as time passed. Metallographic analysis showed that there are intercrystalline and separate points of failure along titanium weld seams. Orig. art. has: 8 figures and 7 tables.

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Card 2/3

L 15667-65
ACCESSION NR: AT4048067

ASSOCIATION: MM, GO

SUBMITTED: 15Ju164 ENCL: 00 SUB CODE: MM

NO REF SOV: 005 OTHER: 000

Card 3/3

LASHKHI, T.A.; INASHVILI, Sh.Sh.

Meteorological and actinic observations on the Tviberi Glacier. Trudy Inst. geog. AN Gruz. SSR 18:280-281 '64. (MIRA 17:6)

INASHVILI, Sh.V.; LASHKHI, T.A.

Observations over the meteorological elements and ablation on the Adishi Glacier in the summer of 1961. Trudy Inst. geog. AN Gruz. SSR 20:265-280 '64. (MIRA 18:5)

LASHKHIYA, Sh.V.

Recent changes in the shore line of Abkhazia. Izv.AN SSSR.Ser.geol. 21 no.12:21-28 D '56. (MIRA 10:1)

1. Sukhomskiy gosudarstvennyy pedagogicheskiy institut imeni A.M. Gor'kogo.
(Abkhazia--Shore lines)

LASHKHIYA, Sh.V.

Origin of terraces on the Black Sea coast of the Caucasus. Izv. AN SSSR. Ser. geog. no. 4:99-103 Jl-Ag '61. (MIRA 14:7)

1. Sukhumskiy gosudarstvennyy pedagogicheskiy institut im. M.Gor'kogo.

(Black Sea region--Terraces (Geology))

LASHKHIYA, Sh. U.

LASHKHIYA, Sh. V.

On the Yashtukha flora. Dokl.AN SSSR 112 no.6:1104-1105 F '57.
(MLRA 10:5)

1.Sukhumskiy gosudarstvennyy pedagogicheskiy institut im.
A.M. Gor'kogo. Predstavleno akademikom V.N. Sukachevym.
(Sukhumi--Pollen, Fossil)

LASHKHIYA, Sh. V.: Master Geogr Sci (diss) -- "Physico-geographical characteristics of the Black Sea coast of the Abkhaz ASSR". Sukhumi, 1958. 26 pp (Min Higher Educ USSR, Azerb State U im S. M. Kirov), 150 copies (KL, No 7, 1959, 122)

USSR/Farm Animals. Horses

Q-2

Abs Jour : Ref Zhur - Biol., No 11, 1958, No 49971

Author : Leshkin D.
Inst : -
Title : Protein-Vitamin Paste in the Diet of Siring Stallions and Suckling Mares.

Orig Pub : Konovodstvo, 1957, No 9, 42-43

Abstract : The paste was prepared from grain and bean grass mixture (75-80 percent of grains before earing and 20-25 percent of beans at the onset of budding) by removing the cellular tissue and preservation. The paste contained 63.9 percent of water, 15.7 percent of proteins, 5.6 percent of lipoids, 4.6 gr/kg of Ca, 2.8 gr/kg of P, 151 mg/kg of carotene, 3.3 gr/kg of chlorophyll. Tests performed on 6 stallions for 142 days proved the higher biological value of the paste as compared with whole butter. In 2 out of 3 tests, thenumber of sperm cells with straightforward translational movement was 36.7 percent and 28.3 percent higher in stallions on paste diet

Card : 1/2

AUTHOR: Lashkin, K.I., Chief SOV/111-58-11-26/36

TITLE: The Importance of Inter-Rayon Inspectors for Improving Communications in Villages (Rol' mezhrayonnykh kontrolërov v uluchshenii svyazi na sele)

PERIODICAL: Vestnik svyazi, 1958, Nr 11, pp 26-27 (USSR)

ABSTRACT: Although there are presently 600 inter-rayon (district) inspectors in the RSFSR, this number is inadequate since there are about 2,000 rural communication offices and more than 28,000 rural communication branch offices. Three years ago, an institute of inter-rayon inspectors was created because many rural communication offices worked unsatisfactorily. The inspectors are recruited from senior communication employees, managers of telephone or post offices and must have wide experience. Many communication administrations of the RSFSR conduct regular instruction and conferences for the inspectors. Their duties consist of checking the work of

Card 1/2

The Importance of Inter-Rayon Inspectors for Improving Communications in Villages

the various postal and communication installations within their respective areas and the training of personnel.

ASSOCIATION: Glavnoye pochtovoye upravleniye Ministerstva svyazi RSFSR (Main Postal Directorate of the RSFSR Ministry of Communications)

DVOSKIN, Ya., kand. med. nauk; VAGAPOVA, Ye., tekhnik-laborant; LASHKINA, A., tekhnik-laborant

Comparative evaluation of the preparation "ML" and kerosine for the cleaning of oil tankers. Rech. transp. 24 no. 10: 38 '65. (MIRA 18:12)

LASHKO, A.

Preparing seeds for sowing. p. 13.

Vol. 10, no. 12, Dec. 1955
KOOPERATIVNO ZEMEDELIE
Sofiya, Bulgaria

So: Eastern European Accession Vol. 5 No. 4 April 1956

LASHKO, A.S.; DANYLOV, V.I., diysnyy chlen.

Structure of amorphous antimony. Dop.AN URSR no.6:455-458 '52.
(MLRA 6:10)

1. Akademiya nauk Ukrayins'koyi RSR (for Danylov). 2. Laboratoriya metalogizyky Akademiyi nauk Ukrayins'koyi RSR (for Lashko). (Antimony)

LASHKO, O.S.; DANYLOV, V.I., diysnyy chlen.

New trigonometrical method for the calculation of the distribution curve of atoms of a fluid, based on radiographic data. Dop.AN URSR no.3:150-157 '53. (MLRA 6:6)

1. Laboratoriya metalofizyky AN URSR (for Lashko). 2. Akademiya nauk Ukrayins'koyi RSR (for Danylov). (Fluids) (Radiography)

Lashko, O.S.

Distr: 4E4j

3-1

The application of integral analysis for determination of the structure of liquids. O. S. Lashko. *Stroenie i Fiz. Svoistva Veshchestv v Zhidkom Sostoyanii* (Kiev: Izdatel. Univ.) *Sbornik* 1954, 39–44; *Referat. Zhur., Khim.* 1956, Abstr. No. 25016.—For detn. of the distribution function by the integral analysis method, it is necessary to know the intensity curve for a wide interval of the value $S = (4\pi/\lambda \sin \theta)$ (λ is wave length, 2θ dispersion angle) covering all interference effects. During expts. using not very short waves, the intensity curve is detd. in a limited interval of S changes, which affects the analysis results, introducing an error in the at. distribution curve. To analyze the possible errors, the curves of at. distribution for 3 cubic forms (simple, face-centered, and body-centered) are plotted. The d. function is detd. as a sum of Gaussian functions corresponding to the different spherical layers of atoms surrounding the central atom. The curves of intensity are calcd. from the distribution curves. Then the intensity curves are sepd. in sections and the function of at. distribution is detd. for each of them. As a result of underestg. the first max. of intensity for all forms, a diminution of the coördination no. is observed without any noticeable change in the radius of the coördination sphere. The conclusion is not general for all possible cases. The underevaluating of the intensity at high-dispersion angles brings about a diffused distribution as a result of which the first max. becomes broader, while the area under it changes little. While neglecting the first max. and disregarding sections of the intensity curve for wide angles do not bring about substantial changes in the location of coördination spheres on the distribution curves, the effect of these operations in the area under the first max. of the distribution curve is such that it can lead to incorrect conclusions about the type of packing.

N. Vasileff

LASHKO, A. S.

"Application of Fourier Analysis to the Decoding of Radiograms of Liquids". SB. Nauch. Rabor Labor. Metallofiziki AN Ukr SSR, No 5, pp 15-20, 1954

Debye's formula, basic in determining the function of radial distribution of atoms and molecules, is applicable when the ordered zones of the liquid are small in comparsion with the scattering volume of the specimen. This statement didproves the assertion (Cf. Petrashen, M. I., Poray-Koshits, Ye. A. Zh. Eksperim. i Teor. Fiziki, 21, 887 [1951] that Fourier analysis assumes a priori the disorder state of a liquid and therefore leads to a uniform picture of atomic structure discarding ordered groups. (RZhFiz, No 10, 1955)

SO: Sum No 812, 6 Feb 1956

LASHKO, A. S.

"X-Ray Determination of the Functions of Atomic Distribution in A Multiatomic Fluid"

an article in the book "Questions on thePhysics of Metals and Metal Science", AS Ukr. SSR, Kiev, 1955, 151 pp.

So: Sum, No 1102, 19 Oct 56

Lashko, O. S.

X-ray determination of the atomic distribution function in a polyatomic liquid. O. S. Lashko. *Sbornik Nauch. Robot Inst. Metallofiz., Akad. Nauk Ukr. S.S.R.* 1955, No. 6, 53–9; *Referat Zhur., Khim.* 1956, Abstr. No. 12283.—A method for detn. of the at. distribution function by observation of intensity of dispersed x-rays is explained with an example of a liquid that consists of 2 kinds of atoms. In devising the formulas at. factors as functions of the angle of dispersion are substituted by their mean values. A possible application of the method to a polyat. liquid is explained.

L. Mieszczynska

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DANILOV, Vitaliy Ivanovich, professor, doktor fiziko-matematicheskikh nauk, laureat Stalinskoy premii; KURDYUMOV, G.V., akademik, redaktor; DANILOVA, A.I., redaktor; ZUBKO, A.M., redaktor; KAMENETSKAYA, D.S., redaktor; LASHKO, A.S., redaktor; OVSIYENKO, D.Ye., redaktor; SKRYSHEVSKIY, A.F., redaktor; SPEKTOR, Ye.Z., redaktor; KAZANTSEV, B.A., redaktor izdatel'stva; RAKHLINA, N.P., tekhnicheskiy redaktor

[Structure and crystallization of liquids; selected articles] Stroenie i kristallizatsiia zhidkosti; izbrannye stat'i. Pod red. G.V.Kurdiumova. Kiev, Izd-vo Akademii nauk UkSSR, 1956. 566 p. (MLRA 9:10)

1. Deystvitel'nyy chlen AN USSR (for Danilov)
(Liquids) (Crystallization)

SOV/137-58-7-15597

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 240 (USSR)

AUTHOR: Lashko, A. S.

TITLE: ~~X-ray Investi~~gation of the Liquid Tin-zinc Alloy (Rentgenograficheskoye issledovaniye struktury zidkogo splava olovo-tsink)

PERIODICAL: Sb. nauchn. rabot In-ta metallofiz. AN UkrSSR, 1957, Nr 8, pp 182-186

ABSTRACT: Presentation of the results of experiments on the investigation of the intensity curves of the liquid eutectic alloy Sn-Zn at different temperatures. Photographs were taken in a vacuum chamber with a bent quartz crystal of the Bagaryatskiy system with Cu-K_α radiation. A drop of the liquid alloy flattened between two mica plates served as specimen. After the microphotometry, elimination of absorption and polarization factors, and introduction of a correction for the secondary radiation, a curve of the relationship between J and sin θ/λ was plotted,

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SOV/137-58-7-15597

X-ray Investigation of the Liquid Tin-zinc Alloy

according to which the function $(S)-J/\Sigma N_i f_i^2$, $S=4\pi/\lambda \sin 0$ was determined, where N_i is the number of atoms of the i type, and f_i is the atomic factor of these atoms. Calculation of the number of the nearest atoms of the i type surrounding the given k-type atom was performed according to the furmulae well-known in the literature. The values of the coordination numbers at 300°C were extablished to be Sn 9.5 and Zn 10; at 500°, Sn 7.0 and Zn 8. It is shown that in a liquid alloy of eutectic concentration there exist regions possessing the structure of pure components.

V. Sh.

1. Liquid metals--X-ray analysis 2. Liquid metals--Temperature factors

Card 2/2

Lashko, O. S.

The structure of liquid potassium. O. S. Lashko. *Ukrain. Fiz. Zhur.* 1, 403–6, Russian summary 406(1956).—The structure of liquid K was investigated by aid of x-rays at 100 and 300°, with monochromatic Mo $K\alpha$ radiation and with cylindrical specimens. The curves of the at. distribution were calcd. according to the harmonic method, and the analysis of these curves showed that liquid Na and liquid K have indeed a similar structure. From the change of the position of the curve and of the area underneath the first max. of the curve the coördination no. and the radius of the coördination sphere are detd. Thus at 100° the coördination no. is 10, and the distance between adjacent atoms is roughly 4.7 A. At 300° the radius of the coördination sphere becomes somewhat greater, whereas the coördination no. drops to 9. Werner Jacobson

LASHKO, A.S. [Lashko, O.S.]; ROMANOVA, A.V. [Romanova, O.V.]

Structure of some liquid metal alloys [with summary in English].
Ukr. fiz. zhur. 3 no.3:375-384 My-Je '58. (MIRA 11:10)

1. Institut metallofiziki AN USSR.
(Liquid metals) (Alloys)

N. F. LASHKO

AUTHOR: Gulyayev, B.B. SOV/24-58-4-37/39

TITLE: Conference on Crystallisation of Metals (Soveshchaniye po kristallizatsii metallov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 153 - 155 (USSR)

ABSTRACT: This conference was held at the Institut mashinovedeniya AN SSSR (Institute of Mechanical Engineering of the Ac.Sc. USSR) on June 28-31, 1958. About 400 people participated and the participants included specialists in the fields of foundry, metallurgy, crystallography, physics, welding, heat, physical chemistry, mathematical physics and other related subjects. In addition to Soviet participants, foreign visitors included Professor D. Czikl (East Germany) and N.I. Chvorinov (Czechoslovakia). This conference on crystallisation of metals was the fourth conference relating to the general problem of the theory of foundry processes.
Crystallisation of Steel and Alloys with Special Properties. The following papers were read:
V.I. Lapitskiy, N.I. Stupar', K.P. Rudachev,
V.L. Oleksayenko, A.I. Marinov - "Certain Methods of
Reducing Non-uniformities of Large Castings (up to 20 t)
made of Rimming Steel"; V.K. Novitskiy, A.B. Mikul'chin
and V.V. Blinov - "Influence of Internal Crystallisers
on the Structure and Properties of Steel Ingots";
N.I. Chvorinov (Czechoslovakia) - "On the Crystallisation
of Steel"; A.P. Pronov - "Crystallisation of Continuously
Cast Ingot and Influence on it of the Properties of
Card6/10 Liquid Steel"; L.I. Morozenskiy and O.D. Zigel' -
"Influence of Movement of the Metal in the Liquid Core
on the Crystallisation of Steel Ingots and Castings";
N.N. Guglin, A.A. Novikova and B.B. Gulyayev -
"Crystallisation and Mechanical Properties of Steels at
Elevated Temperatures"; V.Ye. Neymark - "Influence of
Inoculation on the Deformation of the Crust and the
Speed of Solidification of Ingots"; G.P. Ivantsov
"Thermal Stresses and Deformation in the Crust of a
Crystallising Ingot"; V.G. Gruzin and P.I. [illegible] A. Meyerova
dealt with problems of formation of the primary structure
of structural steel and the influence on it of the
temperature of pouring.
The features of crystallisation of castings made of
alloys with special properties and of austenitic steels
were dealt with in the following papers:
I.I. Goryunov - "Influence of Inoculation on the Structure
and on the Physico-mechanical Properties of High-alloy
Steels"; F.F. Khimushin, P.V. Aksenov, N.P. Lashko and
N.Ya. Rodina - "Occurrence of Non-uniformities in High-
Card7/10 temperature alloys During Crystallisation and Heat
Treatment" and "Experimental Investigation of the Process
of Crystallisation of Cast Blades Made of Refractory
Alloys"; A.M. Yufgrov considered the process of
recrystallisation of steel.

LASHKO, A.S.; SVIRSKIY, G.S.

Camera for high-temperature radiography of liquids and solids.
Zav. lab. 24 no.5:646 '58. (MIRA 11:6)

1. Institut metallofiziki Akademii nauk USSR.
(Radiography)

LASHKO, A.S.; KARLIKOV, D.N.

Calculating the distribution function for atoms in a liquid. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.9:198-209 '59. (MIRA 12:9)

(Liquid metals) (Atoms)

LASHKO, A.S.; ROMANOVA, A.V.

Investigating short-range order in certain liquid binary systems. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.10:150-159 '59. (MIRA 13:9)

(Alloys--Metallography) (Crystal lattices)

5 (4)

AUTHOR: Lashko, A. S., (Kiyev)

SOV/76-33-8-9/39

TITLE: X-Ray Investigation of the Structure of Some Liquid Metallic Systems

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1730 - 1738 (USSR)

ABSTRACT: An X-ray method for the determination of the atom distribution in melted KNO_3 and $NaNO_3$ used in the structure examination of glasses (Ref 1) had later on been applied to the examination of complex liquids. It was called "integral analytic method". This integral analysis of the intensity curves of scattered X-rays was used in the present case for the determination of the function of the atom distribution of liquid alloys (A) - tin (I) + bismuth (II), (I) + zinc (III), aluminum (IV) + + silver (V), and gold (VI) + (I). For the calculations, the equations (3) - (5) regarding the statistics of a higher order of liquid binary systems with different types of interaction between the atoms were derived. X-ray pictures of the eutectoid (A) ((I) + (II) and (I) + (III)) were obtained in a monochromatic copper radiation in a vacuum high-temperature chamber at

different temperatures, while the calculations regarding the system (VI) + (I) were made on the basis of data obtained from (Ref 10). Radical-distribution curves of the (A) (IV) + (V) were obtained from the X-ray investigations with the cooperation of A. V. Romanova. The analysis of the atom-distribution curves (ADC) of the liquid (A) of eutectic composition showed that there are small ranges within which the statistics of a near order (SNO) is the same as that of the pure component. This "quasi-eutectic" structure cannot only be observed in the vicinity of the crystallization point (CP) but also above it. The analysis of the (ADC) of the liquid (A) (VI) + (I) with 50 atom% of Au shows that at a temperature near the (CP) the (SNO) of the atom distribution is very similar to that in the solid state, but that at the same time there are ranges with a statistical distribution of the atoms A and B in the liquid (A). In the liquid (A) (IV) + (V) with 13.7 atom% of Ag, two kinds of packing may be assumed: a distribution according to the (SNO) of the γ-phase, and an atom distribution similar to that observed in liquid aluminum. There are 9 figures and 10 references, 7 of which are Soviet.

X-Ray Investigation of the Structure of Some Liquid Metallic Systems SOV/76-33-8-9/39

ASSOCIATION: Akademiya nauk USSR, Institut metallofiziki (Academy of Sciences of the UkrSSR, Institute of Metallophysics)

SUBMITTED: January 4, 1958

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SOV/20-125-1-33/67

24(2), 18(6)

AUTHOR: Lashko, A. S.

TITLE: On the Structure of a Liquid AuSn Alloy (O strukture chidkogo splava AuSn)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 126-128 (USSR)

ABSTRACT: The author investigated a liquid AuSn alloy with stoichiometric composition which in solid state forms an intermetallic compound with nickel-arsenide structure. The intensity lines of this liquid alloy were plotted in monochromatic copper-Kα-radiation from the free surface of the sample (which was placed in a vacuum-high-temperature-X-ray chamber). The temperature of the sample was higher by 10-15° than the melting temperature. The scattered X-rays were recorded by means of the counter MSTR-4. This intensity line is characterized by the existence of two maxima on the top of the first peak. For the position of these maxima it holds $s_1 = 2.79\ \text{Å}^{-1}$; and $s_2 = 2.40\ \text{Å}^{-1}$; $s = \frac{4\pi}{\lambda}\sin\vartheta$, where λ denotes the wavelength of X-rays and 2ϑ the scattering angle. If there are two kinds of atomic packings in the liquid phase

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On the Structure of a Liquid AuSn Alloy

and the superimposition of their intensity distributions leads to an observable splitting of the first peak on the line. the radii of the first coordination spheres of these distributions may be determined by the formula $R = 7.7/s_{max}$ therefrom resulting $R_1 = 2.76$ Å and $R_2 = 3.20$ Å. In the crystalline state the first three coordinates are characterized by the following atomic distribution: in the immediate neighborhood of the Au atom there are two Au atoms at a distance of 2.75 Å and six Sn atoms at a distance of 2.84 Å. In the immediate neighborhood of the Sn atom there are six Sn atoms at a distance of 3.71 Å. The radius of the coordination sphere $R_1 = 2.76$ Å computed on the basis of the intensity line of the liquid alloy agrees well with the radius $r_1 = 2.75$ resulting from the atomic distribution within the crystal lattice, which is indicative of an ordered state of the liquid alloy. This order resembles that prevailing in the crystalline state. In addition to an ordered distribution of the atoms, also a statistical distribution is assumed to

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On the Structure of a Liquid AuSn Alloy

be present in the liquid alloy. The coordination numbers may be determined from the line of atomic distribution. This line shows a clearly distinct maximum at 2.95 Å. The author then gives two formulae for computing the coordination numbers. If half the Au- and Sn atoms are distributed in a statistical manner and the remaining part of the atoms has the same short-range order as in crystalline AuSn, the coordination number of the statistical distribution is equal to 10. Consequently, the position of the maximum on the line of atomic distribution may be defined as an average value of the radii of the coordination spheres of the ordered and statistical distribution: $(2.76 + 3.20)/2 = 2.98$ Å. This value agrees well with the experimental one determined from the experimental line of atomic distribution. On the basis of the data under investigation the atoms are not completely mixed during the melting process of the alloy, but half the atoms retain a short-range order near the melting point, which is of the same type as in the crystalline state. There are 3 figures and 5 references, 3 of which are Soviet.

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SOV/20-125-1-33/67

On the Structure of a Liquid AuSn Alloy

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

PRESENTED: November 27, 1958, by G. V. Kurdyumov, Academician

SUBMITTED: November 22, 1958

Card 4/4

LASHKO, A.S. (Kiyev); ROMANOVA, A.V, (Kiyev)

X-ray study of the structure of liquid metal alloys of systems with oen eutectic. Izv. AN. SSSR. Otd. tekh. nauk. Met. i topl. no.3:135-138 My-Je '61. (MIRA 14:7)
(Alloys--Metallography) (Eutectics)

LASHKO, A.S.

STRUCTURE AND PHYSICAL PROPERTIES OF MATTER IN A LIQUID STATE
reports read at the 4th Conference convened in KIYEV from 1 to 5 June 1959, published by the publishelr House of KIYEV University, KIYEV, USSR, 1962

S/843/62/000/000/007/010
D207/D308

AUTHOR: Lashko, A.S.

TITLE: X-ray diffraction investigation of the liquid alloy Au-Sn

SOURCE: Stroyeniye i fizicheskiye svoystva veshchestva v zhidkom sostoyanii; materialy IV soveshch. po probl. zhidkogo sost. veshchestva, v Kiyeve 1959 g. Kiev, Izd-vo Kiev. univ., 1962, 101-106

TEXT: The work was done as part of an investigation of the effect of intermolecular interactions on the short-range order in liquid alloys, especially those which form chemical compounds. The alloy studied was Au-Sn (50%) which forms an intermetallic compound with nickel-arsenide structure in the solid state. The intensity distribution curves were obtained using monochromatic K_α copper radiation incident on the free surface of the liquid in a vacuum high-temperature X-ray camera. The sample temperature was kept at 10-15°C above the melting point. The scattered X-rays were recorded with an end-window counter of MCTP-4 (MSTR-4) type. It was found

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that on melting, about half of the alloy atoms retained the same short-range order as in crystalline state, i.e. the first two coordination spheres of gold contained each of two atoms of gold and six atoms of tin. The other half of the alloy atoms were distributed at random and had a coordination number of 10. On increase of temperature the proportion of the randomly distributed atoms increased. There are 3 figures and 1 table.

ASSOCIATION: Institut metallofiziki AN USSR (Institute of Metal Physics, AS UkrSSR)

S/843/62/000/000/008/010
D207/D308

AUTHORS: Romanova, A.V. and Lashko, A.S.

TITLE: X-ray diffraction investigation of the structure of liquid tin-lead alloys

SOURCE: Stroyeniye i fizicheskiye svoystva veshchestva v zhidkom sostoyanii; materialy IV soveshch. po probl. zhidkogo sost. veshchestva, v Kiyeve 1959 g. Kiev, Izd-vo Kiev. univ., 1962, 107-114

TEXT: The following four alloys were investigated over a range of temperatures: no. 1 - 61.9% by weight or 73.9 at.% Sn (eutectic composition); no. 2 - 30% by weight or 42.8 at.% Sn (eutectic region); no. 3 - 19% by weight or 29.1 at.% Sn (threshold of the solubility of Sn in Tb); no. 4 - 10% by weight or 16.2 at.% Sn (solid solution region). X-ray diffraction patterns were obtained using K_α copper radiation incident on the free surface. A crystal of pentaerythritol served as a monochromator. The scattered X-rays were recorded by an ionization method. To prevent oxidation the

Card 1/2

X-ray diffraction investigation ...

liquid surface was covered with a thin layer of boron oxide or a thin mica plate. The purpose of the investigation was to find the variation of the structure of the liquid alloy of eutectic composition with variation of temperature. At 200°C, which is close to the melting point, the atomic distribution was mainly 'quasieutectic'. On increase of temperature to 400°C the 'quasieutectic' structure was destroyed and the atoms were distributed mainly at random with an average coordination number of 8. Variation of the tin content altered the alloy structure. For non-eutectic compositions the atoms were mainly distributed at random with coordination numbers of 9 (for alloys nos. 2 and 3) and 9.8 for alloy no. 4. The average coordination numbers of the alloys were quite close to the coordination numbers of pure tin and lead. There are 4 figures and 2 tables.

ASSOCIATION: Institut metallofiziki AN USSR (Institute of Metal Physics, AS UkrSSR)

S/185/62/007/008/003/008
D234/D308

AUTHORS: Romanova, A.V., and Lashko, A.S.

TITLE: Short-range order in liquid alloys In-Pb and In-Sn

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 8, 1962, 836 - 844

TEXT: The authors give the results of an experimental study of the structure of In-Pb, In_3-Sn and In-Sn_4, by S-rays. The method of investigation is described and the results are discussed in detail. It is concluded that 1) in the case of close-packed or nearly close-packed lattices, melting of the alloy does not disturb the type of packing. At temperatures close to the liquidus point the most probable atom configurations correspond to the positions of the atoms in the crystal lattice; 2) in liquid alloys the atoms of different kinds are distributed statistically; 3) when the temperature is 60 - 70°C above the liquidus points of the In-Pb system corresponding to solid solutions with tetragonal lattices, there is a tendency towards a more closely packed structure (corresponding to face-centered cubic); 4) no quasieutectic structure is observed in

Card 1/2

Short-range order in liquid alloys ...

$In-Sn_4$. The solubility of In in Sn increases in the liquid state and this causes Sn to approach still more the close-packed structure. There are 10 figures and 2 tables.

ASSOCIATION: Institut metallofiziki AN USSR, G. Kiyev (Institute of Metal Physics, AS UkrSSR, Kiev)

S/601/62/000/015/001/010
A004/A127

AUTHOR: Lashko, A.S.

TITLE: Investigating the short-range order in aluminum-silver monocrystals by the method of diffusion scattering of x-rays

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Instytut metalofyzyky. Sbornik nauchnykh rabot. no. 15. Kiev, 1962. Voprosy fiziki metallov i metallovedeniya, 80 - 86

TEXT: The article presents some results of investigating the short-range order in monocrystals of the solid solution of the aluminum-silver system for three concentrations, viz. 3, 5.9 and 9.7 atomic % of silver. The monocrystals were grown from an alloy in the form of 25 x 10 x 2 mm plates. Diffuse scattering was measured at a monocrystal temperature of approximately 20°C. Determination of monocrystal orientation and measuring of the intensity of the diffuse scattering were carried out at the same alignment of the specimen in the special x-ray chamber. CuK_α radiation was used, monochromatized by a plane pentaerythrite crystal. The scattered radiation intensity was measured with an MCT-17

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S/601/62/000/015/001/010
A004/A127

Investigating the short-range order in ....

(MST-17) counter. The author describes in detail the calculation of the various factors, such as determining the crystal orientation - for which it suffices to determine the position of the normal relative to two arbitrary systems of planes, decay energy for various coordination spheres, etc., and presents the relevant formulae. The results of testing monocrystals for three concentrations of the binary Al-Ag solid solution are given in two tables. The author thanks M.A. Krivoglaz for his assistance. There are 2 tables and 1 figure.

SUBMITTED: May 8, 1961

Card 2/2

S/601/62/000/015/002/010
A004/A127

AUTHORS: Romanova, A.V., Lashko, A.S.

TITLE: X-ray diffraction studies on the structure of some liquid indium--lead and indium-tin alloys

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Instytut metalofyzyky. Sbornik nauchnykh rabot. no. 15, Kiev, 1962. Voprosy fiziki metallov i metallovedeniya, 87 - 99

TEXT: The authors describe x-ray studies of the structure of liquid alloys of the indium-lead and indium-tin systems of several concentrations at different temperatures. These investigations were aimed at studying the relation between the alloy structure in the solid and in the liquid phases, the regularities of variations in the short-range order depending on temperature and concentration for binary systems with different constitution diagrams. A detailed description of the experimental methods and test results and their analysis is given. The analysis of the intensity curves and atomic distribution functions of the studied alloys in the liquid phase yielded the following results: 1) Smelting of alloys

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X-ray diffraction studies on the structure of S/601/62/000/015/002/010
A004/A127

with compact crystal lattice does not result in the destruction of the compactness of atoms. 2) Atoms of various types are distributed statistically in the liquid alloys. 3) If the temperature of the liquid alloys of the indium-lead system is increased by 60 - 70°C above the liquidus, they tend to change their short-range structure into a more compact structure, corresponding to a face-centered cubic lattice. 4) An increase in the temperature of liquid alloys with face-centered tetragonal lattice is accompanied by different characteristic changes of the short-range order for alloys of the indium-lead and indium-tin systems. 5) Liquid alloys of the In-Sn_4 composition do not show a quasi-eutectic structure. There are 7 figures and 2 tables.

SUBMITTED: May 28, 1961

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ROMANOVA, A.V.; LASHKO, A.S.

On the short-range order in liquid alloys of In - Pb and In - Sn.
Ukr. fiz. zhur. 7 no.8:836-845 S '62. (MIRA 16:1)

1. Institut metallofiziki AN UkrSSR, Kiyev.
(X rays--Diffraction)
(Indium-lead-tin alloys)

LASHKO, A.S.

Investigating short range order in aluminum-zinc single crystals by the method of diffusive scattering of X rays. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.15:80-86 '62. (MIRA 15:12)
(Crystal lattices) (X ray—Scattering)

ROMANOVA, A.V.; LASHKO, A.S.

X-ray investigation of the strudture of certain liquid alloys of indium with lead and tin. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.15:87-99 '62. (MIRA 15:12)
(Indium alloys—Metallography)(Phase rule and equilibrium)

PEN'KOV, G.K., inzh.; LASHKO, E.N., inzh.

Some initial results obtained in the operations of the ND-1250 extraction equipment. Masl.-zhir.prom. 27 no.3:39-41 Mr '61. (MIRA 14:3)

1. Armavirskiy maslozhirovoy kombinat.
(Armavir—Oil industries—Equipment and supplies)
(Extraction apparatus)

LASHKO, L.N.

Mechanization of the mixer drive of a rotary drum filter for micella. Masl.-zhir.prom. 26 no.11:42-43 N '60. (MIRA 13:11)

1. Zrmavirskiy maslozhirovoy kombinat.
(Armavir--Oil industries--Equipment and supplies)
(Filters and filtration)

STEPANOV, N.M., inzh.; LASHKO, L.N., inzh.

Modernization of the ND-1000 oil-extraction line.
Masl.-zhir.prom. 28 no.7:32-33 Jl '62. (MIRA 15:11)

1. Bogatovskiy maslоekstraktsionnyy zavod.
(Bogatov--Oils and fats)

STEPANOV, N.M., inzh.; LASHKO, L.N., inzh.

Improving the system of wet grist separation in the ND-1000 and ND-1250 extraction units. Masl.-zhir.prom. 28 no.4:33-34 Ap '62. (MIRA 15:5)

1. Bogatovskiy masloekstraktsionnyy zavod.
(Separators (Machinery)) (Feed water purification)

LASHKO, L.N., inzh.

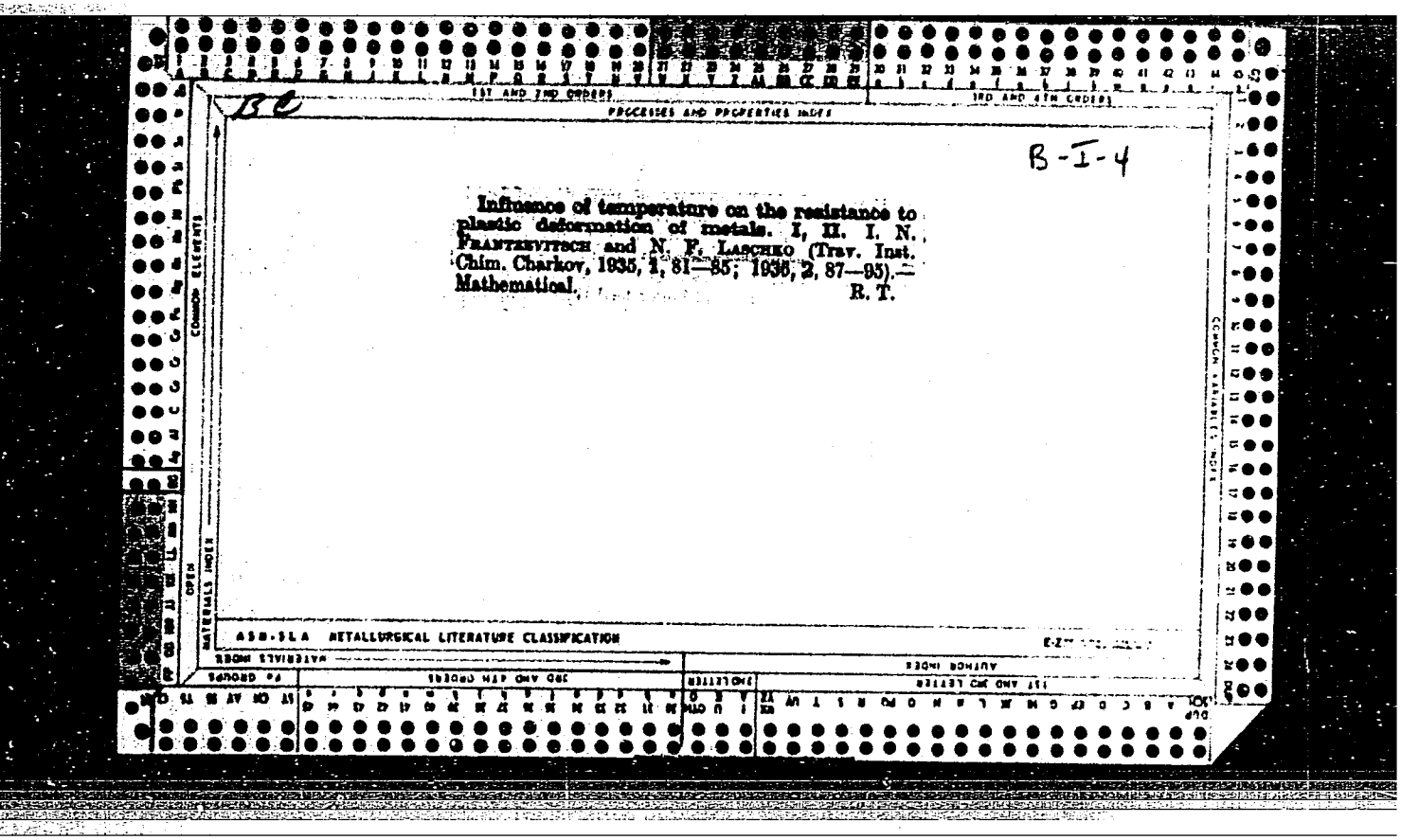
Operation of the cartridge-type micelle filters. Masl.-zhir.prom. 27 no.5:42-44 My '61. (MIRA 14:5)

1. Armavirskiy maslozhirovoy kombinat.
(Armavir—Extraction apparatus) (Filters and filteration)

LASHKO, L.N., inzh.

Remarks on designing rolling mills. Masl.-zhir. prom. 27 no.9: 39-40 S '61. (MIRA 14:11)

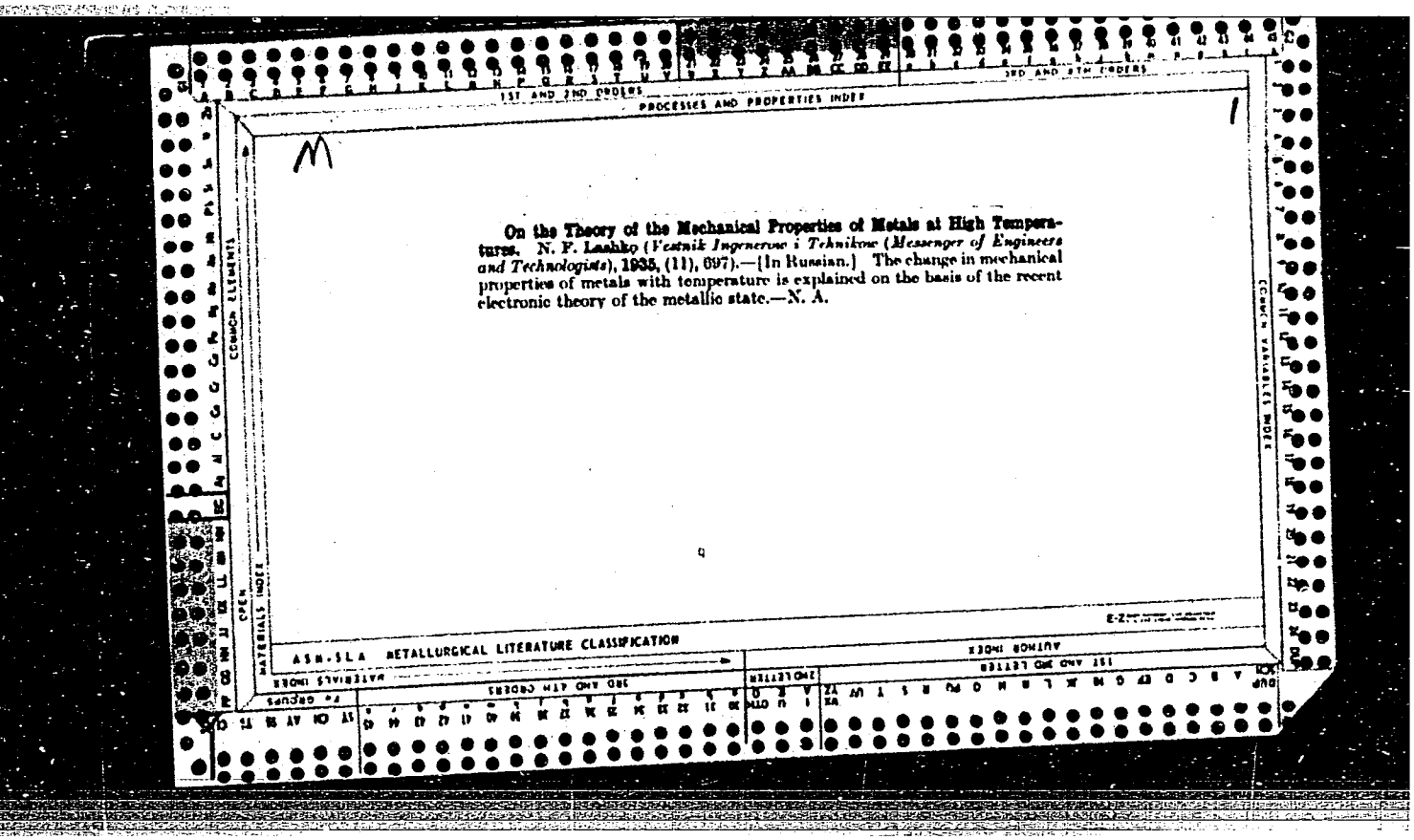
1. Armavirskiy maslozhirovoy kombinat.
(Rolling mills) (Oil industries--Equipment and supplies)



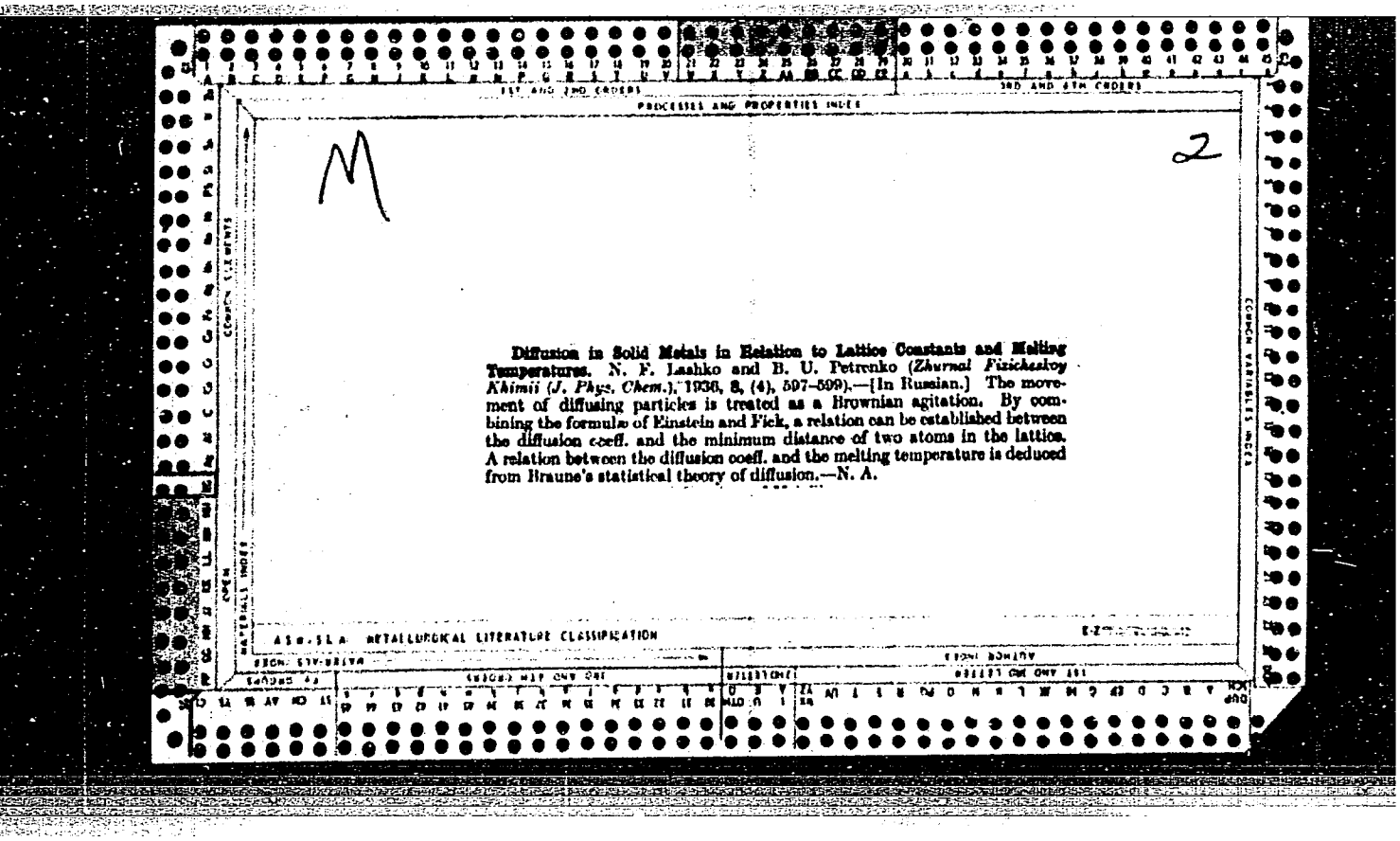
B-I-4

Influence of temperature on the resistance to plastic deformation of metals. I, II. I. N. Frantsevitsch and N. F. Laschko (Trav. Inst. Chim. Charkov, 1935, 1, 81—85; 1936, 2, 87—93).—Mathematical.

R. T.



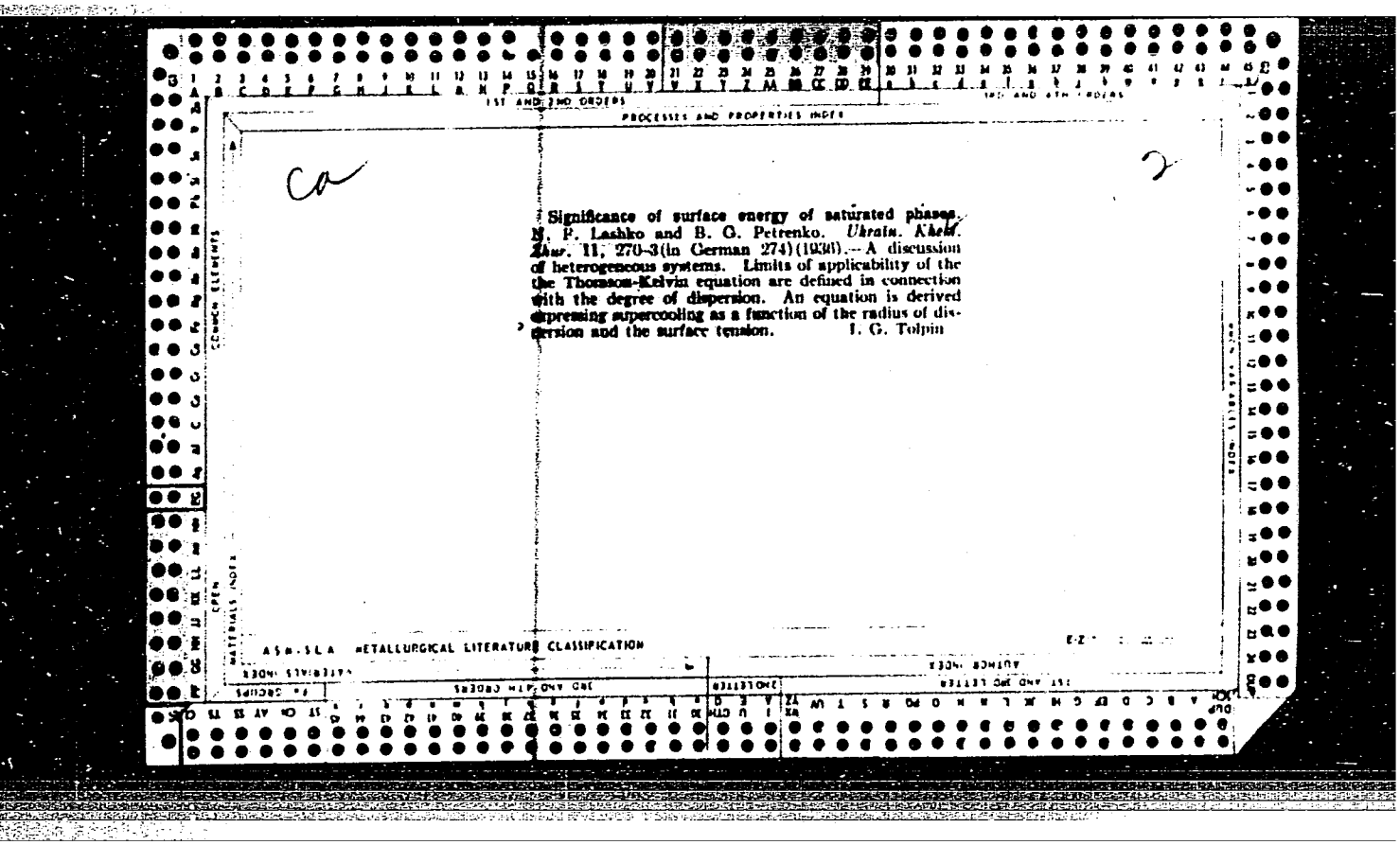
On the Theory of the Mechanical Properties of Metals at High Temperatures. N. F. Lashko (*Vestnik Ingenerov i Tekhikov* (*Messenger of Engineers and Technologists*), **1935**, (11), 697).—[In Russian.] The change in mechanical properties of metals with temperature is explained on the basis of the recent electronic theory of the metallic state.—N. A.



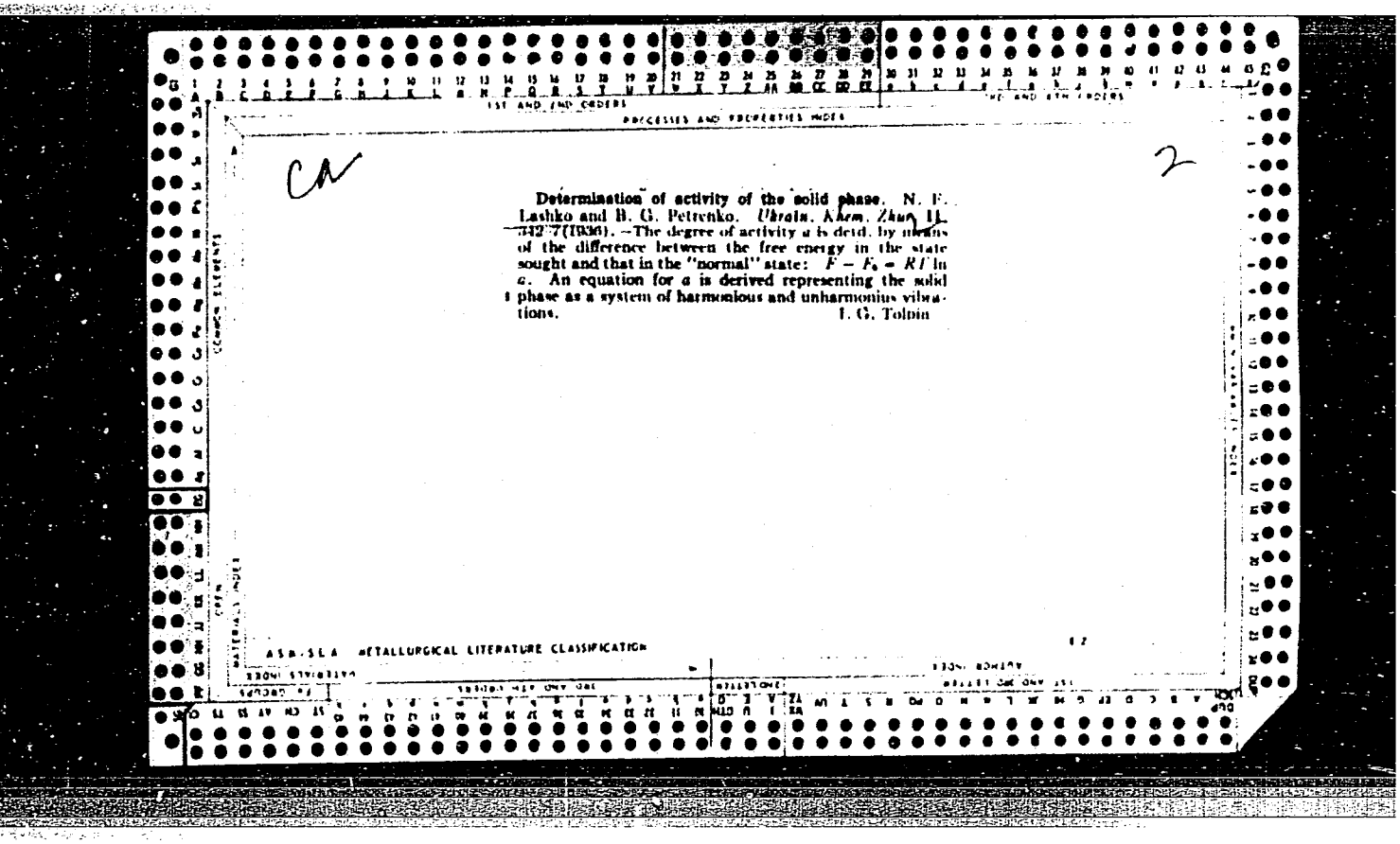
M

2

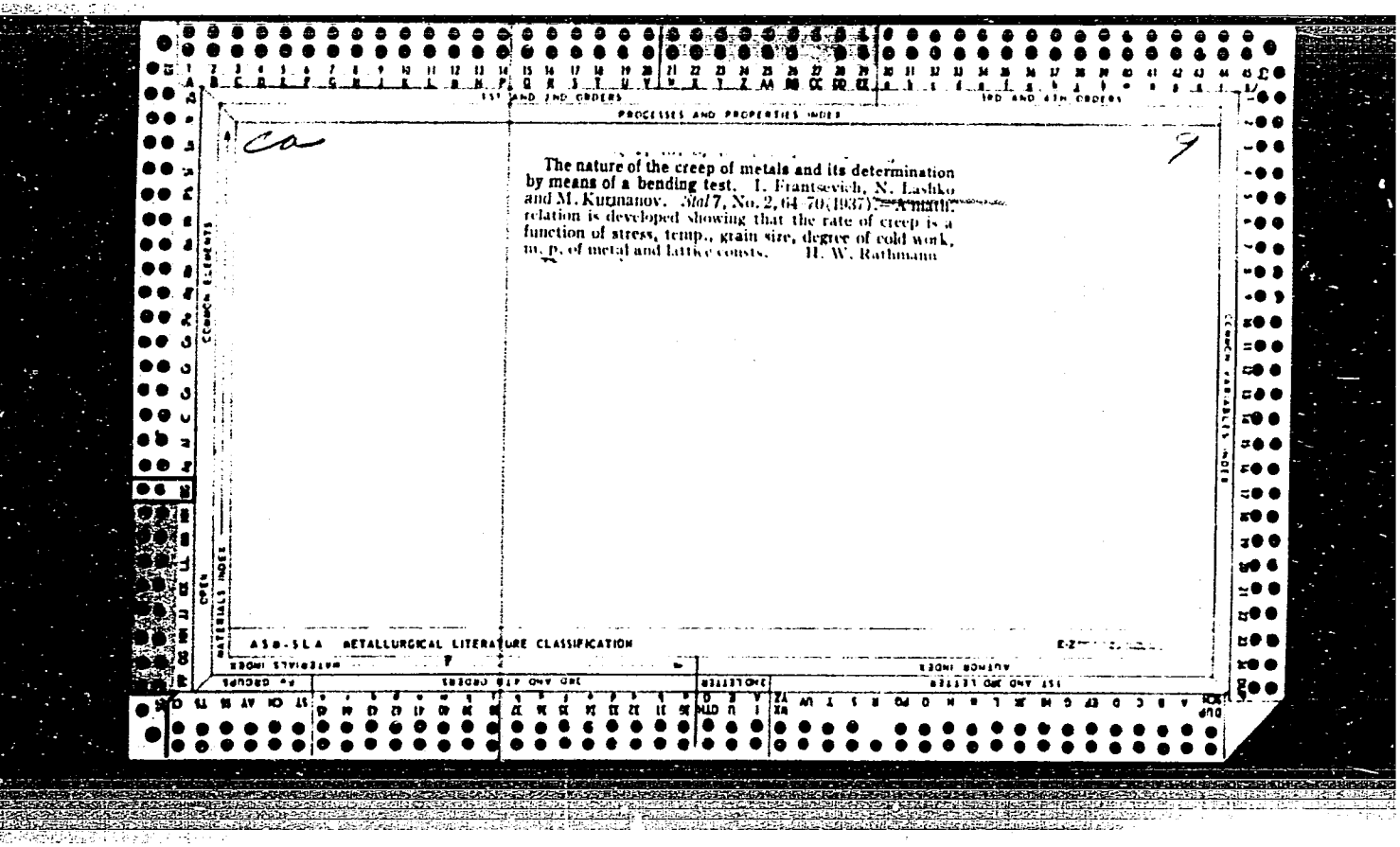
Diffusion in Solid Metals in Relation to Lattice Constants and Melting Temperatures. N. F. Lashko and B. U. Petrenko (*Zhurnal Fizicheskoy Khimii (J. Phys. Chem.)*, 1936, 8, (4), 597–599).—[In Russian.] The movement of diffusing particles is treated as a Brownian agitation. By combining the formulæ of Einstein and Fick, a relation can be established between the diffusion coeff. and the minimum distance of two atoms in the lattice. A relation between the diffusion coeff. and the melting temperature is deduced from Braune's statistical theory of diffusion.—N. A.



Significance of surface energy of saturated phases. N. P. Lashko and B. G. Petrenko. *Ukrain. Khim. Zhur.* 11, 270–3(in German 274)(1936).—A discussion of heterogeneous systems. Limits of applicability of the the Thomson-Kelvin equation are defined in connection with the degree of dispersion. An equation is derived expressing supercooling as a function of the radius of dispersion and the surface tension. I. G. Tolpin



Determination of activity of the solid phase. N. F. Lashko and B. G. Petrenko. *Ukrain. Khem. Zhur.* 11, 312-7(1936).—The degree of activity a is detd. by means of the difference between the free energy in the state sought and that in the "normal" state: $F - F_0 = RT \ln a$. An equation for a is derived representing the solid phase as a system of harmonious and unharmonious vibrations. I. G. Tolpin

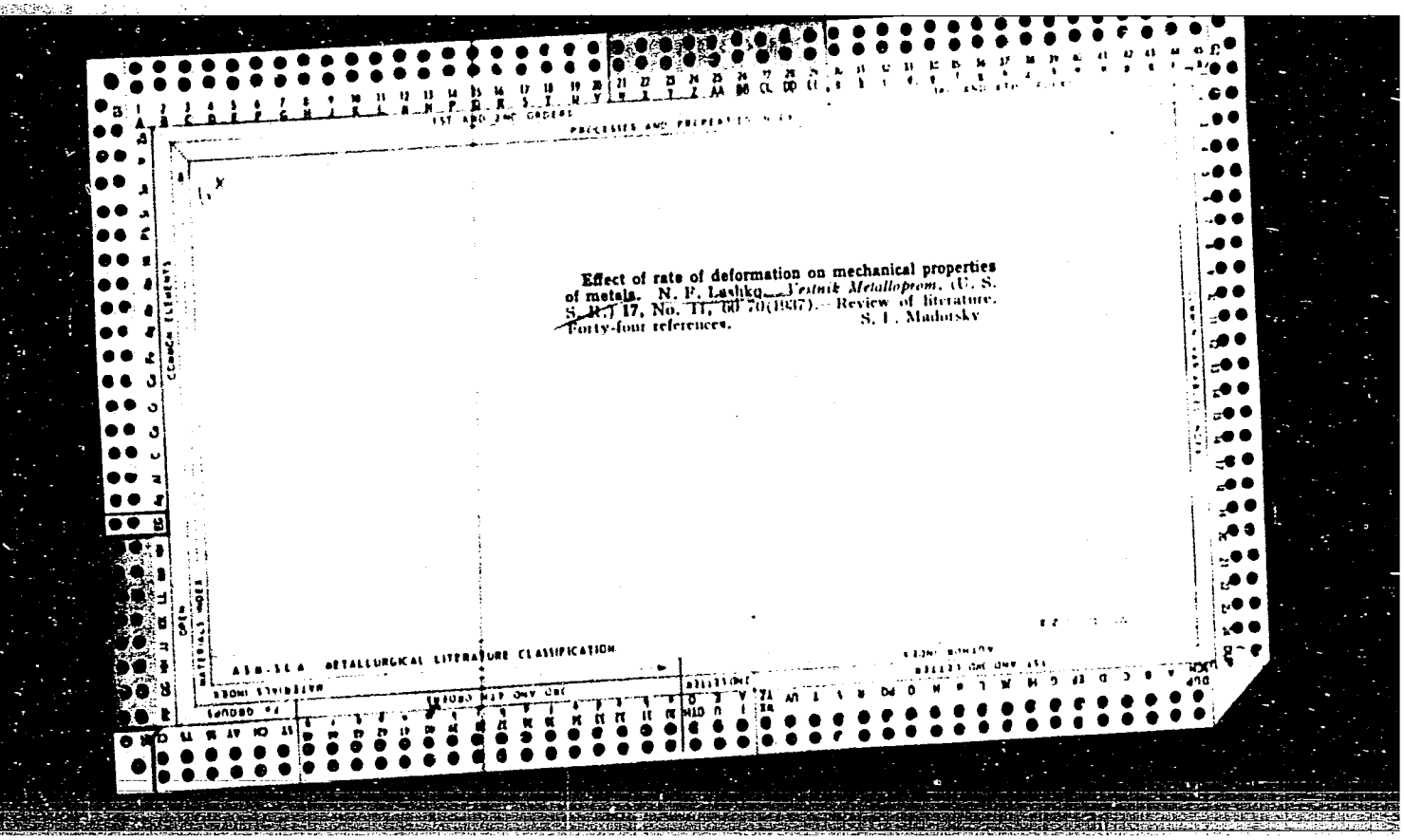


PROCESSES AND PROPERTIES INDEX

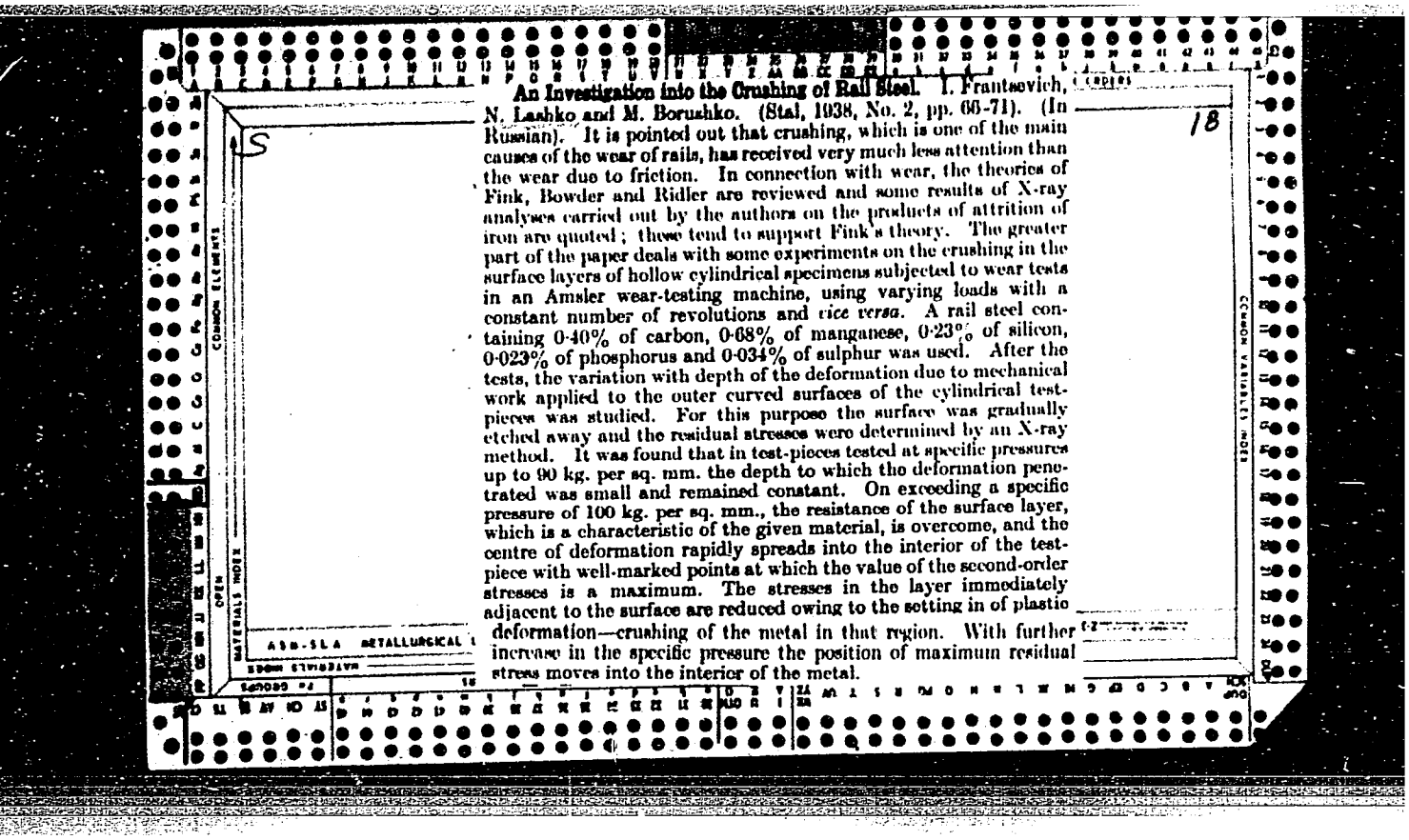
Ca

The nature of the creep of metals and its determination by means of a bending test. I. Frantsevich, N. Lashko and M. Kuznanov. *Mal* 7, No. 2, 64–70 (1937). A mathematical relation is developed showing that the rate of creep is a function of stress, temp., grain size, degree of cold work, m. p. of metal and lattice consts. H. W. Rathmann

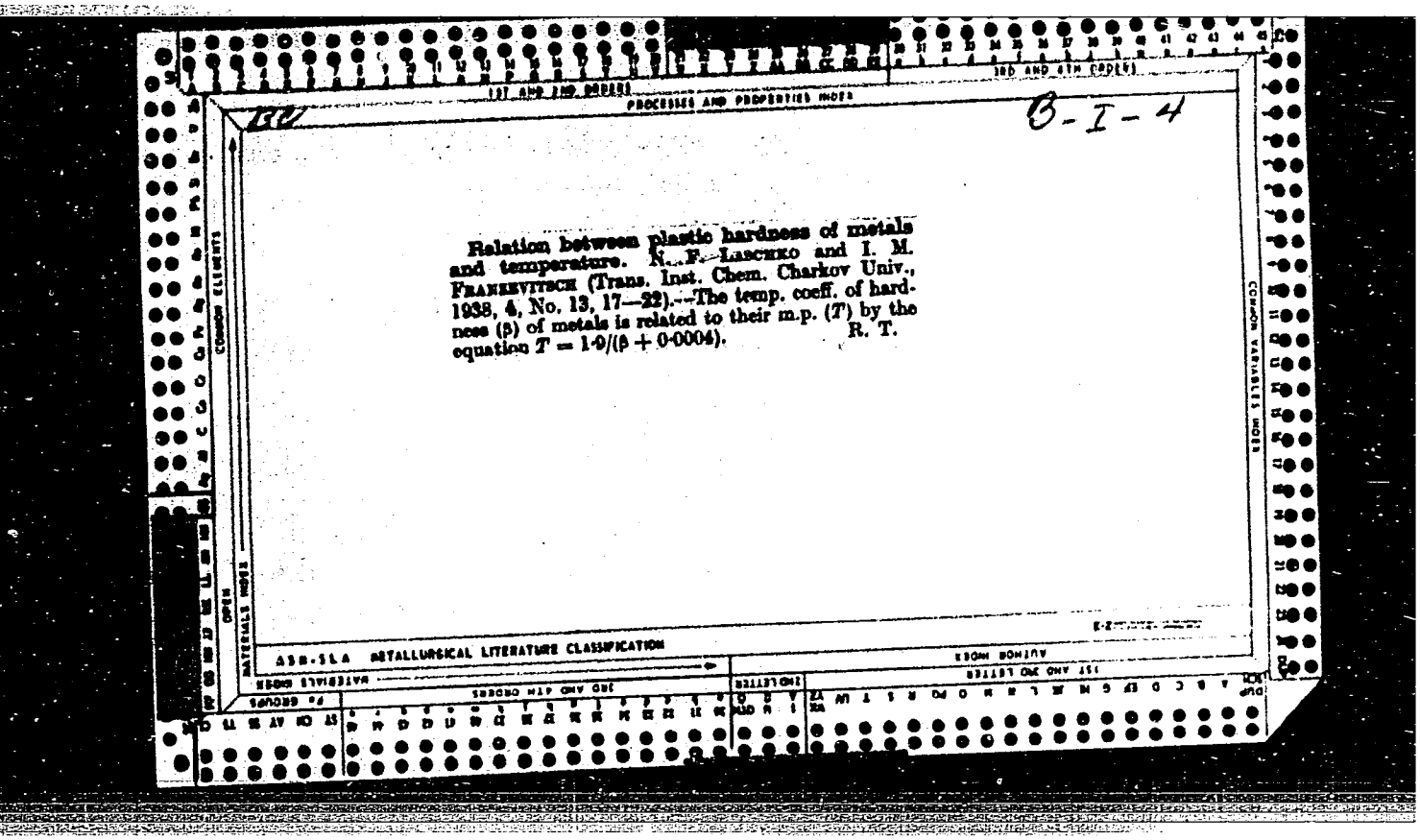
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Effect of rate of deformation on mechanical properties of metals. N. P. Lashko. *Vestnik Metalloprom.* (U. S. S. R.) 17, No. 11, 60–70 (1937).—Review of literature. Forty-four references. S. I. Madorsky



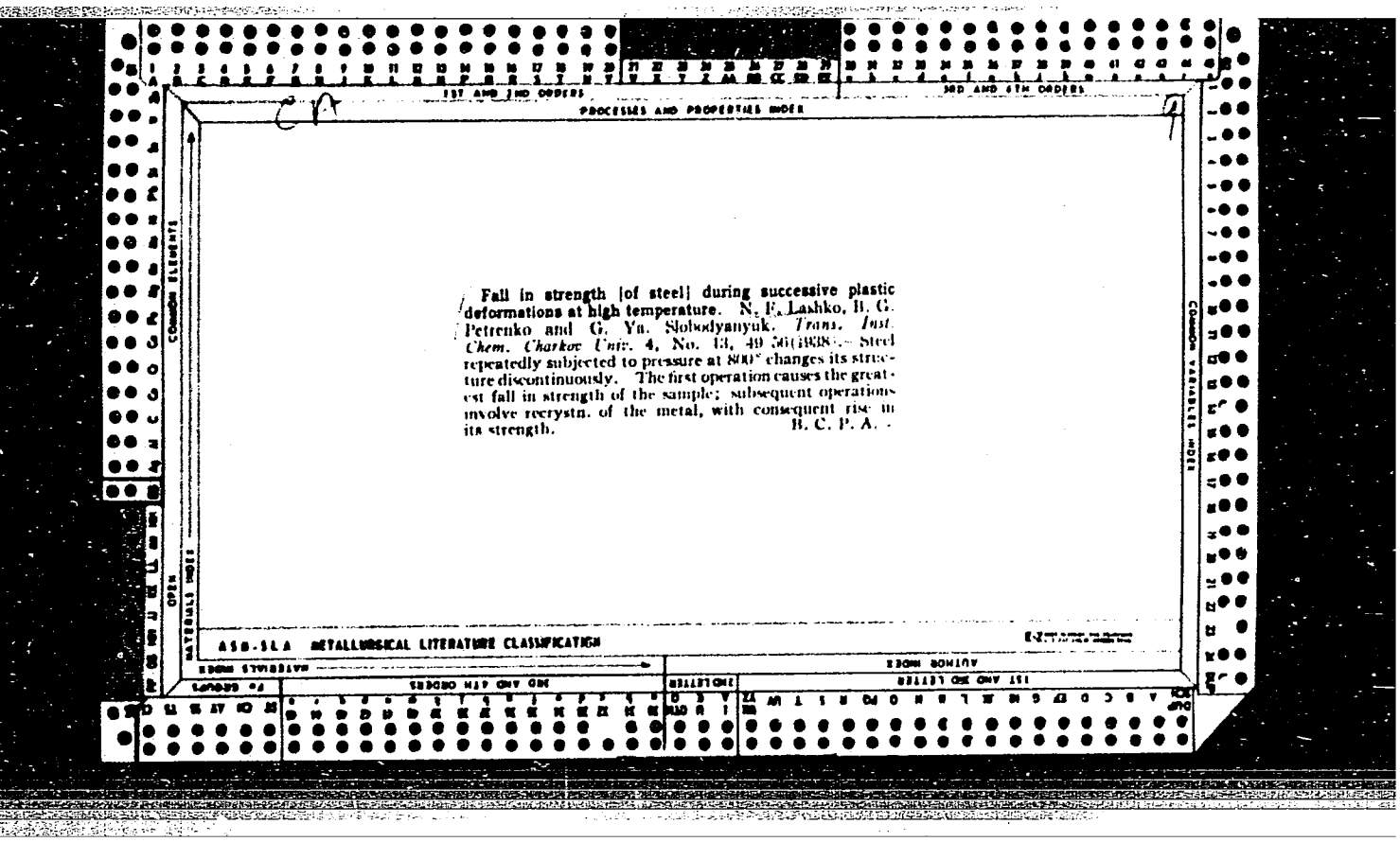
An Investigation into the Crushing of Rail Steel. I. Frantsevich, N. Lashko and M. Borushko. (Stal, 1938, No. 2, pp. 66-71). (In Russian). It is pointed out that crushing, which is one of the main causes of the wear of rails, has received very much less attention than the wear due to friction. In connection with wear, the theories of Fink, Bowder and Ridler are reviewed and some results of X-ray analyses carried out by the authors on the products of attrition of iron are quoted; these tend to support Fink's theory. The greater part of the paper deals with some experiments on the crushing in the surface layers of hollow cylindrical specimens subjected to wear tests in an Amsler wear-testing machine, using varying loads with a constant number of revolutions and *vice versa*. A rail steel containing 0·40% of carbon, 0·68% of manganese, 0·23% of silicon, 0·023% of phosphorus and 0·034% of sulphur was used. After the tests, the variation with depth of the deformation due to mechanical work applied to the outer curved surfaces of the cylindrical test-pieces was studied. For this purpose the surface was gradually etched away and the residual stresses were determined by an X-ray method. It was found that in test-pieces tested at specific pressures up to 90 kg. per sq. mm. the depth to which the deformation penetrated was small and remained constant. On exceeding a specific pressure of 100 kg. per sq. mm., the resistance of the surface layer, which is a characteristic of the given material, is overcome, and the centre of deformation rapidly spreads into the interior of the test-piece with well-marked points at which the value of the second-order stresses is a maximum. The stresses in the layer immediately adjacent to the surface are reduced owing to the setting in of plastic deformation—crushing of the metal in that region. With further increase in the specific pressure the position of maximum residual stress moves into the interior of the metal.



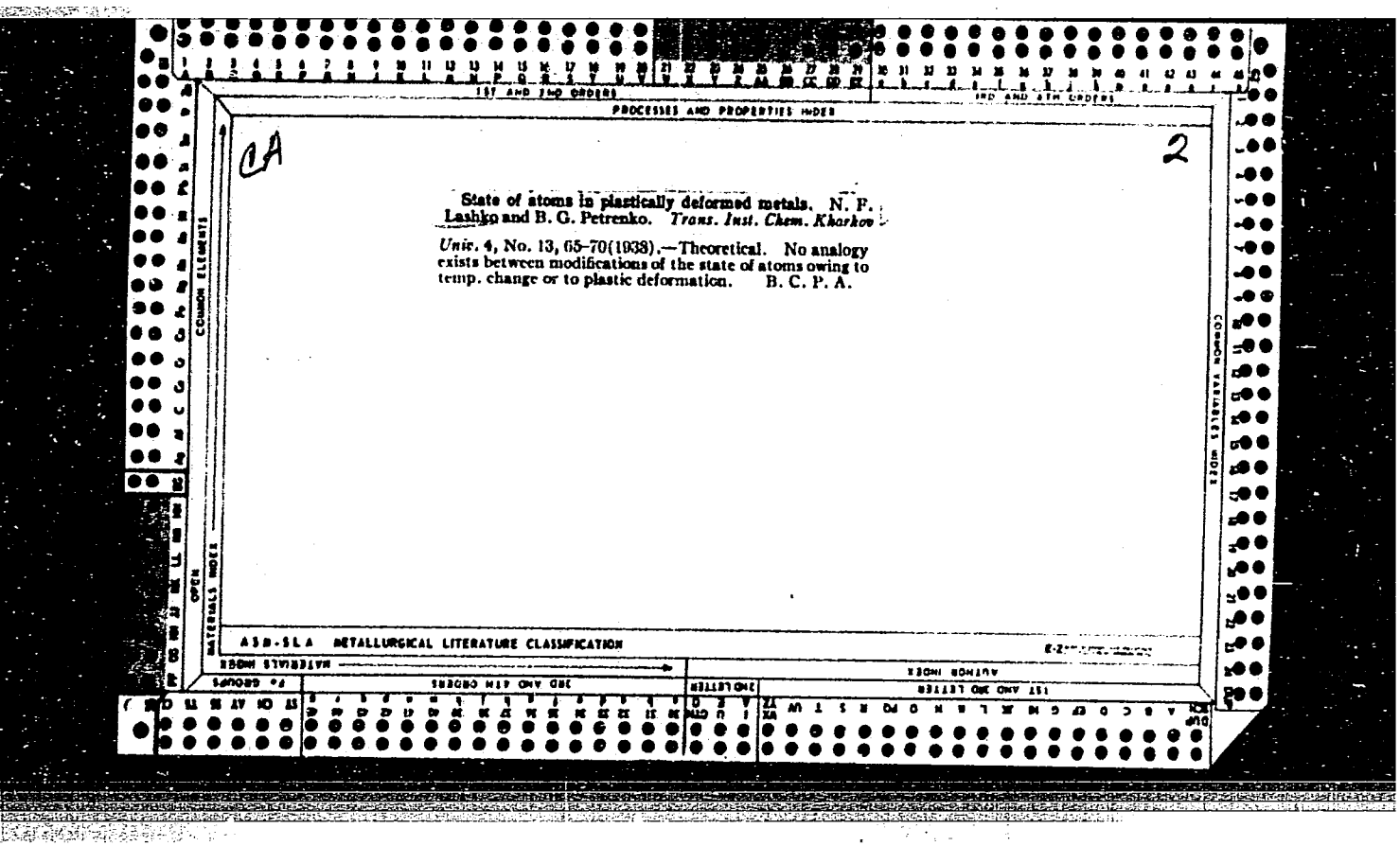
B-I-4

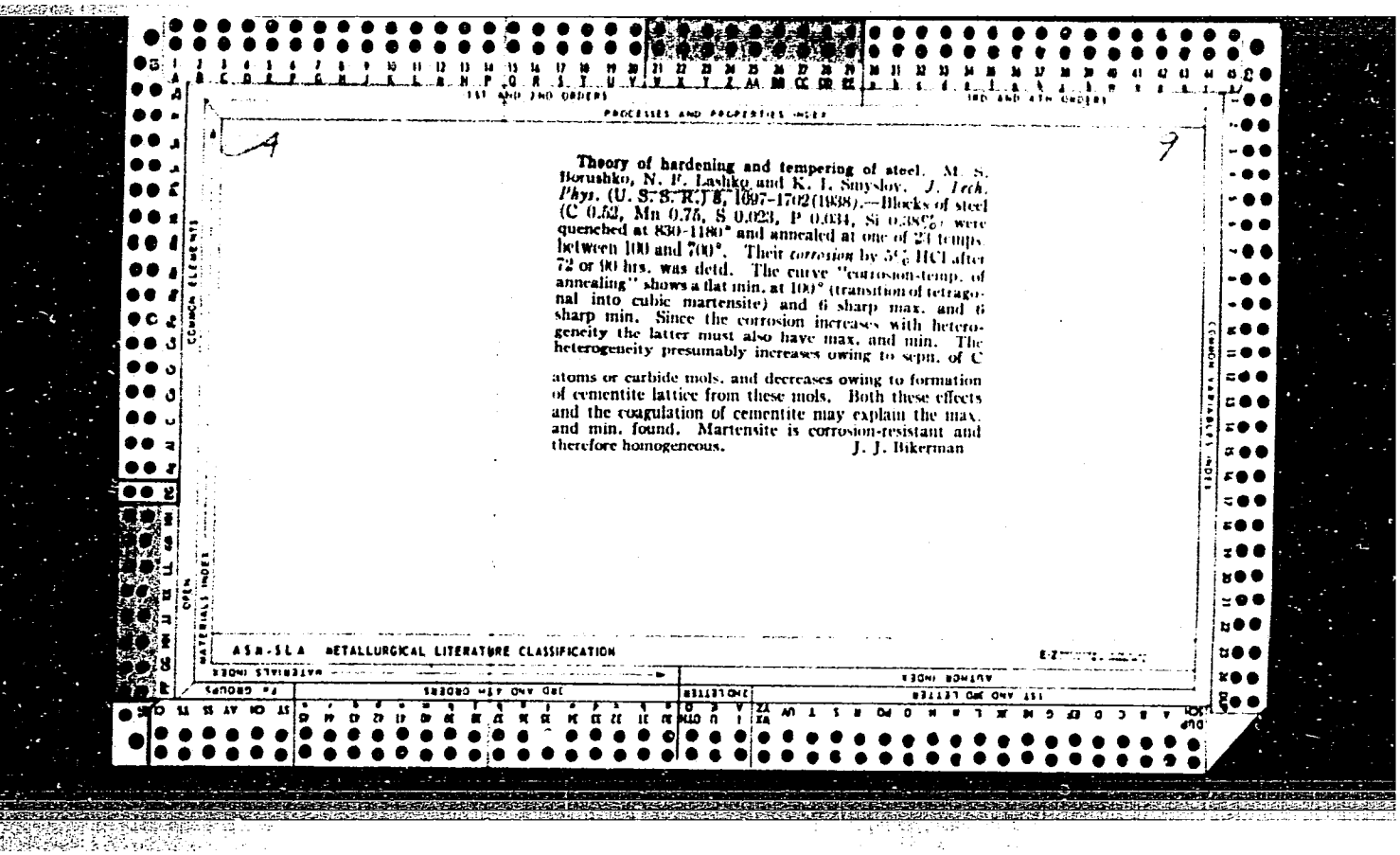
Relation between plastic hardness of metals and temperature. N. F. Lascenko and I. M. Frankevitsch (Trans. Inst. Chem. Charkov Univ., 1938, 4, No. 13, 17—22).—The temp. coeff. of hardness (β) of metals is related to their m.p. (T) by the equation $T = 1{\cdot}9/(\beta + 0{\cdot}0004)$. R. T.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



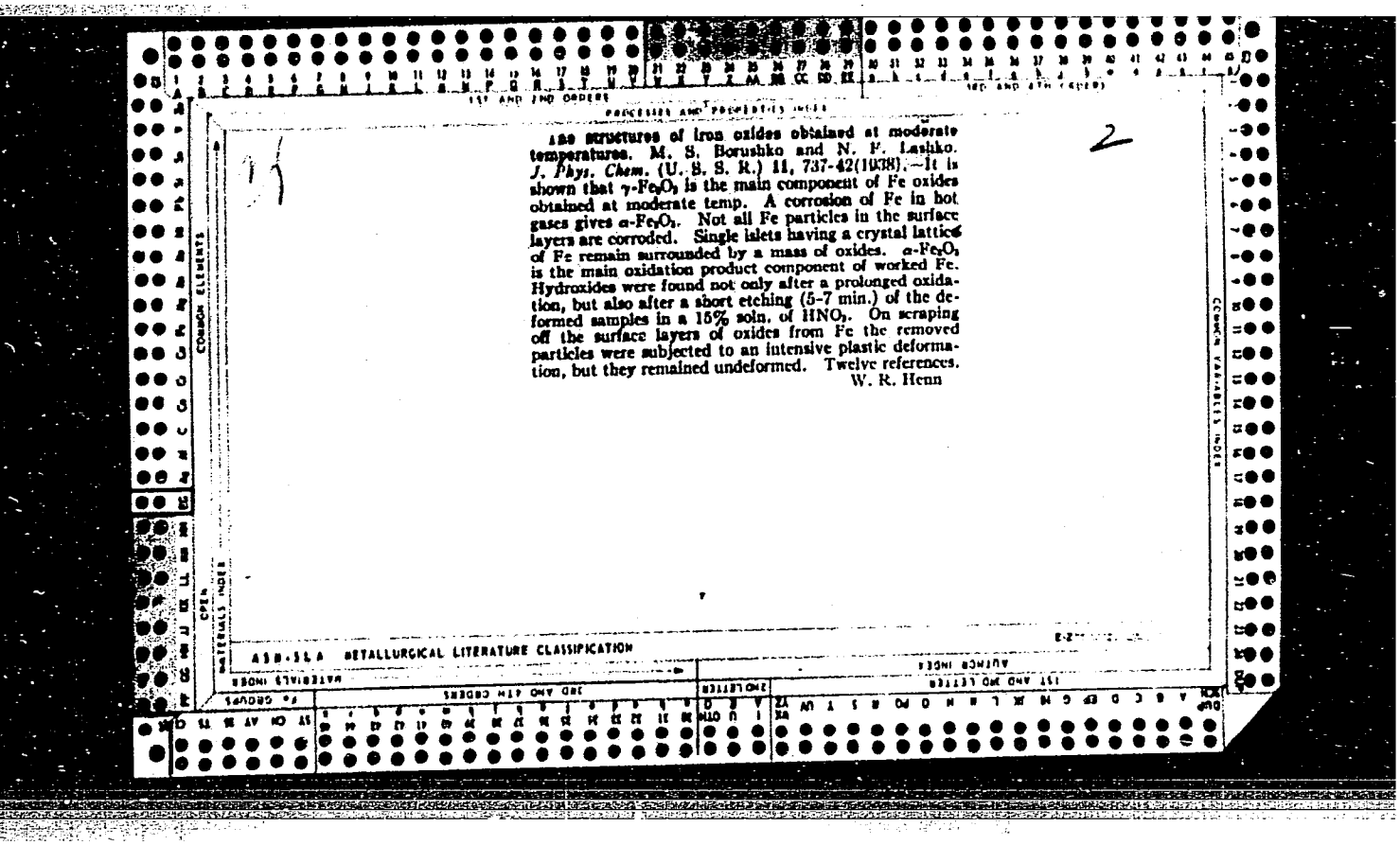
Fall in strength [of steel] during successive plastic deformations at high temperature. N. F. Lashko, B. G. Petrenko and G. Ya. Slobodyanyuk. *Trans. Inst. Chem. Charkov Univ.* 4, No. 13, 49-56(1938).— Steel repeatedly subjected to pressure at 800° changes its structure discontinuously. The first operation causes the greatest fall in strength of the sample; subsequent operations involve recrystn. of the metal, with consequent rise in its strength. B. C. P. A.



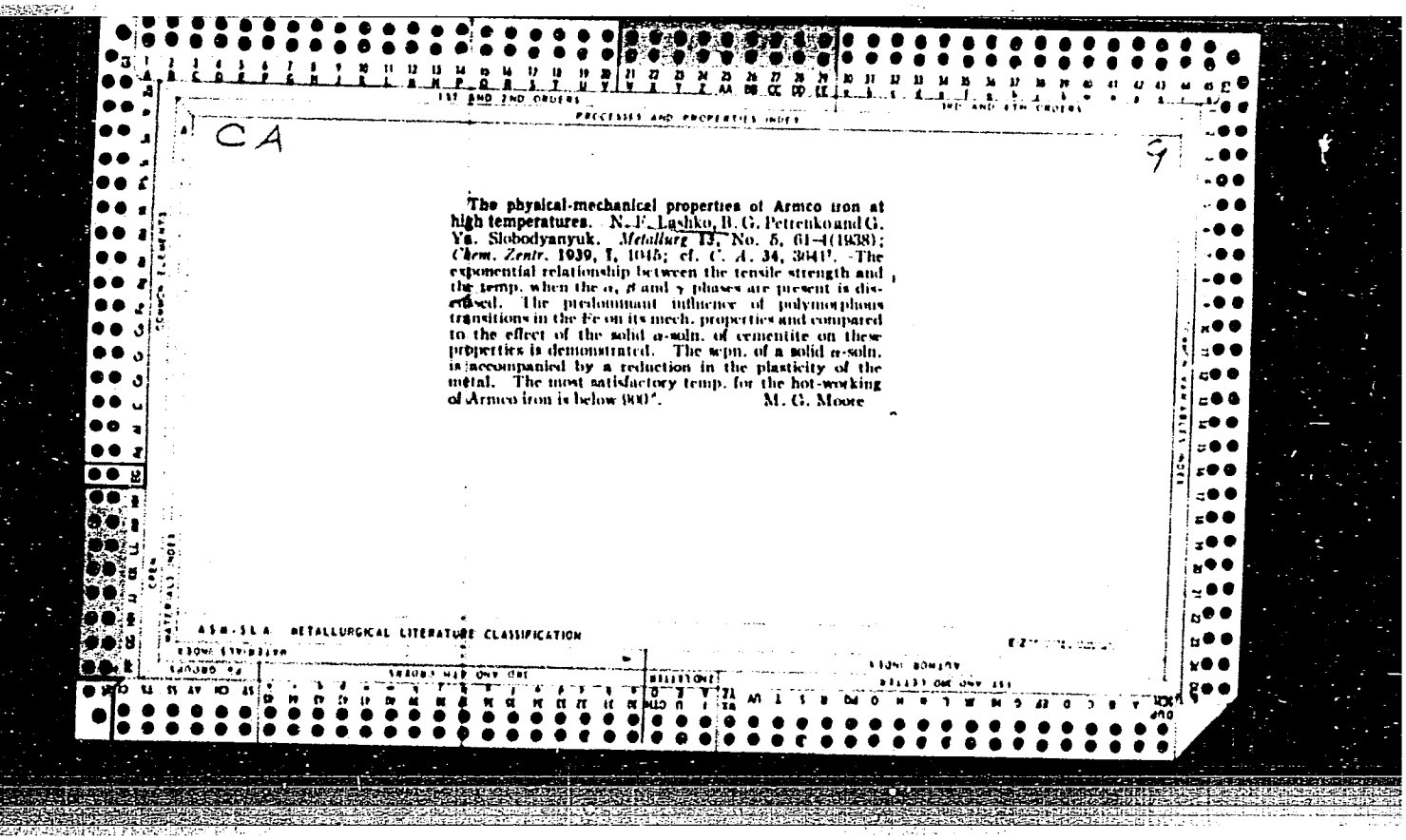


Theory of hardening and tempering of steel. M. S. Horushko, N. P. Lashko and K. I. Smyslov. *J. Tech. Phys.* (U. S. S. R.) 8, 1697–1702 (1938).—Blocks of steel (C 0.52, Mn 0.75, S 0.023, P 0.034, Si 0.38%) were quenched at 830–1180° and annealed at one of 24 temps. between 100 and 700°. Their *corrosion* by 5% HCl after 72 or 90 hrs. was detd. The curve "corrosion-temp. of annealing" shows a flat min. at 100° (transition of tetragonal into cubic martensite) and 6 sharp max. and 6 sharp min. Since the corrosion increases with heterogeneity the latter must also have max. and min. The heterogeneity presumably increases owing to sepn. of C atoms or carbide mols. and decreases owing to formation of cementite lattice from these mols. Both these effects and the coagulation of cementite may explain the max. and min. found. Martensite is corrosion-resistant and therefore homogeneous.

J. J. Bikerman



The structures of iron oxides obtained at moderate temperatures. M. S. Borushko and N. F. Lashko. *J. Phys. Chem.* (U. S. S. R.) 11, 737-42(1938).—It is shown that γ-Fe_2O_3 is the main component of Fe oxides obtained at moderate temp. A corrosion of Fe in hot gases gives α-Fe_2O_3. Not all Fe particles in the surface layers are corroded. Single islets having a crystal lattice of Fe remain surrounded by a mass of oxides. α-Fe_2O_3 is the main oxidation product component of worked Fe. Hydroxides were found not only after a prolonged oxidation, but also after a short etching (5-7 min.) of the deformed samples in a 15% soln. of HNO_3. On scraping off the surface layers of oxides from Fe the removed particles were subjected to an intensive plastic deformation, but they remained undeformed. Twelve references.
W. R. Henn

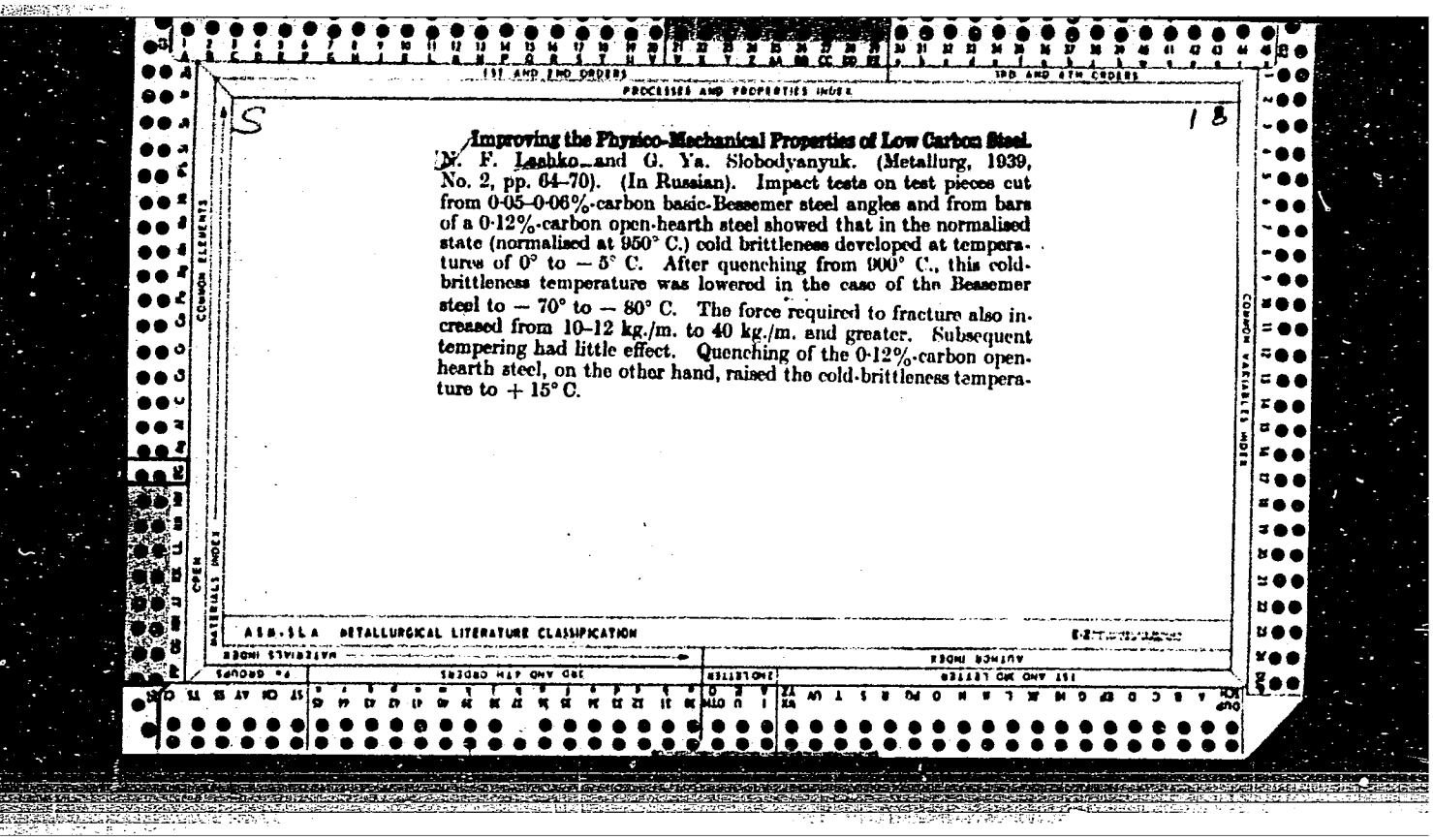


CA

9

The physical-mechanical properties of Armco iron at high temperatures. N. F. Lashko, B. G. Petrenko and G. Ya. Slobodyanyuk. *Metallurg* **13**, No. 5, 61–4 (1938); *Chem. Zentr.* **1939**, I, 1045; cf. *C. A.* **34**, 3041⁹. The exponential relationship between the tensile strength and the temp. when the α, β and γ phases are present is discussed. The predominant influence of polymorphous transitions in the Fe on its mech. properties and compared to the effect of the solid α-soln. of cementite on these properties is demonstrated. The appn. of a solid α-soln. is accompanied by a reduction in the plasticity of the metal. The most satisfactory temp. for the hot-working of Armco iron is below 900°. M. G. Moore

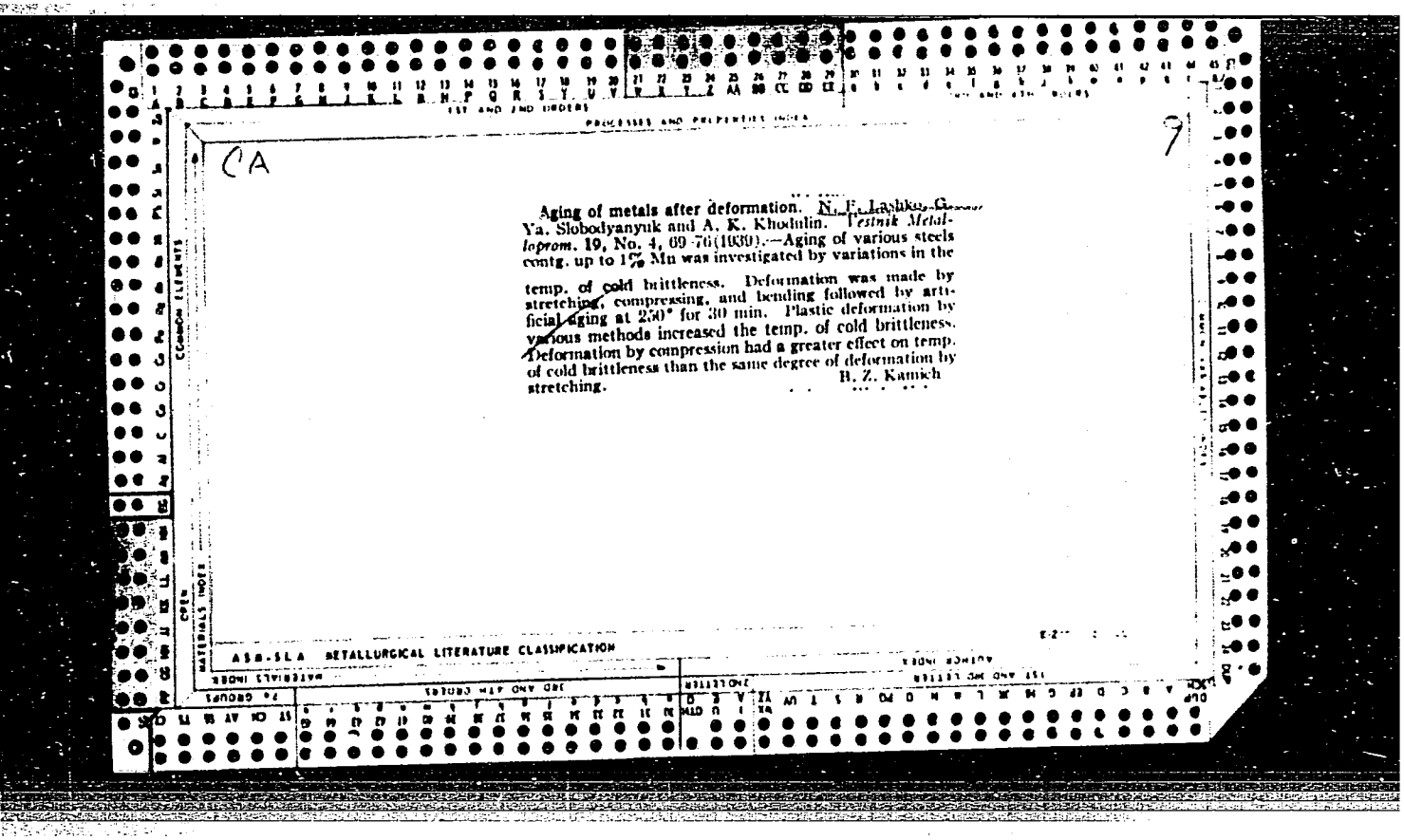
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



S

18

Improving the Physico-Mechanical Properties of Low Carbon Steel. N. F. Leshko and G. Ya. Slobodyanyuk. (Metallurg, 1939, No. 2, pp. 64–70). (In Russian). Impact tests on test pieces cut from 0·05–0·06%-carbon basic-Bessemer steel angles and from bars of a 0·12%-carbon open-hearth steel showed that in the normalised state (normalised at 950° C.) cold brittleness developed at temperatures of 0° to − 5° C. After quenching from 900° C., this cold-brittleness temperature was lowered in the case of the Bessemer steel to − 70° to − 80° C. The force required to fracture also increased from 10–12 kg./m. to 40 kg./m. and greater. Subsequent tempering had little effect. Quenching of the 0·12%-carbon open-hearth steel, on the other hand, raised the cold-brittleness temperature to + 15° C.



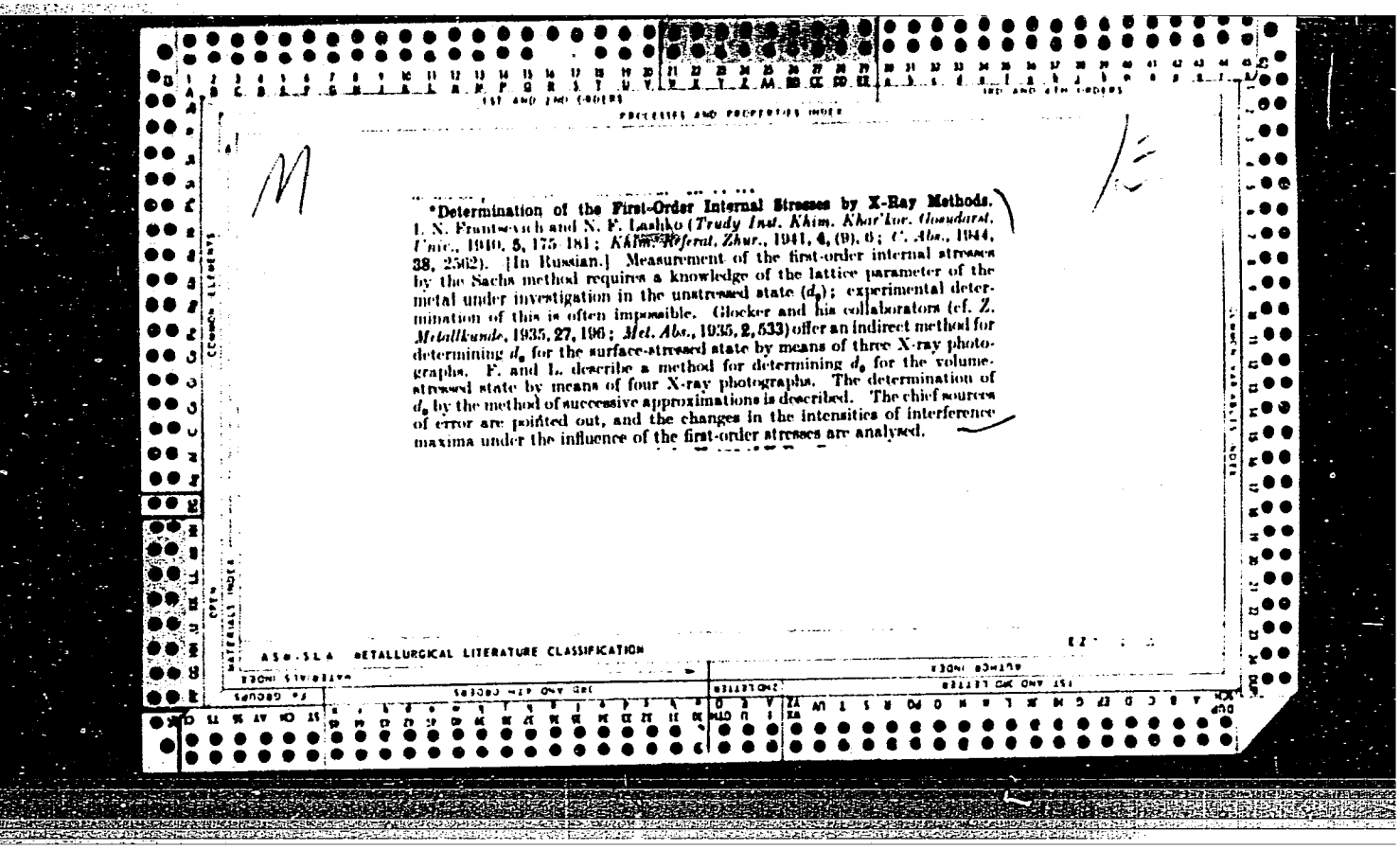
CA

9

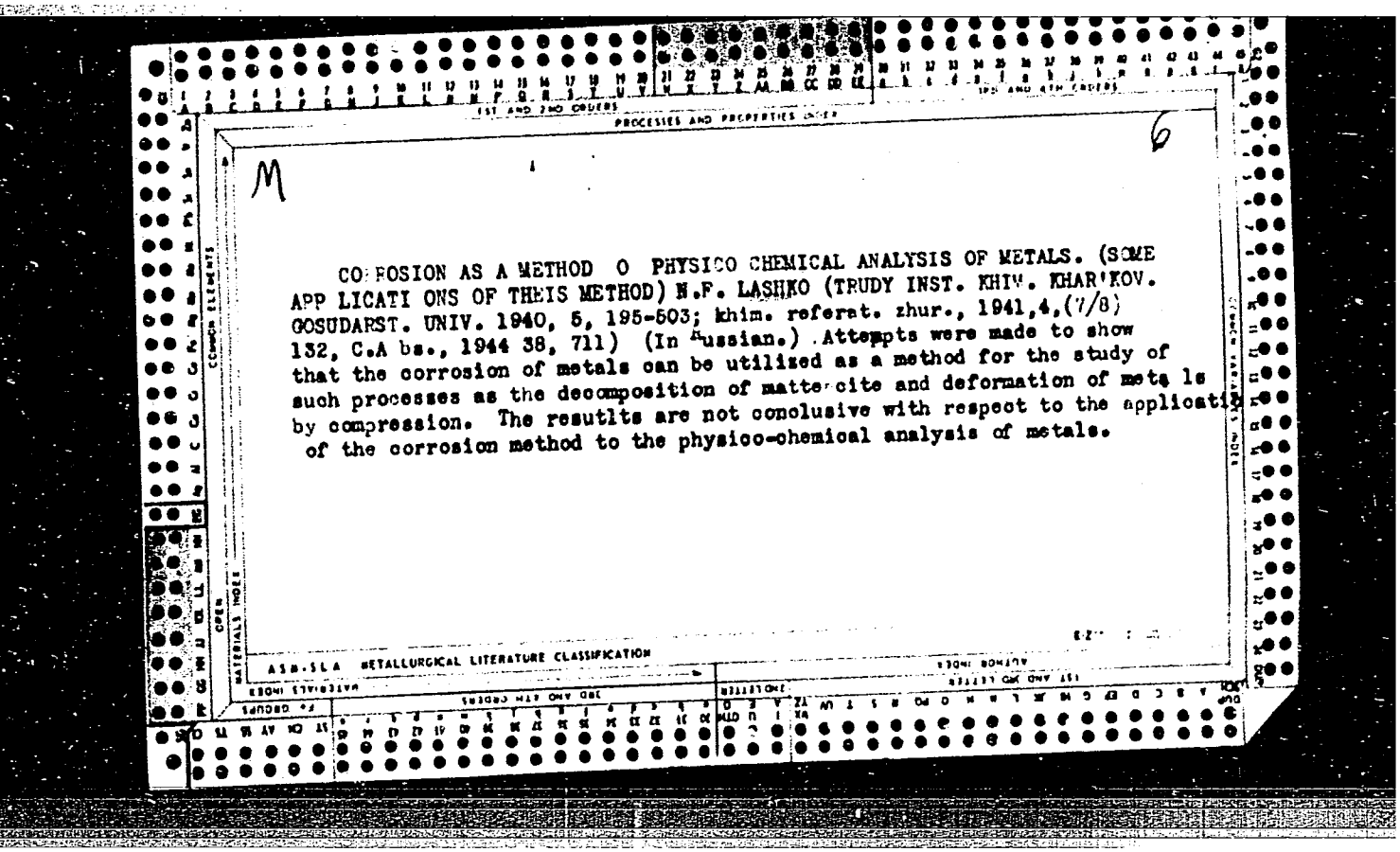
Aging of metals after deformation. N. F. Lashko, G. Ya. Slobodyanyuk and A. K. Khodulin. *Vestnik Metallaprom.* 19, No. 4, 69-76(1939).—Aging of various steels contg. up to 1% Mn was investigated by variations in the temp. of cold brittleness. Deformation was made by stretching, compressing, and bending followed by artificial aging at 250° for 30 min. Plastic deformation by various methods increased the temp. of cold brittleness. Deformation by compression had a greater effect on temp. of cold brittleness than the same degree of deformation by stretching.

B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



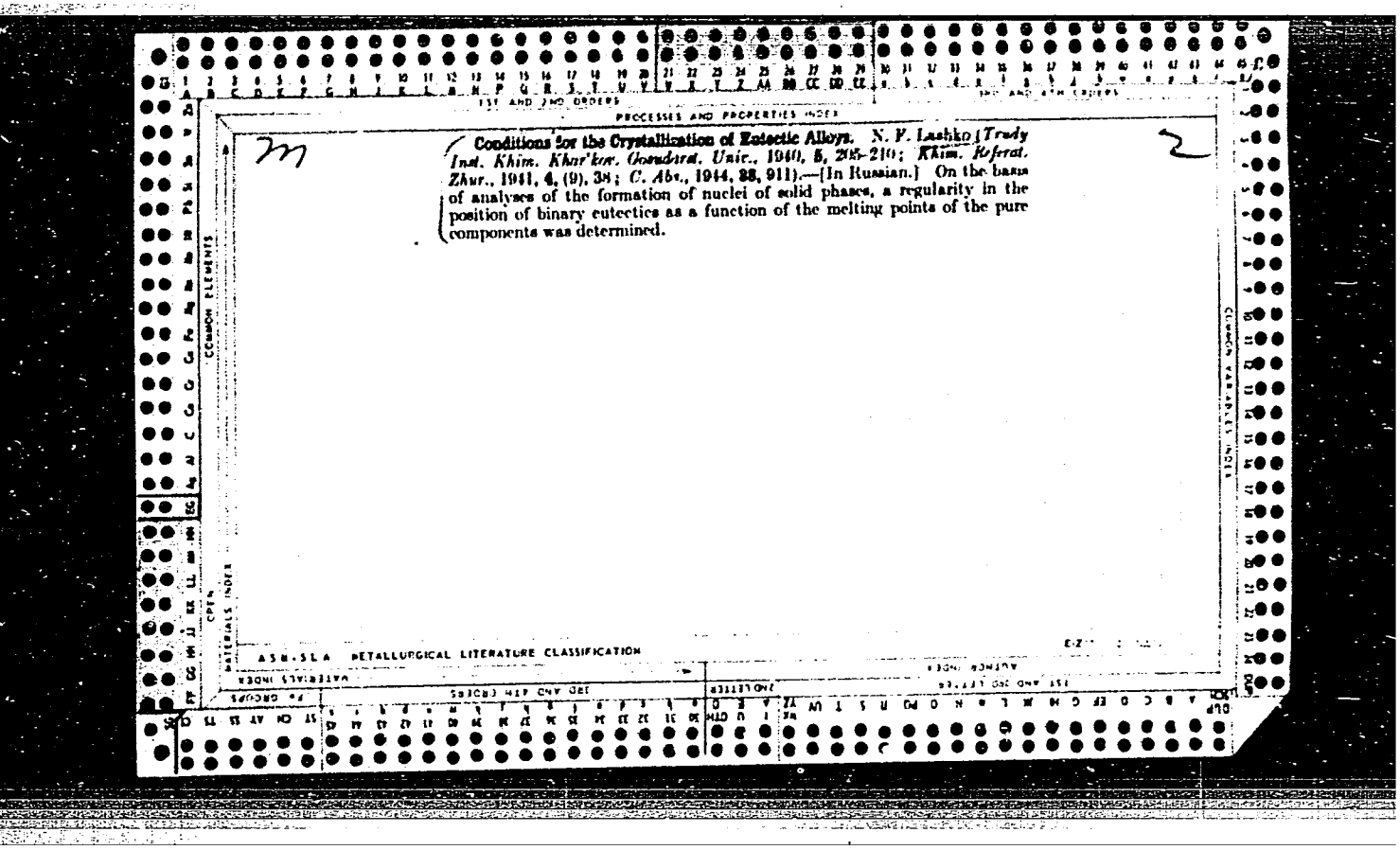
*Determination of the First-Order Internal Stresses by X-Ray Methods. I. N. Frantsevich and N. F. Lashko (*Trudy Inst. Khim. Khar'kov. Gosudarst. Univ.*, 1940, **5**, 175–181; *Khim. Referat. Zhur.*, 1941, **4**, (9), 6; *C. Abs.*, 1944, **38**, 2502). [In Russian.] Measurement of the first-order internal stresses by the Sachs method requires a knowledge of the lattice parameter of the metal under investigation in the unstressed state (d_0); experimental determination of this is often impossible. Glocker and his collaborators (cf. *Z. Metallkunde*, 1935, **27**, 196; *Met. Abs.*, 1935, **2**, 533) offer an indirect method for determining d_0 for the surface-stressed state by means of three X-ray photographs. F. and L. describe a method for determining d_0 for the volume-stressed state by means of four X-ray photographs. The determination of d_0 by the method of successive approximations is described. The chief sources of error are pointed out, and the changes in the intensities of interference maxima under the influence of the first-order stresses are analysed.



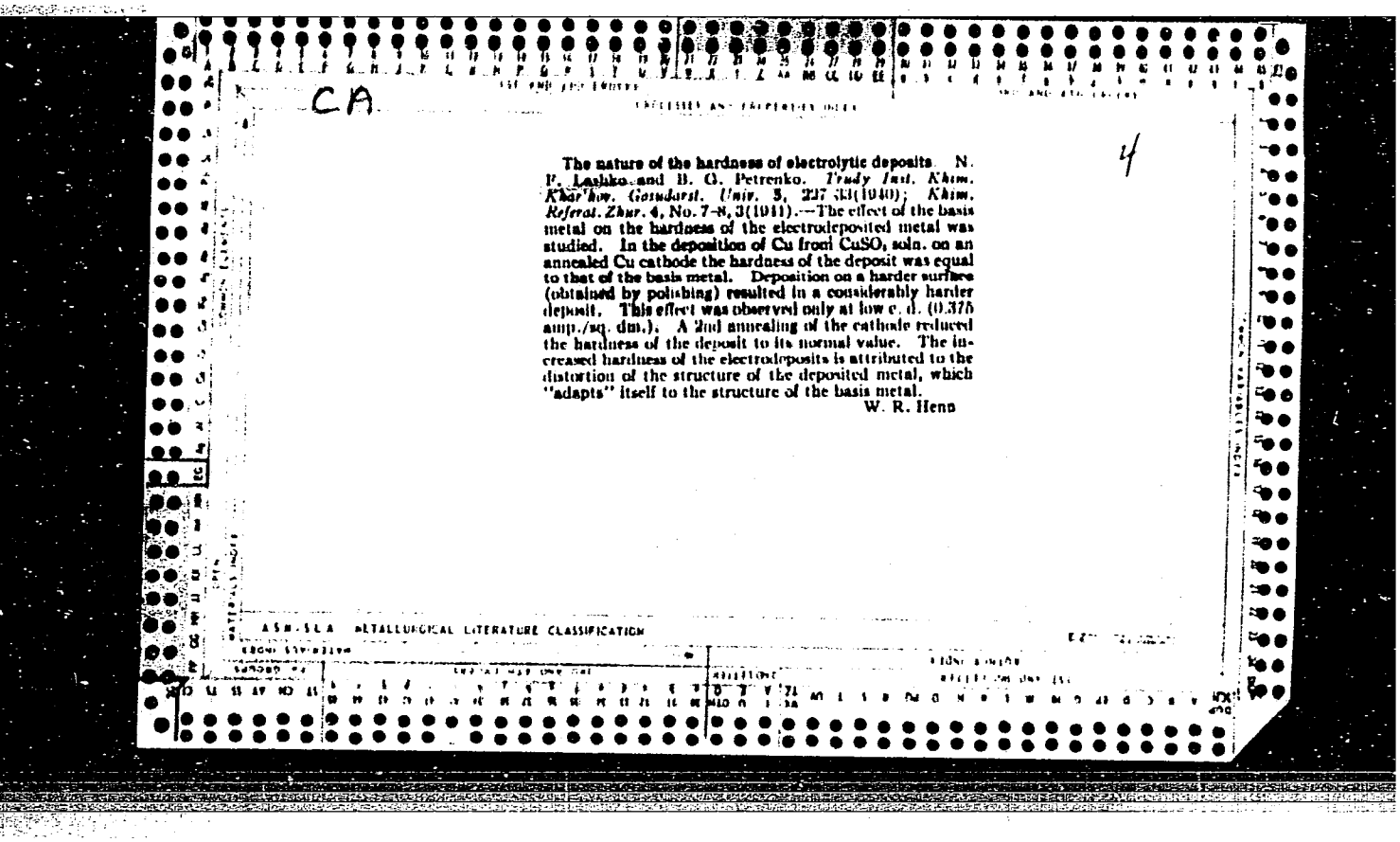
M

6

CORROSION AS A METHOD O PHYSICO CHEMICAL ANALYSIS OF METALS. (SOME APP LICATI ONS OF THEIS METHOD) N.F. LASHKO (TRUDY INST. KHIM. KHAR'KOV. GOSUDARST. UNIV. 1940, 5, 195-503; khim. referat. zhur., 1941,4,(7/8) 132, C.A bs., 1944 38, 711) (In Russian.) .Attempts were made to show that the corrosion of metals can be utilized as a method for the study of such processes as the decomposition of matte cite and deformation of meta ls by compression. The resutlts are not conclusive with respect to the applicati of the corrosion method to the physico-chemical analysis of metals.



Conditions for the Crystallization of Eutectic Alloys. N. F. Lashko (*Trudy Inst. Khim. Khar'kov. Gosudarst. Univ.*, 1940, 5, 205-210; *Khim. Referat. Zhur.*, 1941, 4, (9), 38; *C. Abs.*, 1944, 38, 911).—[In Russian.] On the basis of analyses of the formation of nuclei of solid phases, a regularity in the position of binary eutectics as a function of the melting points of the pure components was determined.



CA

4

The nature of the hardness of electrolytic deposits. N. P. Lashko and B. G. Petrenko. *Trudy Inst. Khim. Khar'kov. Gosudarst. Univ.* 3, 227-33(1940); *Khim. Referat. Zhur.* 4, No. 7-8, 3(1941).—The effect of the basis metal on the hardness of the electrodeposited metal was studied. In the deposition of Cu from $CuSO_4$ soln. on an annealed Cu cathode the hardness of the deposit was equal to that of the basis metal. Deposition on a harder surface (obtained by polishing) resulted in a considerably harder deposit. This effect was observed only at low c. d. (0.375 amp./sq. dm.). A 2nd annealing of the cathode reduced the hardness of the deposit to its normal value. The increased hardness of the electrodeposits is attributed to the distortion of the structure of the deposited metal, which "adapts" itself to the structure of the basis metal.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

LASHKO, N.F.; SERGEYEV, G.Ya.; CHICHAGOV, V.V.; GEVELING, N.V., redaktor.

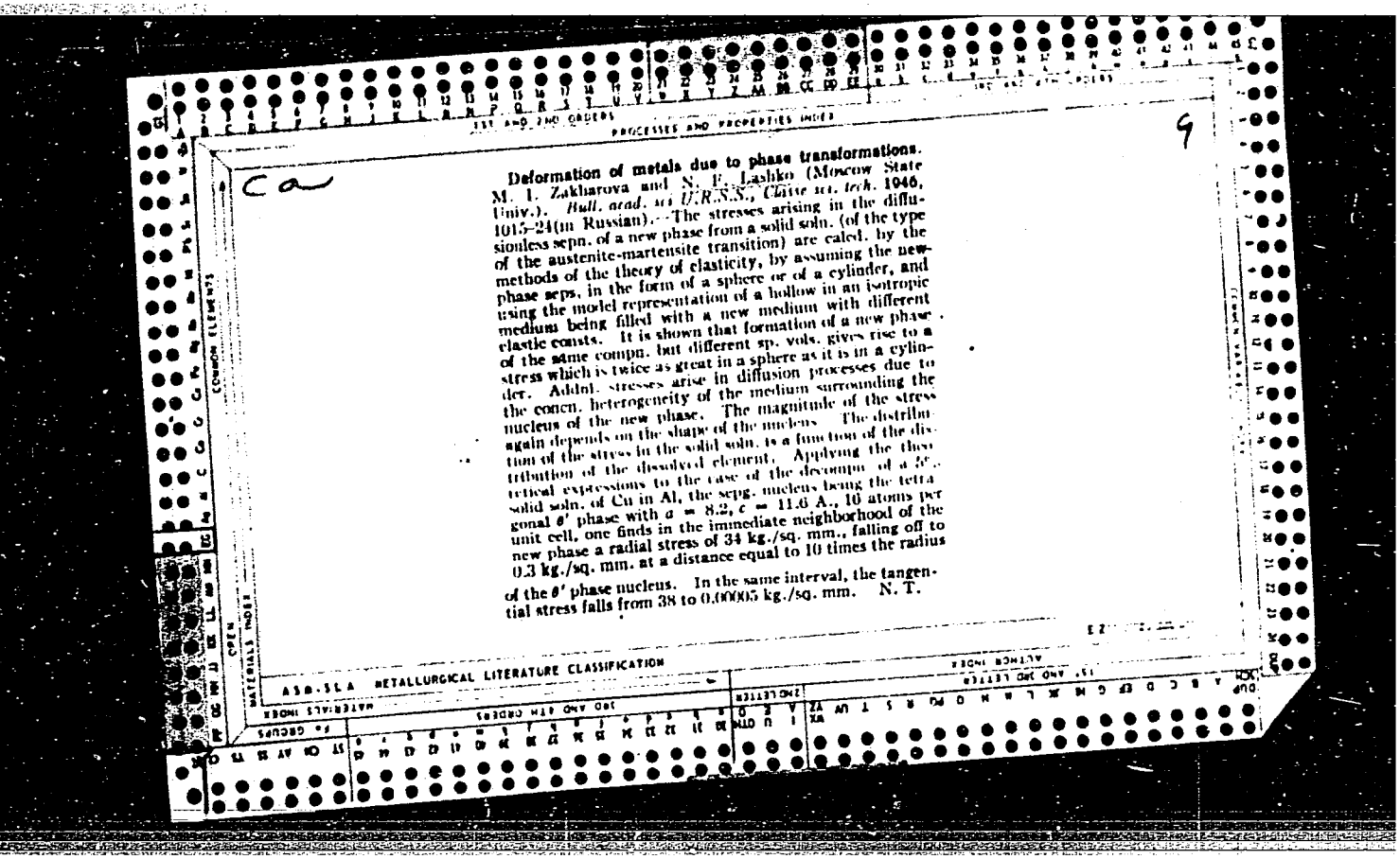
[Effect of deformation on the recovery capacity of duralumin] Vliianie deformatsii na effekt vozvrata v duraliumine. Pod red. N.V.Gevelinga. [Moskva] Izd. Akademii, 1945. 98 p. (Trudy Voennoi vozdushnoi ordena Lenina akademii KA im. Zhukovskogo, vyp. 153) (MLRA 7:3)
(Duralumin) (Deformations (Mechanics))

CA

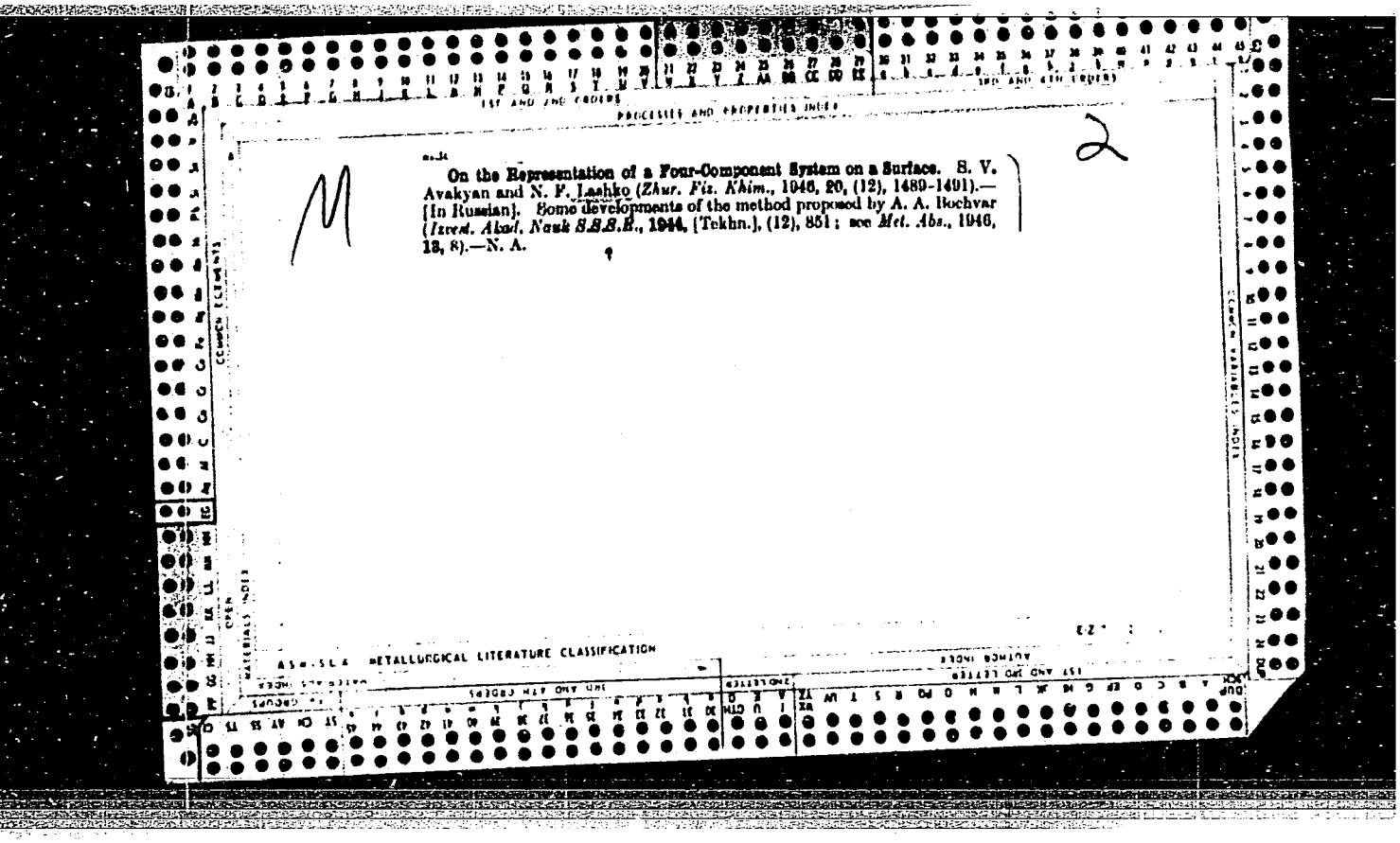
9

Reversible and irreversible processes in the recovery phenomena in aging alloys. S. V. Avakyan and N. F. Lashko. *Doklady Akad. Nauk S.S.S.R.* 50, 265-7 (1945).—Wt. loss and intercryst. penetration after 3-days' exposure in a soln. of 2 cc. of HCl and 3 g. of NaCl in 100 cc. of H_2O were used as the evidence that the recovery of the as-quenched hardness of naturally aged duralumin on heating for about 1 min. at 240–270° is the result of a process essentially the same as artificial aging rather than the soln. of the small particles responsible for natural age hardening. The alloy aged naturally after quenching from 500° showed no intercryst. corrosion and only 0.000 g./sq. cm. wt. loss. The strength fell on heating this alloy at 240° and reached a min. after 1 min. This is the recovery process. After 1 min. the wt. loss was 0.055 g./sq. cm. and the depth of intercryst. penetration was 0.35 mm. At 270° recovery occurred in 22 secs. and the corresponding values after 1 min. were 0.115 g./sq. cm. and 0.64 mm. The corrosion values increased monotonically with time in almost the same manner in artificially aged specimens and in those given the recovery treatment.

A. G. Guy



Deformation of metals due to phase transformations. M. I. Zakharova and N. F. Lashko (Moscow State Univ.). *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1946, 1015-24(in Russian).--The stresses arising in the diffusionless sepn. of a new phase from a solid soln. (of the type of the austenite-martensite transition) are calcd. by the methods of the theory of elasticity, by assuming the new-phase sepn. in the form of a sphere or of a cylinder, and using the model representation of a hollow in an isotropic medium being filled with a new medium with different elastic consts. It is shown that formation of a new phase of the same compn. but different sp. vols. gives rise to a stress which is twice as great in a sphere as it is in a cylinder. Addnl. stresses arise in diffusion processes due to the concn. heterogeneity of the medium surrounding the nucleus of the new phase. The magnitude of the stress again depends on the shape of the nucleus. The distribution of the stress in the solid soln. is a function of the distribution of the dissolved element. Applying the theoretical expressions to the case of the decompn. of a supersatd. solid soln. of Cu in Al, the sepg. nucleus being the tetragonal θ' phase with $a = 8.2$, $c = 11.6$ A., 10 atoms per unit cell, one finds in the immediate neighborhood of the new phase a radial stress of 34 kg./sq. mm., falling off to 0.3 kg./sq. mm. at a distance equal to 10 times the radius of the θ' phase nucleus. In the same interval, the tangential stress falls from 38 to 0.00005 kg./sq. mm. N. T.



On the Representation of a Four-Component System on a Surface. S. V. Avakyan and N. F. Lashko (*Zhur. Fiz. Khim.*, 1946, 20, (12), 1489–1491).—[In Russian]. Some developments of the method proposed by A. A. Bochvar (*Izvest. Akad. Nauk S.S.S.R.*, 1946, [Tekhn.], (12), 851; see *Met. Abs.*, 1946, 13, 8).—N. A.

LASHKO, N.F.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 6038 - I

Call No.: TL504.M63

BOOK

Authors: AVAKYAN, S. V., Eng. and LASHKO, N. F., Kand. of Tech. Sci.

Full Title: PROBLEM OF STRUCTURAL TRANSFORMATIONS IN PIG IRON. In: Moscow Aviatsionnyi Tekhnologicheskiy Institut. Trudy. Issue 4, 1948

Transliterated Title: K voprosu o strukturnykh prevrashcheniyakh v chugunakh

PUBLISHING DATA

Originating Agency: Moscow Aviation Technological Institute

Publishing House: State Publishing House of the Defense Industry (Oborongiz)

Date: 1948 No. pp.: 7 (68-74) No. of copies: Not given

Editorial Staff

Ed.-in-Chief: Voronov, S. M., Prof., Doc. of Tech. Sci.

PURPOSE: For scientific workers in aviation technology and materials.

TEXT DATA

Coverage: This is a report on the authors' survey of the methods of thermal processing of pig iron in order to obtain the highest resistance to corrosion. During this research they studied the mechanism of structural transformations in pig iron at different temperatures. Diagrams, photos, charts.

No. of References: None

Facilities: None

LASHKO, N.F.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 603e - I

Call No.: TL504.M63

BOOK

Authors: AVAKYAN, S. V., Eng. and LASHKO, N. F., Kand. of Tech. Sci.

Full Title: CONDITIONS OF THE FORMATION OF EUTECTICS. In: Moscow Aviatsionnyi Tekhnologicheskiy Institut. Trudy. Issue 4, 1948.

Transliterated Title: Ob usloviyakh obrazovaniya evtektiki

PUBLISHING DATA

Originating Agency; Moscow Aviation Technological Institute

Publishing House: State Publishing House of the Defense Industry (Oborongiz)

Date: 1948 No. pp.: 8 (75-82) No. of copies: Not given

Editorial Staff

Ed.-in-Chief: Voronov, S. M., Prof., Doc. of Tech. Sci.

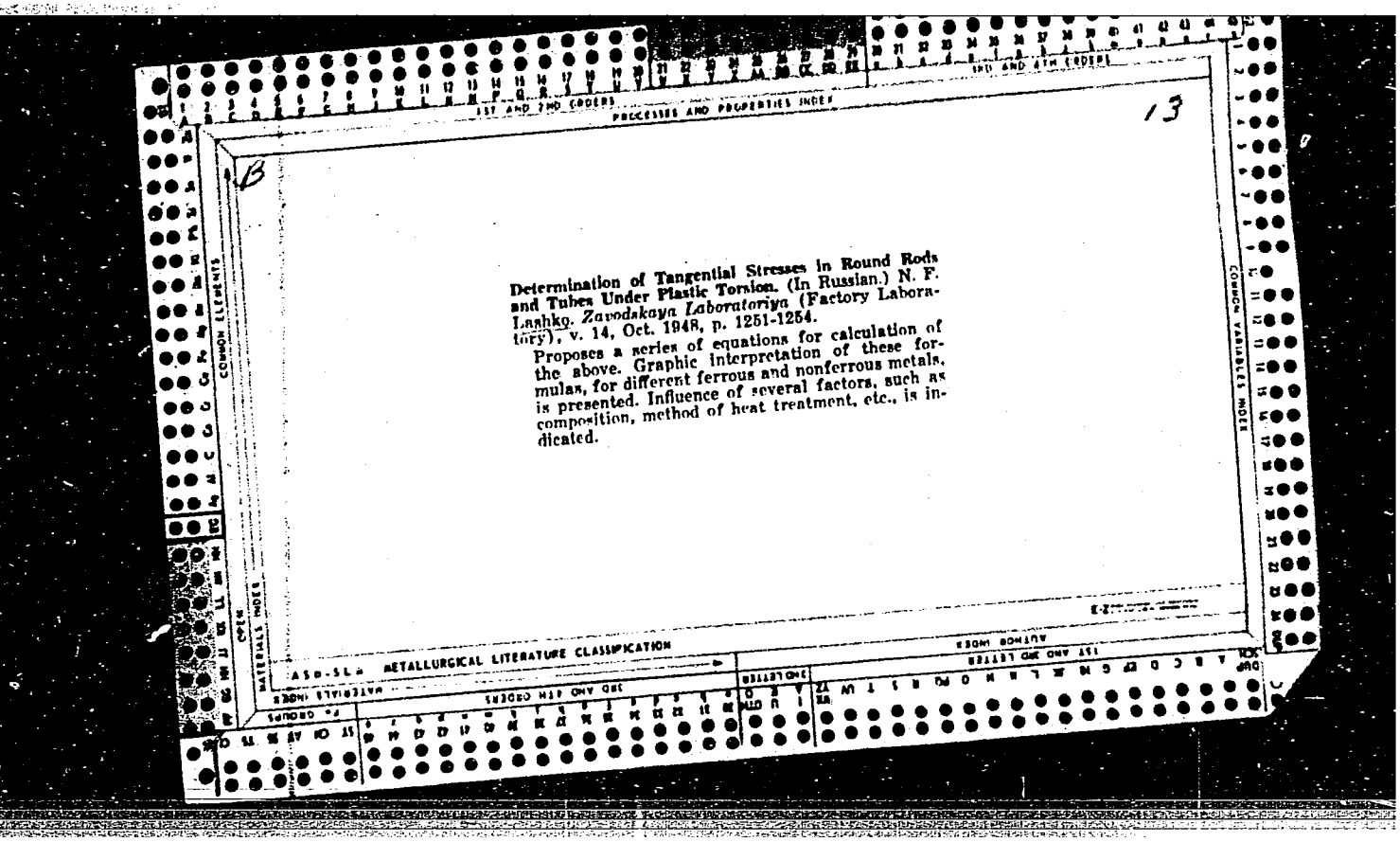
PURPOSE: For scientific workers in aviation technology and materials.

TEXT DATA

Coverage: In their consideration of the kinetics of crystallization of eutectic alloys, the authors follow the theory according to which at cooling temperature nearing crystallization, some parts in liquids appear to be arranged more orderly than the others. Those more-arranged parts become embryos of crystallization and gradually induce solidification of the liquid metal. At the end of the article a table gives the theoretical and actual positions of the eutectic point for various binary eutectic systems of some metals.

No. of References: 6 Russian, 1935-1945

Facilities: Names of several Russian scientists appear in the text.



Determination of Tangential Stresses in Round Rods and Tubes Under Plastic Torsion. (In Russian.) N. F. Lashko. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 14, Oct. 1948, p. 1251-1254.

Proposes a series of equations for calculation of the above. Graphic interpretation of these formulas, for different ferrous and nonferrous metals, is presented. Influence of several factors, such as composition, method of heat treatment, etc., is indicated.

LASHKO, N. F.

PA 10/49T93

USSR/Metals Jul 48
Steel Alloys
Martensite

"Some Boundary States of Metals," N. F. Lashko, 3½ pp

"Zhur Tekh Fiz" Vol XVIII, No 7

Boundary state is reached in pure metals when volume alteration reaches a definite critical value. For pure metals changing from solid to liquid, $\frac{\Delta V}{V} = 0.06 - 0.07$.

Extends this criteria of lattice stability to

10/49T93

USSR/Metals (Contd) Jul 48

nondiffusion processes, rupture of metals, short impulses of considerable magnitude (cumulative shells), martensite, and solid solutions of α-iron. Submitted 30 Jan 48.

10/49T93

CA

Coagulation of decomposition products of a supersaturated solid solution. N. F. Lashko. *Kolloid. Zhur.* 11, 251–4(1949).—The theory of Valnshtein and Zakharova (*Compt. rend. acad. sci. U.S.S.R.* 8, 1021(1947)) is extended for sepn. of many solid particles from a supersatd. soln. The diffusion coeff. D is correlated with the av. particle radius r by $D = r^2/\pi t$; t is the duration of coagulation. This equation allows calcn. of D. J. J. B.

LASHKO, N. F.

PA 38/49T91

USSR/Metals Mar 49
Eutectics
Alloys

"The Nature of Eutectic Alloys," S. V. Avakyan, N. F. Lashko, All-Union Inst of Aviation Materials, 9 pp

"Zhur Fiz Khimii" Vol XXIII, No 3

Discusses system of three principles which are required for formation of eutectic rather than other types of alloys: homogeneity, contactivity, and equal probability. Latter involves the probability of initial formation of nuclei of liquid eutetic alloy being equal in all phases. Submitted 30 Apr 48. 38/49T91

60/49T21

LASHKO, N.

USSR/Chemistry - Eutectics Jul 49
Chemistry - Crystallization

"The Nature of Eutectic Alloys: III, Modification of Binary Eutectics," S. Avakyan, N. Lashko, All-Union Inst of Avn Materials, Moscow, 4½ pp

"Zhur Fiz Khim" Vol XXIII, No 7

Addition of stearic acid to eutectic camphor-naphthalene results either in breaking down the naphthalene (in the case needlelike structures of naphthalene of the of a very small addition) or a modification of the form of the naphthalene crystals (in the case of large additions). Ratio of linear rates of

60/49T21

USSR/Chemistry - Eutectics (Contd) Jul 49

crystallization of camphor and naphthalene are modified also. Includes pictures of crystals. Submitted 30 Sep 48.

60/49T21

LASHKO, N. F.

Feb 49

USSR/Chemistry - Alloys
Chemistry - Crystallization

"Eutectic Crystallization in the Presence of Surface-Active Substances," S. V. Avakyan, N. F. Lashko, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 6

In studying crystallization of metallic, eutectic alloys, a unique structure is sometimes observed, different from normal laminar of polyhedral structure of eutectics. One stage, which goes into the eutectic, envelops the second stage, so that on a plane surface it appears as a ring of one stage around another. To clarify the nature of this eutetic crystallization, authors created artificial conditions which facilitate appearance of the unique structure of adding surface-active materials. Submitted by Acad P. S. Rebinder, 17 Nov 48.

PA 29/49T9

Doc Tech Sci

LASHKO, N. F.

Dissertation: "Concerning the Limited and Corresponding Mechanical States of Metals." 3/3/50

Inst of Metallurgy imeni A. A. Baykov, Acad Sci USSR

SO Vecheryaya Moskva
Sum 71

LASHKO, N. F.

USSR/Metals - Welding

Oct 50

"Primary Structure and Causes for Crack Formation in Welding of Cromansil," S. V. Avakyan, N. F. Lashko, C nd Tech Sci

"Avtogen Delo" No 10, pp 13-16

Investigators detected in welded joint of Cromansil a network which can be revealed only by etching with certain solutions. Established that revealing of this structure takes place with simultaneous presence of sufficient quantities of carbon and silicon and cracks form in places of greatest silicon concentration. Five zones, differing in character of structural transformations discussed for gas welding of 30 KhGSA-type sheet steel.

PA 167T84

LASHKO, N. F.

PA 164T70

USSR/Physics - Plastic Deformation Jul 50
Academy of Sciences - New Concept

"Principle of Correspondence in the Theory of Plastic Deformation," N. F. Lashko

"Zhur Tekh Fiz" Vol XX, No 7, p 26

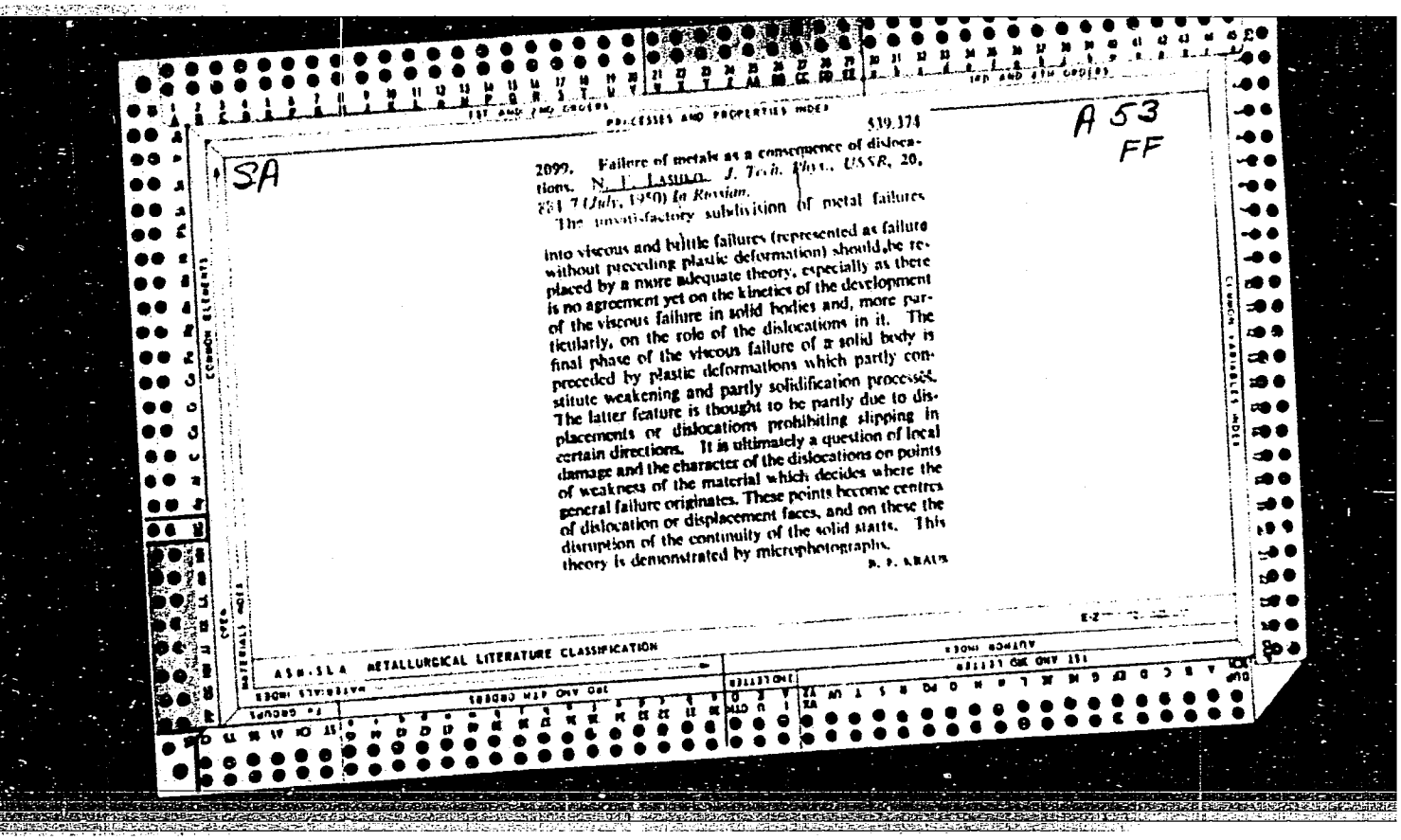
Stresses that main fact in plastic deformation is its nonhomogeneity in individual parts of the solid and even in separate grains. Presents eight photographs illustrating this. Claims there has been artificial division between micro- and macrophysics of deformation. Correspondence principle states: Both laws governing micro-

164T70

USSR/Physics - Plastic Deformation (Contd) Jul 50

and macrophenomena should coincide for a definite limiting state between two regions of investigation. Submitted 26 Jan 49.

164T70



PROCESSES AND PROPERTIES INDEX

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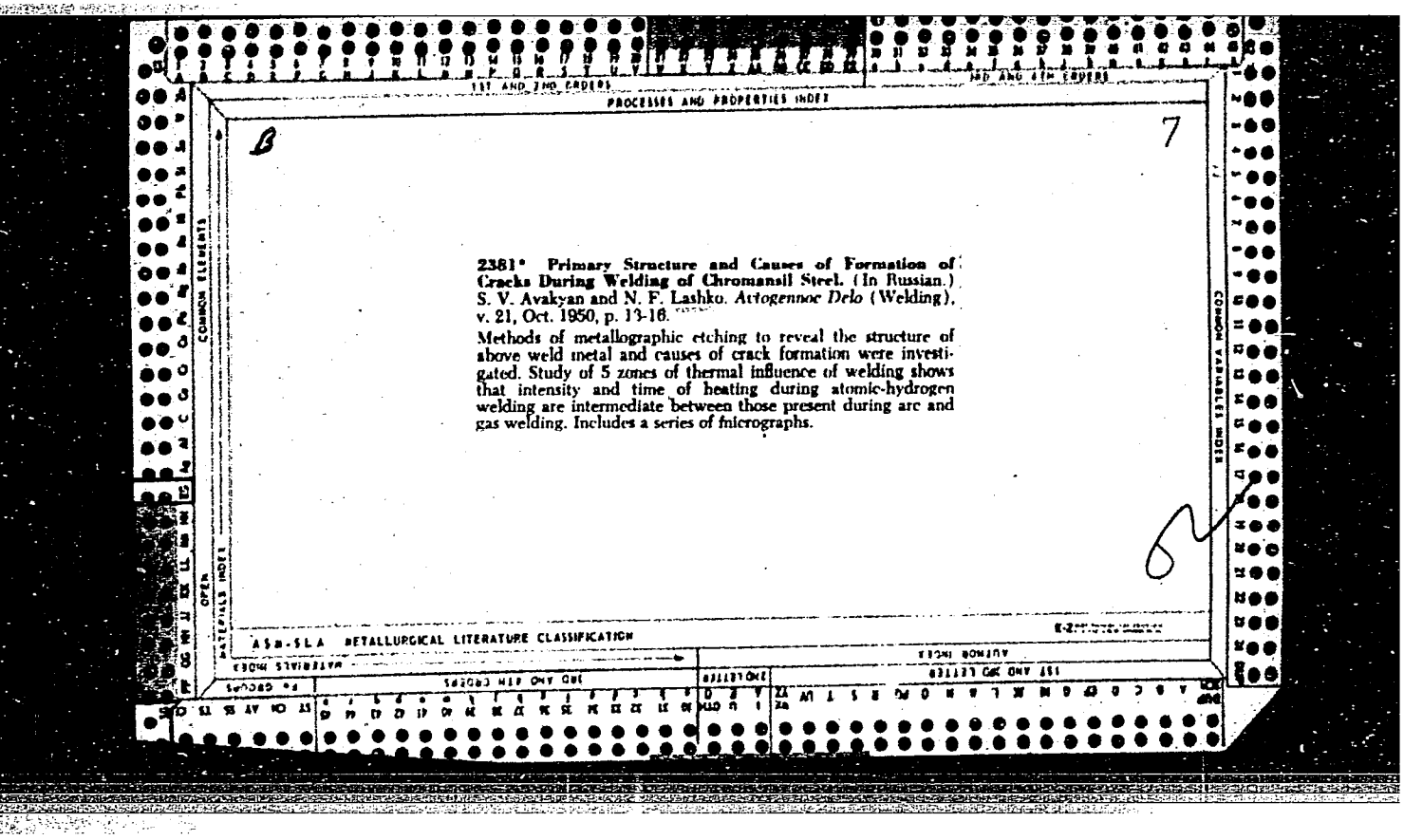
SA

2099. Failure of metals as a consequence of dislocations. N. T. LASHKO. *J. Tech. Phys., USSR*, 20, 851 7 (July, 1950) *In Russian.*

The unsatisfactory subdivision of metal failures into viscous and brittle failures (represented as failure without preceding plastic deformation) should be replaced by a more adequate theory, especially as there is no agreement yet on the kinetics of the development of the viscous failure in solid bodies and, more particularly, on the role of the dislocations in it. The final phase of the viscous failure of a solid body is preceded by plastic deformations which partly constitute weakening and partly solidification processes. The latter feature is thought to be partly due to displacements or dislocations prohibiting slipping in certain directions. It is ultimately a question of local damage and the character of the dislocations on points of weakness of the material which decides where the general failure originates. These points become centres of dislocation or displacement faces, and on these the disruption of the continuity of the solid starts. This theory is demonstrated by microphotographs.

B. P. KRAUS

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



LASHKO, N.F.

USSR/Engineering - Welding May 51

"On the Weldability of Aluminum-Magnesium Alloys," S. V. Avakyan, N. F. Lashko, Candidates Tech Sci

"Avtogen Delo" No 5, pp 9-13

Conducted investigation of causes for increased porosity in weld zone of 5% Mg Al-base alloy (AMG-5) in 3 directions: microscopic analysis of welds, influence of heating and its rate on structure modifications in alloy and study of the betaphase stability during the heating period. Discusses results amd makes suggestions for improvement.

200T29

USSR/Metals - Aluminum, Welding, Properties — Oct 51

"Effect of the Chemical Composition of Certain Binary Aluminum-Base Alloys on Their Tendency to Crack Formation in the Gas-Welding Process," S. V. Avakyan, N. F. Lashko, Candidates Tech Sci

"Avtogen Delo" No 10, pp 1-6

Investigates crystn cracks and conditions for their formation of alloys of Al with Sn, Cu, Mg, Zn, Ag, Si, Mn, Fe, Bi, Cd and Ce. Elimination of cracks may be achieved under following conditions: insignificant difference in crystn temps of Al and eutectic; small amt of 2d phase in eutectic distributed along grain boundaries of solid soln in form of sep inclusions; sufficient quantity of eutectic to "heal" fissures formed in alloy during crystn.

202T80

LASHKO, N. F.

202T80

USSR/Metals - Aluminum, Welding, Dec 51
Properties

"On the Effect of the Composition of Aluminum Alloys on Their Tendency to Crack Formation in the Process of Gas Welding," S. V. Abakyan, N. F. Lashko, Candidates Tech. Sci

"Avtogen Delo" No 12, pp 7-9

Investigation of Al-Cu, Al-Si and Al-Sn systems revealed considerable decrease in tendency of alloys to cracking when alloy of same system but with increased amt of

200T100

USSR/Metals - Aluminum, Welding, Dec 51
Properties (Contd)

alloying element is used as addn in welding process. In this case, temp of complete melting is lower and mixing of weld metal with base alloy is less intensive, keeping comprn of weld metal more const and preventing formation of crysth cracks. Article is continuation of work by the authors in "Avtogen Delo" No 10, 1951.

200T100

LASHKO, N.F.

LASHKO, N. F.

LASHKO, N. F. and NESTEROVA, M.D. C.A. Vol. 46 77 d

Stable and metastable phases in chromium and molybdenum steels with medium carbon content. Izvest. Akad. S.S.S.R., Ser. Fiz. 15, 67-71 (1951).

Examn. of samples of steel contg. 0.30-0.41% C, 0.08-21.30% Cr, or 0.35-4.13% Mo shows that at Cr contents below 1.5% only $(Fe, Cr)_3C$ is formed. At higher content trigonal $(CrFe)_7C_3$ and cubic $(CrFe)_{23}C_6$ are formed. A phase diagram in % Cr vs annealing time is given. A first metastable cementite phase is transformed into a 2nd metastable -phase which can be transformed into the unetable trigonal or the stable cubic carbides. A similar diagram is shown for the Fe-Mo system and it is shown that beyond 0.35% Mo content Mo_2C appears together with cementite. A -phase is also formed, as well as binary carbides Fe_nMo_mC.

LASHKO, N. F.

LASHKO, N. F. and NESTEROVA, M. D. C.A. Vol. 46 75 f

Interchange processes between the solid solution and the carbide phase in the thermal treatment of steels. Izvest. Akad. Nauk S.S.S.R., Ser. Fiz 15, 72-4 (1951)

In steels of type EI 69 and EI 257 (chem. compn. indicated) on annealing at 500-850°) there are formed solely the cubic carbides $(Cr, Fe, Ni, W, Mo)_{23}C_6$. The carbide phases were isolated by anodic soln. of the metal in an electrolyte. The austenite lattice is increased by W, Mo, and Cr, but the carbide phase lattice remains const. This is explained by the presence of vacant spots in the lattice. It is shown that during thermal treatment the W and the Mo atoms gradually go to the periphery of the carbide crystals and the Cr atoms to the center of the phase.