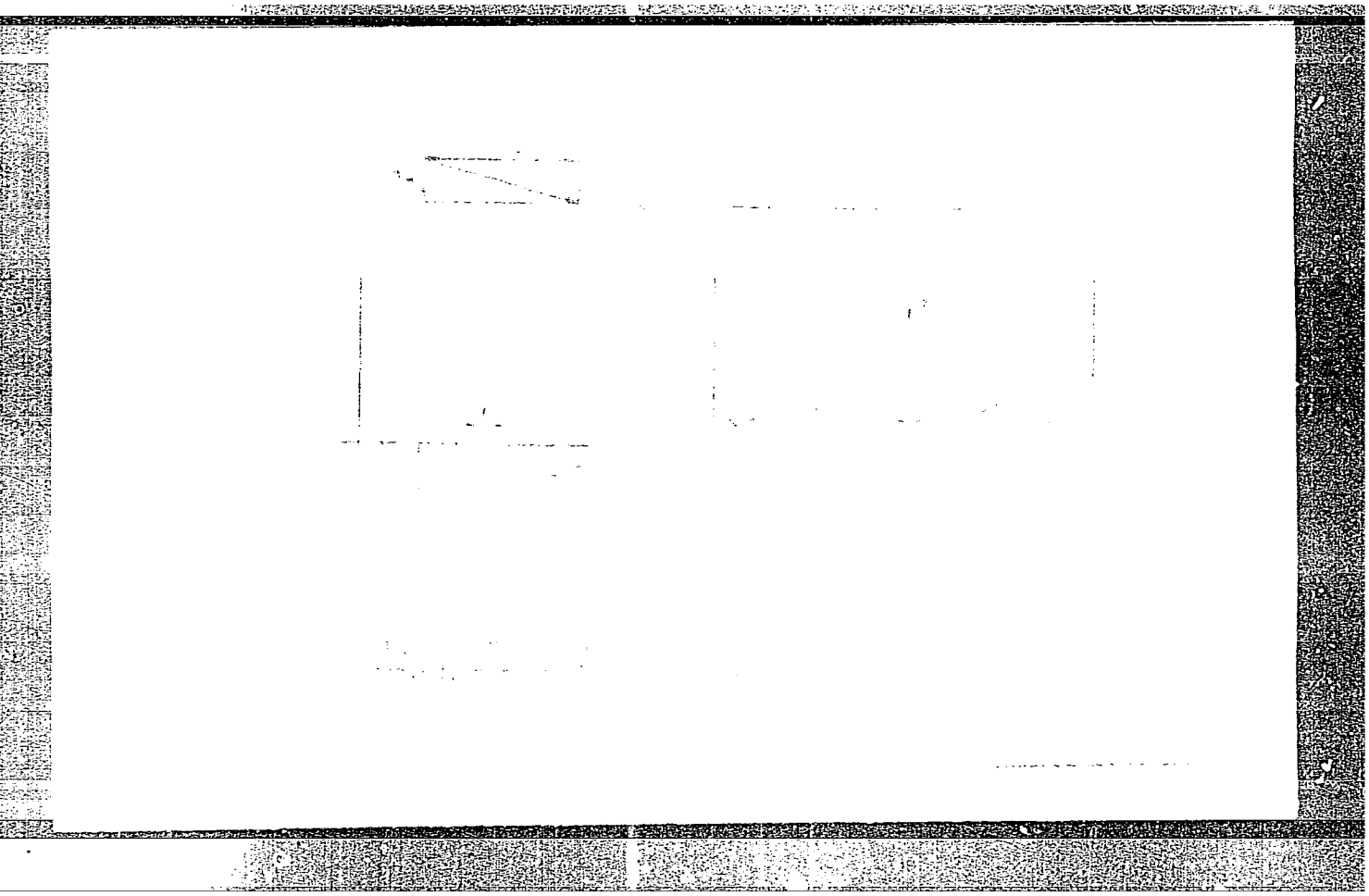
L 02954-65

ACCESSION NR: AP5016341

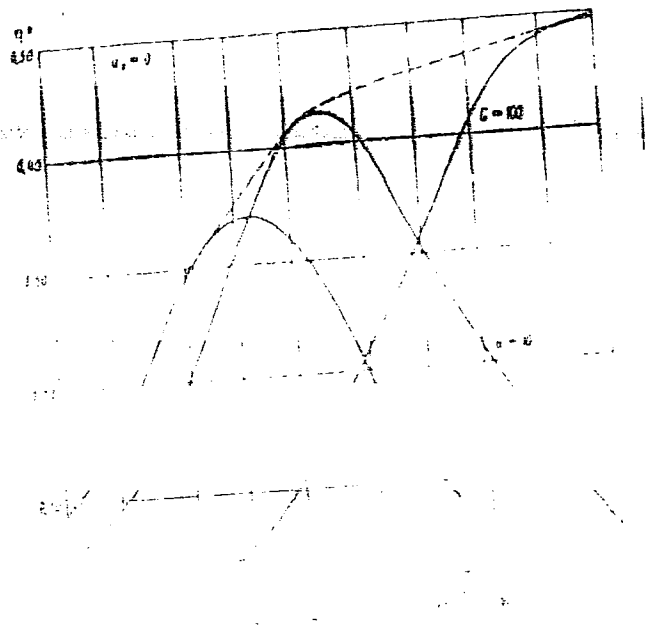
Since $\ell \gg \delta$, electrode edge effects are negligible, and all parameters are assumed to be independent of the y-coordinate. It is assumed that δ is uniform along the x-axis, so that all field and flow parameters are independent of the x-coordinate as well. The mechanism of laminar flow in the liquid-metal condensate layer can then be examined without regard for the structure of the condensing vapor flow.

A system of magnetohydrodynamic equations describing the steady flow of the incompressible conducting fluid is then derived, and a solution is obtained to satisfy boundary conditions developed on the basis of general theorems of mechanics in the integral form. [illegible] efficiency are then derived and a [illegible]

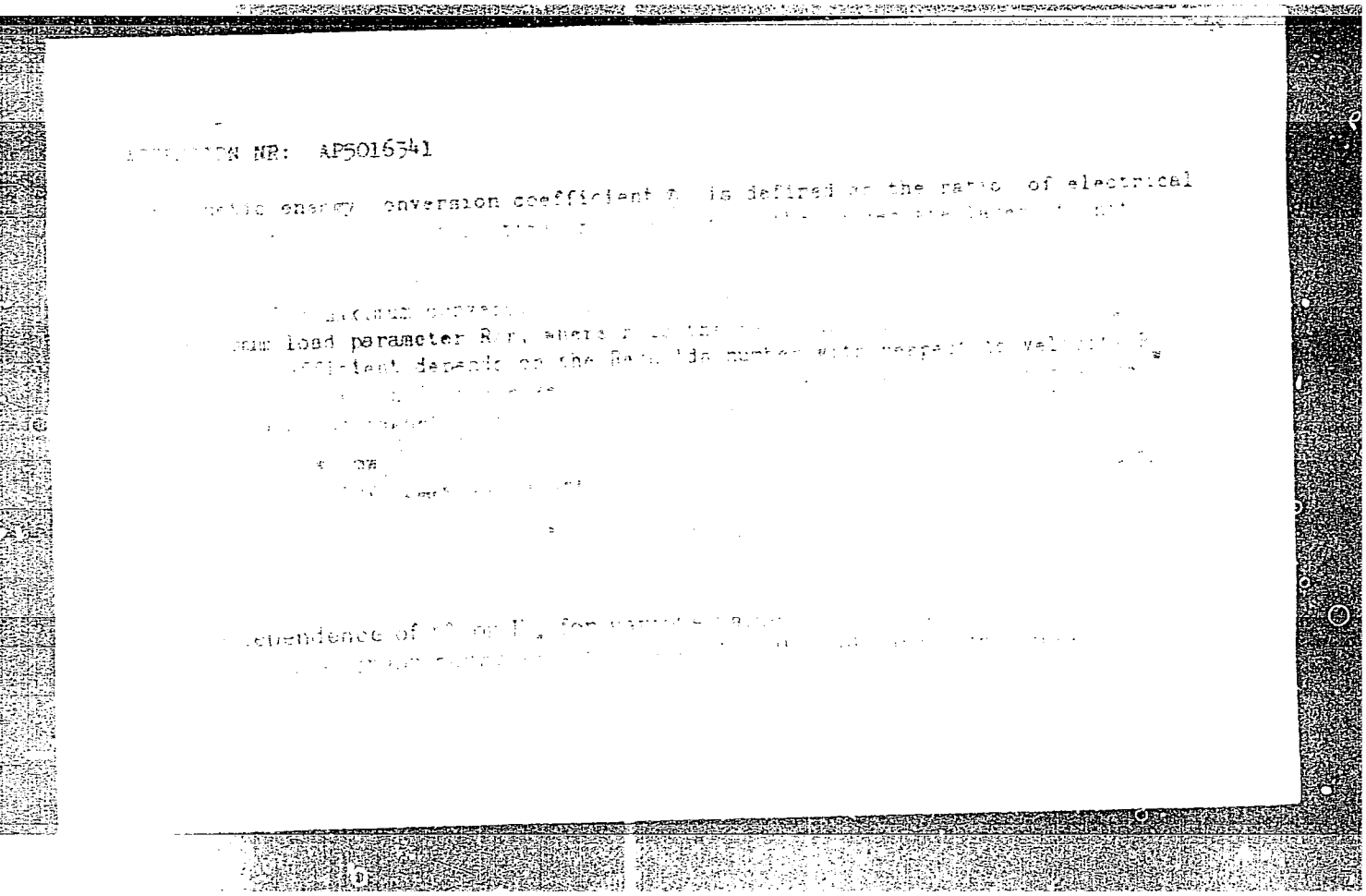
Card 3/7



ACCESSION NR: AP5016341



Dependence of η° on R_w for [illegible] of C when the veloc-



ACCESSION NR: AP5016341

...electric energy conversion coefficient η is defined as the ratio of electrical ...

... load parameter R = ..., where ... coefficient depends on the ... number with respect to ...

... dependence of ... for various ...

ACCESSION NR: AP5016341

... zero, and the second, the case when the plate moves at a velocity $u_0 = u^*$, ... there is no shearing stress on the plate surface and the plate does ... accelerating or decelerating effects on the condensate layer. The ... coefficient η^* for each given value of η reaches a maximum at a specific value of R_w. The low values of η^* for low R_w are explained by the loss of kinetic energy during condensation. The value R_w is directly proportional to the amount of vapor being condensed per unit surface of the liquid-metal layer. The theory can ... practical application in the development of electromagnetic transducers for ... conducting liquids. The direct dependence of the generated emf on R_w makes it possible to determine both the rate of mass transfer between the vapor and condensate and the heat transfer coefficient. Orig. art. has: 3 figures, 35 formulas, 5 graphs.

... TION: none

SUBMITTED: 10Sep64 ENCL: 00 SUB CODE: ME,EM

NR REF SOV: 002 OTHER: 001 FSR v.l, no. 7

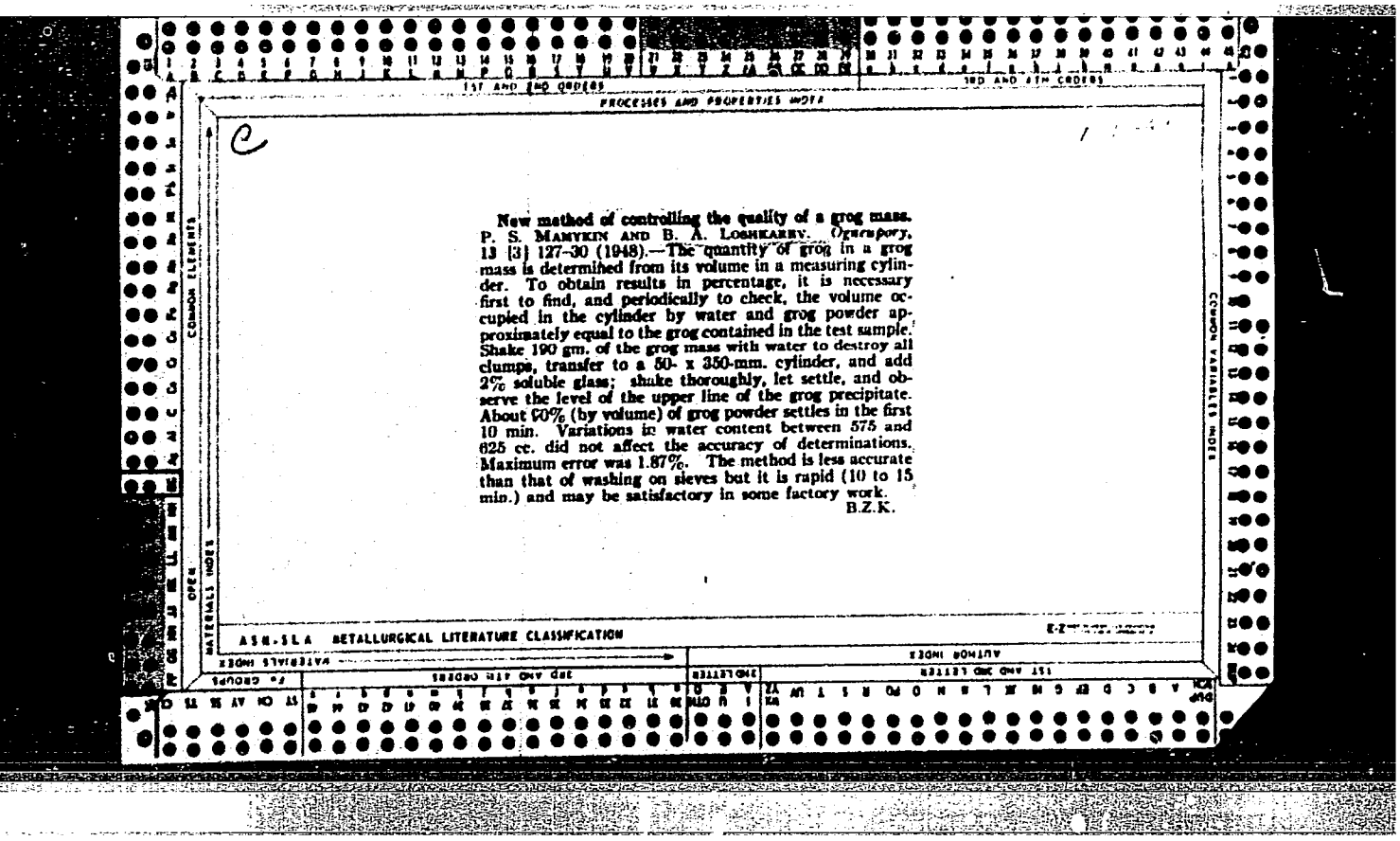
Card 7/7

LOSHKAREV, A. T.

Honey

Don't let honeydew honey be carried over into the winter, Pchelovodstvo, 29, No. 10, 1952.

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



New method of controlling the quality of a grog mass. P. S. Mamykin and B. A. Loshkarev. *Ogneupory*, 13 [3] 127–30 (1948).—The quantity of grog in a grog mass is determined from its volume in a measuring cylinder. To obtain results in percentage, it is necessary first to find, and periodically to check, the volume occupied in the cylinder by water and grog powder approximately equal to the grog contained in the test sample. Shake 190 gm. of the grog mass with water to destroy all clumps, transfer to a 50- x 350-mm. cylinder, and add 2% soluble glass; shake thoroughly, let settle, and observe the level of the upper line of the grog precipitate. About 50% (by volume) of grog powder settles in the first 10 min. Variations in water content between 575 and 625 cc. did not affect the accuracy of determinations. Maximum error was 1.87%. The method is less accurate than that of washing on sieves but it is rapid (10 to 15 min.) and may be satisfactory in some factory work.
B.Z.K.

LOSHKAREV, B. A.

USSR/Engineering - Refractories

May 50

"Calcium Titanates and Kinetics of Their Formation," P. S. Mamykin, B. A. Loshkarev, Cand Tech Sci, Ural Ind Inst 6½ pp

"Ogneupory" No 5

Describes physicochemical investigation of methods for producing refractories of CaO-TiO_2 system. Studied formation reactions of calcium titanates in mixtures of chalk and amorphous titanium dioxide, both chemically pure. Nature of calcium titanates formed was additionally investigated by petrographic analysis of thin sections. Experimentally established lower temperature for beginning of reaction between CaO and TiO_2 at about 500°C.

PA 160T32

CH

19

Effect of titanium dioxide on the sintering of lime. B. A. Loshkarev (Kirov Ural Polytech. Inst.). *Ogneupory* 15, 316–13(1950).—Additn. of TiO_2 ranged from 0.25 to 10.00% and sintering temps. from 1440 to 1620°. Crystal size increased with addn. of TiO_2, reaching a max. for 2% TiO_2 and then gradually decreasing; for 7.4 and 10.00% TiO_2 crystals size was smaller than for CaO alone. Addn. of TiO_2 had a strong sintering effect; CaO with 1% TiO_2 started to sinter intensively at about 1300° and with 3–5% TiO_2 the process was practically complete at 1510–1530°. For over 5% TiO_2 the sintering effect was not so great. Clinker obtained by sintering CaO with 3–5% TiO_2 contained over 90% free CaO and sufficient atm. stability to use it for lab. shapes and for industrial basic super refractories.

B. Z. Kamich

LOSHKAREV, B. A.

Dolomite refractories containing free lime with the addition of perovskite. P. S. Mamykin and B.A. Loshkarev, Ogneupory, 15 (8) 359-62 (1950). — Mixtures of 99, 98, and 95% dolomite and 1, 2, and 5% perovskite were treated with 7% of 0.25% sulfite-cellulose liquor, shaped under 400 kg./cm.^{2}, and fired at 1580° C. The most intensive and dangerous shrinkage occurred at 1300° to 1610°. A specimen containing 5% perovskite had the following characteristics: apparent porosity 5.8%, bulk density 2.76 gm./cm/.3, specific gravity 3.32, true porosity 16.85%, firing shrinkage 27.74%, compressive strength 1517 kg./cm.^{2}, destruction after 72 to 80 heat-shock cycles (air), complete destruction/ after 3 to 4.5 months' storage under laboratory conditions, and initial deformation at 1570° under 2kg./cm.^{2}. Petrographic analysis showed three distinct crystalline phases in the clinker: lime in grains of 0.05 to 0.16 mm., periclase in grains of 0.007 to 0.025 mm., and a small amount of tricalcium dititanate crystal. The clinker (> 2.5 mm. 2.0%, 2.5 to 049 mm. 31.8%, and < 0 _____ mm. 63.2%), with 2% paraffin, was heated, shaped (at 9 _____ kg./ cm.2) into cylinders 50 mm. high and 36 mm. in diameter and fired at 1550° to 1570°. The product showed no deformation or cracks and had the following characteristics: shrinkage 1.4% apparent porosity 29.7%, bulk density 2.37 gm./cm^3, specific gravity 3.38, true porosity 29.9%, and coefficient of thermal expansion (20° to 850°) 1.5 x 10^{-5}; under 2 kg./cm.^{2}, initial deformation occurred at 1475°, 4% compression at 1580°, and destruction at 1630°. At 1600° it did not react with basic open hearth slag, and destruction occurred after 93 heat-shock cycles (air); under laboratory conditions of storage in the open, destruction occurred after 4 to 4.5 months.

BZK.

ms

LOSHKAREV, B. A.

Dolomite refractories containing free lime with the addition of perovskite. P. S. Mamykin and B.A. Loshkarev, Ogneupory, 15 (8) 359-62 (1950). — Mixtures of 99, 98, and 95% dolomite and 1, 2, and 5% perovskite were treated with 7% of 0.25% sulfite-cellulose liquor, shaped under 400 kg./cm.^{2}, and fired at 1580° C. The most intensive and dangerous shrinkage occurred at 1300° to 1610°. A specimen containing 5% perovskite had the following characteristics: apparent porosity 5.8%, bulk density 2.76 gm./cm/.3, specific gravity 3.32, true porosity 16.85%, firing shrinkage 27.74%, compressive strength 1517 kg./cm.^{2}, destruction after 72 to 80 heat-shock cycles (air), complete destruction/ after 3 to 4.5 months' storage under laboratory conditions, and initial deformation at 1570° under 2kg./cm.^{2}. Petrographic analysis showed three distinct crystalline phases in the clinker: lime in grains of 0.05 to 0.16 mm., periclase in grains of 0.007 to 0.025 mm., and a small amount of tricalcium dititanate crystal. The clinker (> 2.5 mm. 2.0%, 2.5 to 049 mm. 31.8%, and < 0 _____mm. 63.2%), with 2% paraffin, was heated, shaped (at 9 _____kg./ cm.2) into cylinders 50 mm. high and 36 mm. in diameter and fired at 1550° to 1570°. The product showed no deformation or cracks and had the following characteristics: shrinkage 1.4% apparent porosity 29.7%, bulk density 2.37 gm./cm^3, specific gravity 3.38, true porosity 29.9%, and coefficient of thermal expansion (20° to 850°) 1.5 x 10^{-5}; under 2 kg./cm.^{2}, initial deformation occurred at 1475°, 4% compression at 1580°, and destruction at 1630°. At 1600° it did not react with basic open hearth slag, and destruction occurred after 93 heat-shock cycles (air); under laboratory conditions of storage in the open, destruction occurred after 4 to 4.5 months.

BZK.

ms

LOSHKAREV B. A.

181T49

USSR/Engineering - Refractories Mar 51

"Sintering of Mixtures in the CaO-CaO·TiO_2 Region of the Chalk-Titanium Dioxide System," B. A. Loshkarev, Cand Tech Sci, Ural Polytech Inst imeni Kirov

"Ogneupory" No 3, pp 127-129

Examd various mixt of chalk with 0-10% of titanium dioxide to study effect of their compn on sintering qualities. Gives some properties of clinkers thus obtained.

181T49

C.A.

17

Properties of calcium titanates and refractory shapes made from them. P. S. Mamykin and B. A. Loshkarev (Ural'sk Polytech. Inst.). *Ogneupory* 16, 218–20(1951); cf. *C.A.* 45, 968*f*.—Clinkers were made from CaO and TiO_2, with CaO/TiO_2 ratios of 1:1, 3:2, 2:1, and 3:1; firing temps. were up to 1600°. In the 2:1 and 3:1 clinkers, the CaO above that required to bind the TiO_2 in $3CaO.2TiO_2$ was in a free state and not bound in any form. The 1:1 and 3:2 clinkers hydrated very little, but the 3:2 clinker showed a tendency toward deformation during firing. From a technological viewpoint, the 1:1 clinker is considered optimum. Shapes of $CaO.TiO_2$ and $3CaO.2TiO_2$ were made of 85% clinkers and 15% bond ($CaCO_3$ and TiO_2) and fired at 1580°. Resistance against portland cement clinker was good and against basic open-hearth slags satisfactory. Shapes showed no contact with materials contg. SiO_2 and Al_2O_3. Curves of deformation under load at high temps. showed a plastic nature. All other properties were within the limits characteristic of other highly refractory materials. B. Z. K.

LOSHKAREV, B. A.

137-1958-1-172

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 27 (USSR)

AUTHOR: Loshkarev, B. A.

TITLE: Effect of Titaniferous Additives on Dolomite Sintering (Vliyaniye titansoderzhashchikh dobavok na spekaniye dolomita)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1956, Nr 55, pp 33-48

ABSTRACT: Verification of the effects of adding 0.5 - 10 percent TiO_2, rutile, ilmenite or titanomagnetite in the sintering of Karagayskiy dolomite powder at 1430-1450° (percent composition by weight as follows): CaO 30.2, MgO 22.0, SiO_2 1.3, R_2O_3 0.6, losses in calcining 46.3. The most densely sintered dolomite clinker (volumetric weight 2.7 - 3.2 g/cm^3) was obtained on introduction of not over 1 percent TiO_2 or rutile, 3-5 percent ilmenite or approximately 5 percent titanomagnetite. When the sintering temperature was raised to 1560/1580°, the optimum Ti-containing additives were 0.5 percent TiO_2 and 3-5 percent ilmenite and titanomagnetite. The hydratability (weathering resistance) of solid pieces and of sintered dolomite powders (35 percent < 0.088 mm, 20 percent 0.75 - 0.49 mm) was studied,

Card 1/2

137-1958-1-172

Effect of Titaniferous Additives on Dolomite Sintering

the specimens being left in the open air for 3 to 52 days. Powders with 3.6 and 10 percent titanomagnetite added showed themselves least susceptible to hydration (41 day rise in weight 10-15 percent).

S. G.

1. Dolomite sintering--Effects of titanium

Card 2/2

34116
S/072/62/000/003/001/001
B145/B101

15.2230

AUTHOR: Losnkarev, B. A

TITLE: Sintering in the system $ZnO-TiO_2$

PERIODICAL: Steklo i keramika, no. 3, 1962, 22 - 26

TEXT: The authors determined several physicochemical values: water absorption and shrinkage as a function of the burning temperature, specific gravity, volumetric weight, bulk resistance, dielectric constant, temperature coefficient of the dielectric constant, of charges with a varying ZnO-to-TiO_2 ratio. The initial components were both chemically pure substances, and commercial TiO_2: ТЭ(TE) and Л(L) of the Chelyabinskiy lakokrasochnyy zavod (Chelyabinsk Varnish and Dye Factory). These initial components were first mixed in dry state and then in humid state; subsequently, they were ground in porcellain mills for 2 - 4 hr, dried, wettened with sulfite spirit waste liquor (density 1.05, humidity of the mass 8 - 10 %), sieved, pressed in half-dry state (cylinder d = 1.5 - 4.0 cm, h = 0.3 - 1.5 cm, pressure = 500 kg/cm^2), dired and finally burned (in silite furnaces, to exclude

Card 1/1 2

Sintering in the system $ZnO-TiO_2$

reduction). The data obtained at 1300°C (Fig. 4) show that the system $ZnO - TiO_2$ contains the compound $2\ ZnO \cdot TiO_2$. In order to obtain sintered materials the burning temperature must be approximately 1300°C for 2-50% and 85-100% ZnO and above 1300°C for 50 - 85 % (above 1400°C for 67% ZnO = orthotitanate). For 60% ZnO sintering largely depends on the type of the initial substances. The electrophysical measurements (Fig. 5) were made partly by Professor N. P. Bogoroditskiy and L. P. Mudrolyubova at the Leningradskiy elektrotekhnicheskiy institut (Leningrad Electrotechnical Institute). A strong dielectric loss which might be reduced by technological processes was observed almost always, and especially in samples of the composition $2ZnO \cdot TiO_2$ and $3\ ZnO \cdot TiO_2$. The electrophysical properties can be altered by adding SrO and CaO. The sintering temperature of zinc orthotitanate can be lowered by adding CaO or CdO. In order to obtain samples with constant properties the technological parameters (composition, processing, casting, burning) must be exactly observed. Kh. S. Valeyev and M. D. Mashkovich are mentioned. There are 5 figures and 3 tables.

Card 2/2

LOSHKAREV, B.A.

Caking in the system ZnO - TiO_2. Stek. i ker. 19 no.3:22-26 Mr '62. (MIRA 15:3)

(Ceramics) (Zinc titanates)

LOSHKAREV, B.A., kand. tekhn. nauk, dotsent

Study of the system $ZnO-TiO_2$; volume changes during the formation of zinc titanates. Trudy Ural. politekh. inst. no.117:75-84 '62. (MIRA 16:6)

(Titanates) (Zinc oxide)

L 18283-65 EWP(e)/EPA(s)-2/EWT(m)/EPF(n)-2/EPA(w)-2/EWP(b) Pt-10/Pu-4/Pab-10

ACCESSION NR: AP4045452 S/0072/64/000/009/0026/0030

AUTHOR Loshkarev, B. A (Candidate of technical sciences), Sycheva, N. A. (Engineer); Baranova, T. F. (Engineer)

TITLE: Conditions for compressing briquetted masses based on materials of the $ZnO-TiO_2$ system

SOURCE: Steklo i keramika, no. 9, 1964, 26-30

TOPIC TAGS: ZnO TiO_2 system, briquetting, ceramic semiconductor, ceramic property stabilization

ABSTRACT: The effects of varying conditions in the preliminary briquetting of $ZnO-TiO_2$ materials and of the simultaneous addition of alumina and zirconia on the properties of the resultant ceramic semiconductors were studied. Using [illegible] briquetted material reduced shrinkage and [illegible] of the properties of the final ceramics. Studies run on 77.5% ZnO-22.5% TiO_2 mixtures showed the following conditions to be optimum for briquetting the moist materials: [illegible]% solids was optimum, lesser amounts did not significantly affect shrinkage

0

and other indices, but greater amounts impaired ceramic properties--increased porosity and decreased specific weight. Optimum firing temperature was about 1200C, the product obtained had a 14% linear shrinkage, specific weight of 4.67 gm/cm^3 and 2% water adsorption; higher temperatures weakened the briquet. A 4% aqueous solution of polyvinyl alcohol was an effective binder. In briquets comprising 80% ZnO, 20% TiO_2, 2 and 4% Al_2O_3 and 0.5, 1, 2, 3, 4, 6 and 10% ZrO_2, 8% by weight of the binder solution was optimum, and in compositions comprising 77% ZnO, 23% TiO_2, and reversed above proportions of Al_2O_3 and ZrO_2 required 9% binder; less binder did not gel and resulted in a product of lower mechanical strength. Optimum compression pressure was 500-600 kg/cm^2 although varying pressure from 300-800 kg/cm^2 had little effect on the properties of the fired samples. On changing pressure from 300-1200 kg/cm^2, the material contracted according to the A. S. Berezhnoy (Ogneuporty*, 1954, no. 4) equation $\epsilon = a - \lg P$, at higher pressures the porosity of the brick did not approximate the equation. Maintaining the above conditions resulted in semiconductive [illegible] variation in their ceramic properties and in their specific [illegible] containing 67-70% ZnO resistivity varied from [illegible] ohm-cm [illegible]

L 18283-65
ACCESSION NR: AP4045452

briquets prepared under proposed conditions, the specific volume resistivity was maintained within the order of 10^5 ohm. cm and the specific surface resistivity, in the order of 10^6 ohm. Orig. art. has: 5 figures and 1 table

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S. M. Kirova (Ural Polytechnical Institute)

SUBMITTED: 00 ENCL: 00

SUB CODE: MT NO REF SOV: 001 OTHER: 001

Card 3/3

L 34111-66 EWP(e)/EWT(m)/EWP(t)/ETI IJP(c) JD/JG/AT/WH

ACC NR: AP6012844 (A) SOURCE CODE: UR/0080/66/ 039/004/0803/0809

AUTHOR: Loshkarev, B. A.; Semirikov, I. S. 59 B

ORG: Ural Polytechnic Institute imeni S. M. Kirov (Ural'skiy politekhnicheskiy institut)

TITLE: Conditions of preparation and certain properties of materials of the Zn_2TiO_4-$CaTiO_3$ system of dielectrics

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 4, 1966, 803-809

TOPIC TAGS: titanate, zinc compound, calcium compound, dielectric material, SINTERING, SINTERED METAL

ABSTRACT: The sintering conditions and properties of the sintered products were studied in the system Zn_2TiO_4-$CaTiO_3$. The degree of sintering increases with the zinc orthotitanate content. Charges with 5-60% $CaTiO_3$ sinter most completely; charges with a higher content of this component and those corresponding to the composition of zinc orthotitanate do not sinter under the conditions employed. Small admixtures of components mutually improve each other's sintering and can be used as mineralizers in the production of articles based on $CaTiO_3$ or Zn_2TiO_4. The electric and physical properties of the materials of this system depend on the composition and degree of sintering. The dielectric constant (ϵ) increases from 16-18 in the orthotitanate to 120-130 in materials containing 90-95% $CaTiO_3$.

Card 1/2 UDC: 621.3.011.5+546.47'41'824

L 34111-66

ACC NR: AP6012844

In materials prepared from pure TiO_2, ϵ deviates from the calculated values; this is attributed to a high porosity (considerable drop of ϵ) and to the possible presence of free TiO_2 (slight rise of ϵ). The temperature coefficient of the dielectric constant ($TC\epsilon$) in the system changes from high negative to low positive values. Materials with $TC\epsilon$ close to zero contain about 5—10% $CaTiO_3$, and their dielectric constant ϵ = 18—29. The volume resistivity ρ_v of completely sintered materials exceeds 10^{13} ohm cm. Minimum dielectric loss in the system is shown by compositions with 40—60% of one of the components; their tan δ does not exceed (4-6) 10^{-4}; $\rho_v = 10^{13}$ ohm cm, and ϵ = 53—85. Such materials can find applications in electronics. Orig. art. has: 5 figures.

SUB CODE: 11 / SUBM DATE: 01Apr64 / ORIG REF: 004

Card 2/2

LOSHKAREV, B. I.

"Investigation of the Process of Casting Lead Bronze by the Centrifuge Method." Cand Tech Sci, Min Aviation Industry USSR, Moscow, 1954. (KL, No 7, Feb 55)

SO: Sum. No. 631, 26 Aug 55-Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

LOSHKAREV, B.I., dots.

Theory and practice of centrifugal casting. Lit.proizv. no.8:
1-6 Ag '57. (MIRA 10:10)
(Centrifugal casting)

LOSHKAREV, B.I.

18(5)

SOV/128-59-6-10/25

AUTHOR: Loshkarev, B.I., Candidate of Technical Sciences

TITLE: Basic Questions of Centrifugal Casting

PERIODICAL: Liteynoye Proizvodstvo, 1959, Nr 6, pp 27-32 (USSR)

ABSTRACT: Many articles have been published about centrifugal casting. Several Soviet authors (Vilyum, Novikov, Chepinoga) treat this type of casting one-sidedly. Certain schemes on the problem of the centrifugal forces are even contradictory to modern ideas. The opinions about the theory and the practice of centrifugal casting are not uniform. The author tries to furnish a contribution to this field. After an explanation of the Newton law, the author explains the performance of liquids at different rotations and accepts sliding of the elementary layer of the liquid as the objective factor. According to the law on the transfer of heat, it has to be considered that centrifugal castings are made in metal or sand molds, which have a better heat transfer than the air. Therefore, the

Card 1/3

Basic Questions of Centrifugal Casting

corresponding correction has to be made. Also the factor of crystallization must be considered. Following this introduction, the author reports on the results of the macro- and micro-structure of the centrifugal casting. To get centrifugal castings with a uniform structure, it is necessary to consider the dependence of the mechanical and crystallization forces in connection with the cooling rate. Non-consideration of this principle results in strong changes of the chemical contents and of the mechanical properties of the cast iron. To confirm his opinion the author quotes an article by L. Northcott ("Steel", Nr 16, 1946) and publishes the results of his experiments by means of tables. The fast cooling down rate is an important factor which is visible too by means of the micro-photos. Another paper by the above mentioned author L. Northcott ("Journal of the Institute of Metals", Nr 7, 1944) confirms this opinion. There are 6 diagrams, 9 photographs 4 tables and 16 references, 1 of which is German,

SOV/128-59-6-10/25

Basic Questions of Centrifugal Casting

2 English and 13 Soviet

Card 3/3

LOSHKAREV, B.I. (Ul'yanovsk)

Spectral resolution of a Hermitian finite difference operator of the second order. Volzh. mat. sbor. no.1:138-144 '63.
(MIRA 19:1)

VASIL'YEV, A.D., inzh.; LOSHKAREV, F.A., tekhnik; POLEZHAYEV, M.M., inzh.

Automatic control of the density and flow of pulp in feeding flotation machines at the "Tomusinskaia 1-2" preparation plant. Nauch. trudy Kuz-NIIUgleobog. no.2:132-136 '64. (MIRA 17:10)

L 22357-66 EWT(1)/EWA(h)

ACC NR: AP6013259 SOURCE CODE: UR/0413/66/000/008/0049/0049

INVENTOR: Abramtsev, Ye. P.; Kuznetsov, N. M.; Loshkarev, F. A. 31

ORG: none 25 B

TITLE: Motor-type time relay. Class 21, No. 180698 [announced by the Kuznetsk Scientific Research Institute of Coal Beneficiation (Kuznetskiy nauchno-issledovatel'skiy institut ugleobogashcheniya)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 49

TOPIC TAGS: time relay, photoelectric cell

ABSTRACT: This Author Certificate introduces a motor-type time relay containing an illuminator, photocells connected with the object control circuit, and a programming

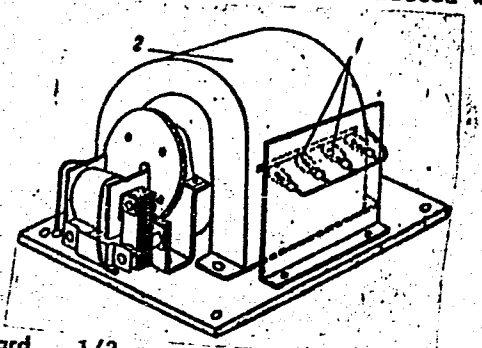


Fig. 1. Motor-type time relay

1 - Illuminators; 2 - programming element.

Card 1/2 UDC: 621.318.563.5

L 22357-66

ACC NR: AP6013259

element which shifts between the illuminator and the photocells (see Fig. 1). In order to improve the reliability of relay operation, the programming element is designed in the form of a transparent rotating cone. Inside the cone are photoresistors and on its surface is a punched tape. The illuminator is fitted with a reflector designed in the form of a parabolic mirror which covers the luminous slot. Orig. art. has: 1 figure. [DW]

SUB CODE: 09/ SUBM DATE: 23Oct62/ ATD PRESS: 4241

Card 2/2 dda

TOMILOV, B.I.; LOSHKAREV, I.A.

Rigorous method of computing the activation energy of electrochemical reactions. Dokl. AN SSSR 151 no.4:894-897 Ag '63. (MIRA 16:8)

1. Predstavleno akademikom A.N.Frumkinym.
(Electrochemistry) (Chemical reaction, Rate of)

LOSHKAREV, K.I.; REPIN, S.S.

Using a tester designed by the Groeny Petroleum Scientific Research Institute. Neft. khoz. 41 no.7[illegible]39-39 J1'63 (MIRA 17:7)

RYAZANTSEV, N.F.; LOSHKAREV, K.I.

Efficient clearances between the packer in the casing string and reservoir testers. Neft. khoz. 41 no.2:40-42 F '63.
(MIRA 17:8)

KARNAUKHOV, L.A.; KULIGIN, N.A.; LOSHKAREV, K.I.

New design for abrasive-cutting bit. Mash. i neft. obor. no.3: 7-11'63 (MIRA 17:7)

1. Groznenskiy neftyanoy nauchno-issledovatel'skiy institut.

SARKIS'YANTS, T. Kh.; ZUBAREV, A.V.; KULIGIN, N.A.; LOSHKAREV, K.I.

Single-cone bit. Mash. i neft. obor. no.3:3-6 '63 (MIRA 17:7)

1. Groznenskiy neftyanoy nauchno-issledovatel'skiy institut.

LOSHKAREV, K.I.; GERZHBERG, Yu.M.; LUTOVINOV, Yu.A.; SHAN'GIN, A.N.

Using a tool assembly with small annular clearances. Burenie no.5:17-21 '64. (MIRA 18:5)

1. Groznenskiy neftyanoy nauchno-issledovatel'skiy institut.

LOSHKAREV, K.I.; GERZHBERG, Yu.M.; SHAN'GIN, A.N.

Preventing hole deviation of wells in the oil fields of the Chechen-Ingush A.S.S.R. Burenie no.1:18-20 '64.

(MIRA 18:5)

1. Groznenskiy neftyanoy nauchno-issledovatel'skiy institut.

L 17469-63 EPR/EWP(j)/EPF(c)/EWT(1)/EPF(n)-2/EWT(m)/BDS AFFTC/
ASD/IJP(C)/SSD Ps-4/Pc-4/Pr-4/Pu-4 RM/WW

ACCESSION NR: AP3004777 S/0191/63/000/008/0058/0059

AUTHORS: Bogorad, M. L.; Loshkarev, M. A.; Lipov, I. G.

TITLE: Equipment for pulsed high-temperature unilateral heating of samples

SOURCE: Plasticheskiye massy*, no. 8, 1963, 58-59

TOPIC TAGS: high-temperature heating, pulse heating

ABSTRACT: An apparatus is designed to attain a temperature of 1000C in 3 sections with power not exceeding 3.3 kw, is detailed in figs. 1 and 2 of the enclosure. It is especially useful in measuring mechanical properties of materials at elevated temperatures. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 28Aug63 ENCL: 02

SUB CODE: SD NO REF SOV: 000 OTHER: 000

Card 1/1

LOSHKAREV, M.A.; DUBYAGO, Ye.I.

Effect of Cl^- and Ho_3^- ions on the structure of cathode deposits of bismuth. Zhur. prikl. khim. 36 no.11:2483-2491 N '63. (MIRA 17:1)

LOSHKAREV, M.A.; D'YACHENKO, T.F.

Electrocrystallization of lead from a pyrophosphate electrolyte.
Zhur.prikl.khim. 37 no.1:70-76 Ja '64. (MIRA 17:2)

CHERNENKO, V.I.; LOSHKAREV, M.A.; LEVITIN, Zh.N.

Electrode polarization by superimposed a.c. current. Zhur. fiz. khim. 37 no.5:1015-1022 My '63. (MIRA 17:1)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut imeni Dzerzhinskogo.

CHERNOBAYEV, I.P. [Chernobaiev, I.P.]; ANTIPIN, L.N. [Antypin, L.N.]; LOSHKAREV, M.A. [Loshkar'ov, M.O.]

Production of dispersed metal powders by the electrolytic reduction of sparingly soluble compounds in fused media. Dop. AN URSR no.5: 618-623 '63. (MIRA 17:9)

1. Ukrainskiy gosudarstvennyy proyektnyy institut tsvetnoy metallurgii i Zaporozhskiy farmatsevticheskiy institut. Predstavleno akademikom Yu.K.Delimarskim [Delimars'kyi, IU.K.].

L 56291-65 EPA(s)-2/EWT(m)/EWP(w)/EPF(c)/EPR/[illegible]

ACCESSION NR: AT5000831 S/0000/64/000/004/0355/0358

AUTHOR: Loshkarev, M. A.; Bogorad, M. L.

TITLE: Testing of glass fabric filled laminated plastics under thermal impact

SOURCE: Nauchnoye soveshchaniye po teplovym napryazheniyam v elementakh konstruk- [illegible]th. Teplovyye napryazheniya v elem[illegible] [illegible] Kiev, Naukova dumka, 1964,

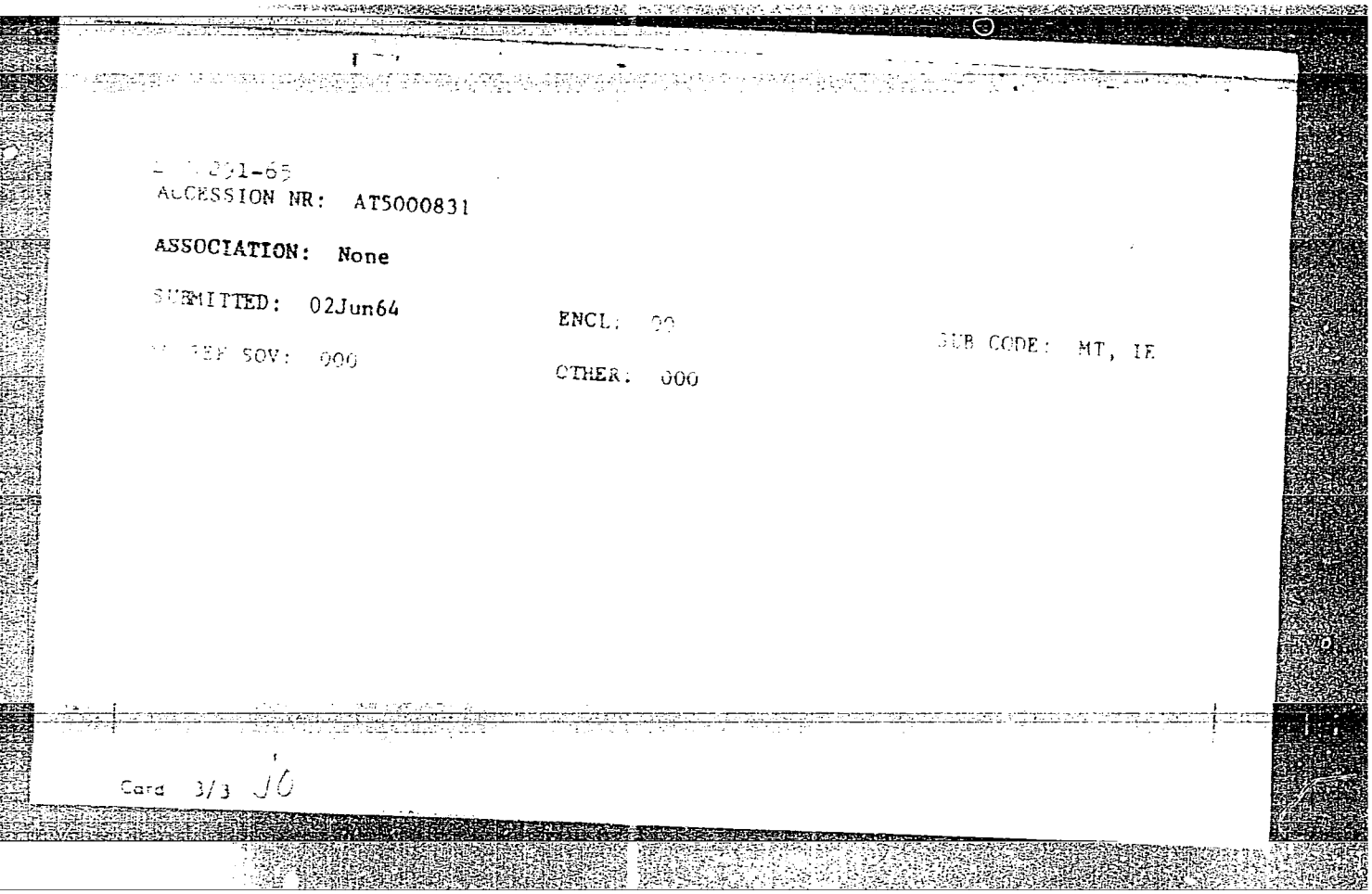
TOPIC TAGS: glass fabric, laminated plastic, laminated plastic impact strength, thermal failure, laminated plastic thermal stress, glass plastic, glass textolite

ABSTRACT: A very important problem in the use of glass fabric filled laminated plastics is one-sided heating with a sharp rise in temperature during a short time when the material has to resist thermal impact. Failure due to thermal impact is a complex function of temperature gradients, geometry of the sample, as well as the mechanical properties of the material. The present paper generalizes the results of several laboratory investigations of glass fabric filled laminated plastics under thermal impact. The sample was heated at a relatively constant rate of [illegible] deg/sec. on one side with the possibility of repeating the temperature cycles. A wiring diagram for the test is illustrated. [illegible] nichrome plate was heated

ACCESSION NR: AT5000831

to the required temperature, the circuit was disconnected and the temperature was checked by a thermocouple. A time relay in the circuit permitted a change in the duration of heating or of the thermal impact within certain limits. At present, plastics reinforced by glass fiber are being used in different fields of engineering. This material has a high ratio of strength to specific gravity, as well as high thermal insulation properties. Three types of glass fabric filled plastics were tested: (SVAM) anisotropic glass fabric filled plastic on a phenol epoxy binder; (STR) glass textolite on a polyester; and (VFT-S) glass textolite on a phenol furfural tar. Samples 3 mm thick [illegible] at a rate of 16 mm/sec and a temperature of 400, 600, 700 and 800C at a rate of 300 deg/sec. for a duration of either 15 or 60 seconds. Analysis of the results indicates that even during one-sided heating at up to 600C for 60 seconds, these materials retain a large proportion of their ultimate strength: SVAM up to 75%, STR up to 52% and VFT-S up to [illegible]%. At 600C for 15 seconds, the polyester begins to burn in all the tested plastics. Thus, it can be seen that not only the temperature but also the duration of heating affect the strength of the plastics. For a short time, the plastics may resist the action of very high temperatures and show a very small drop in strength. This important property of glass fabric filled laminated plastics allows them to be used as heat-insulating and structural materials under thermal impact conditions. Orig. art. has: 4 figures.

Card 2/3



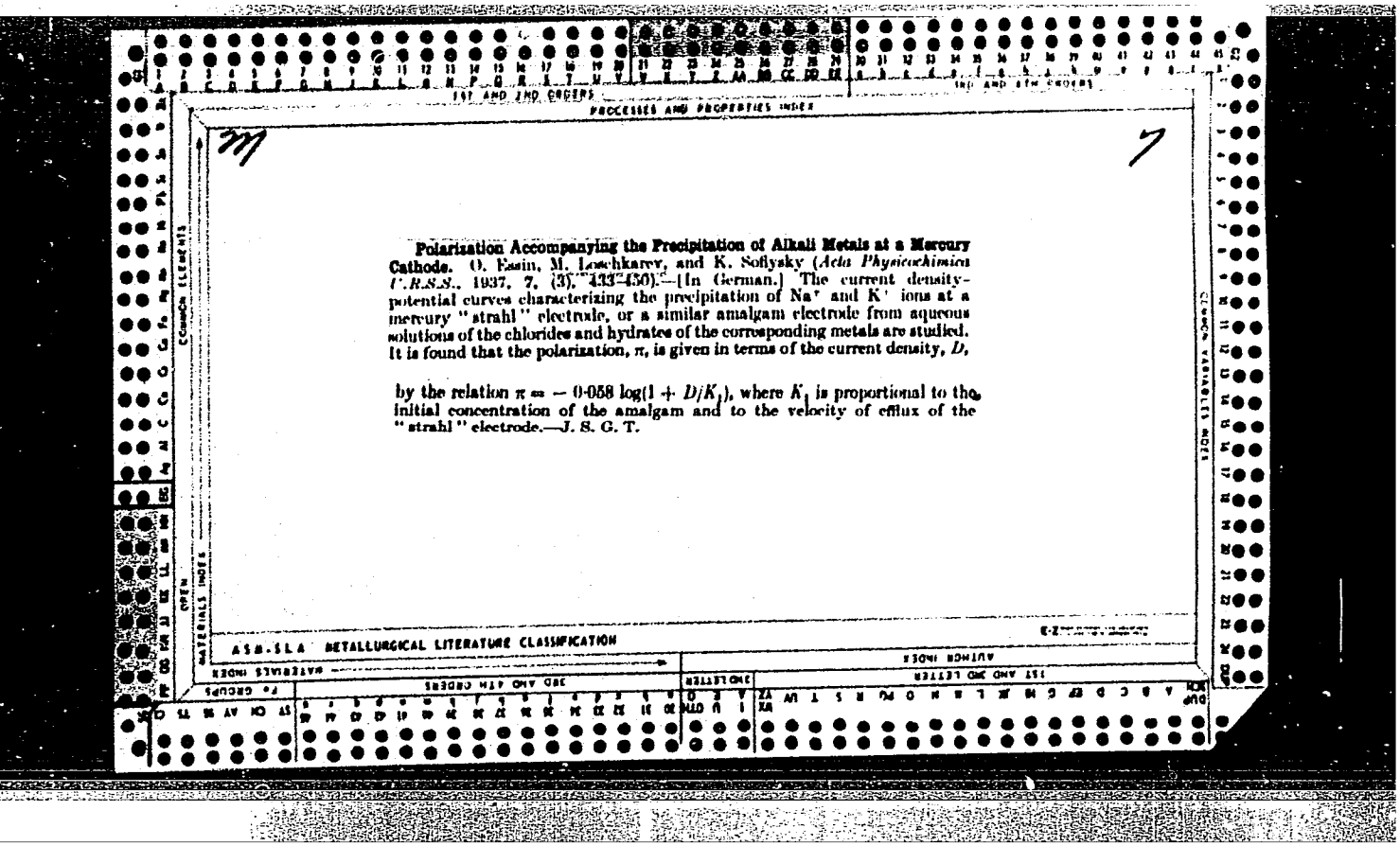
ACCESSION NR: AT5000831

ASSOCIATION: None

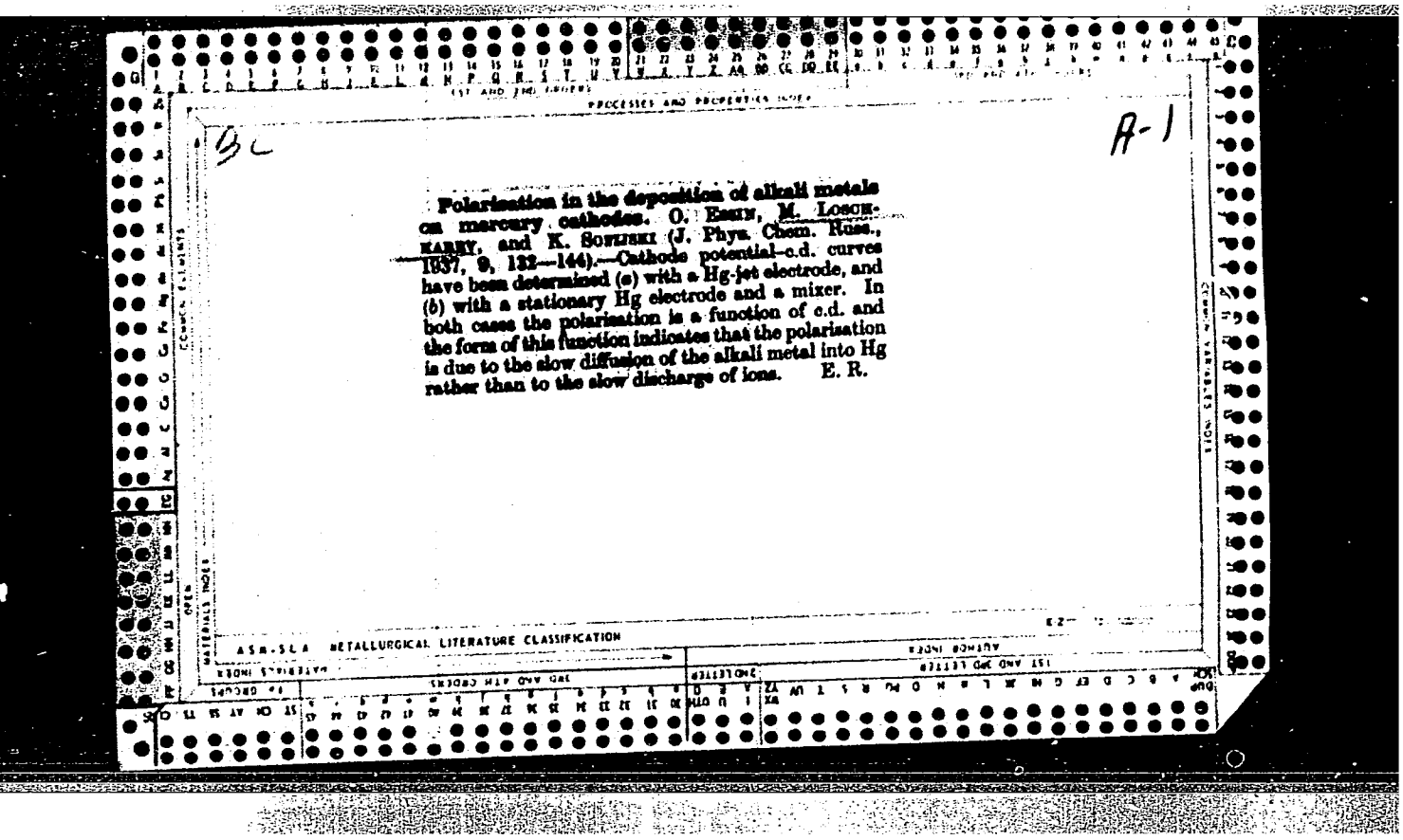
SUBMITTED: 02Jun64 ENCL: 00 SUB CODE: MT, IE

NO REF SOV: 000 OTHER: 000

Card 3/3 JO



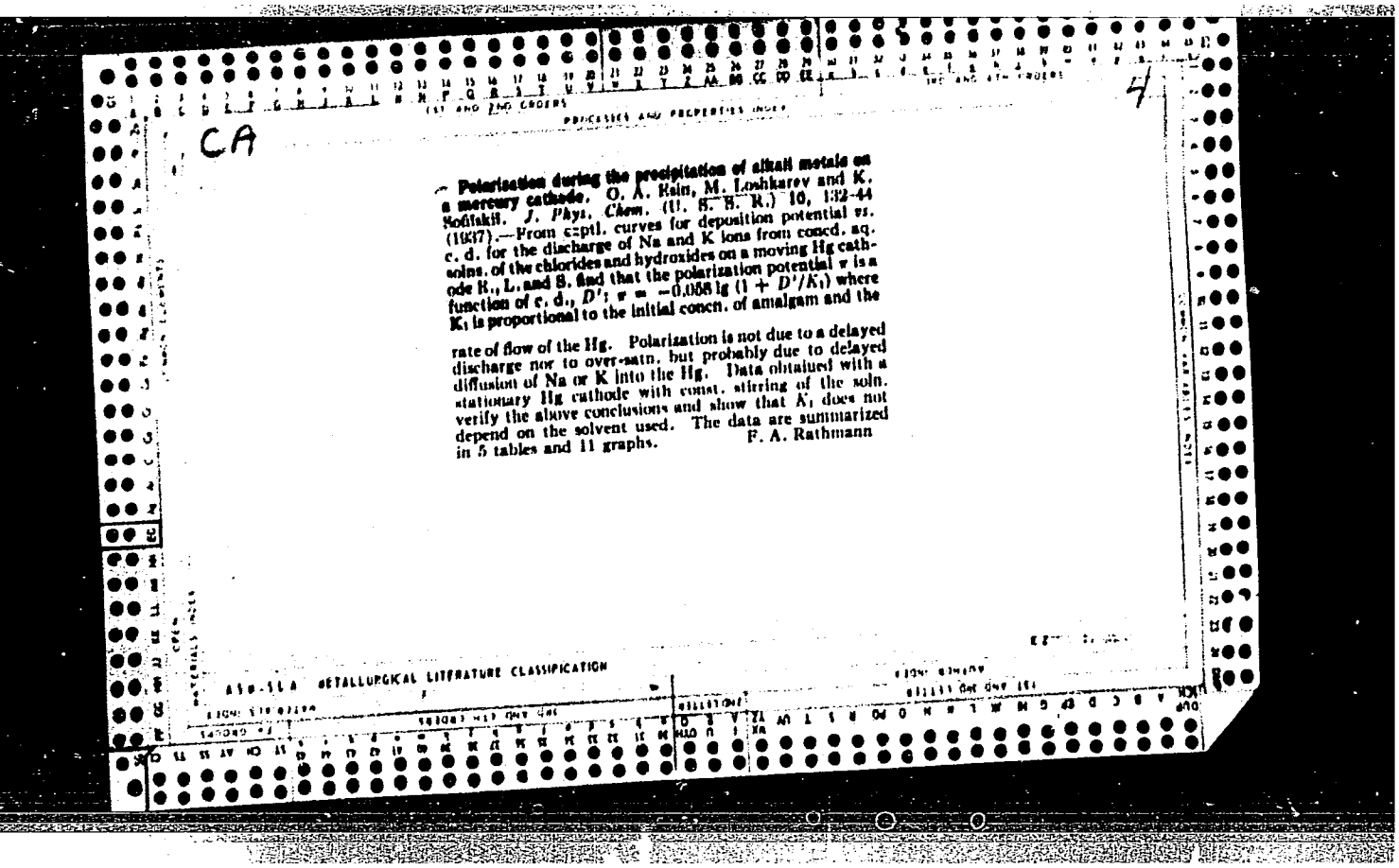
Polarization Accompanying the Precipitation of Alkali Metals at a Mercury Cathode. O. Essin, M. Loschkarev, and K. Sofiysky (*Acta Physicochimica U.R.S.S.*, 1937, 7, (3), 433–450).—[In German.] The current density-potential curves characterizing the precipitation of Na^+ and K^+ ions at a mercury "strahl" electrode, or a similar amalgam electrode from aqueous solutions of the chlorides and hydrates of the corresponding metals are studied. It is found that the polarization, π, is given in terms of the current density, D, by the relation $\pi = -0{\cdot}058 \log(1 + D/K_1)$, where K_1 is proportional to the initial concentration of the amalgam and to the velocity of efflux of the "strahl" electrode.—J. S. G. T.



A-1

Polarisation in the deposition of alkali metals on mercury cathodes. O. Essin, M. Loschkarev, and K. Sovlinski (J. Phys. Chem. Russ., 1937, 9, 132—144).—Cathode potential–c.d. curves have been determined (*a*) with a Hg-jet electrode, and (*b*) with a stationary Hg electrode and a mixer. In both cases the polarisation is a function of c.d. and the form of this function indicates that the polarisation is due to the slow diffusion of the alkali metal into Hg rather than to the slow discharge of ions. E. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

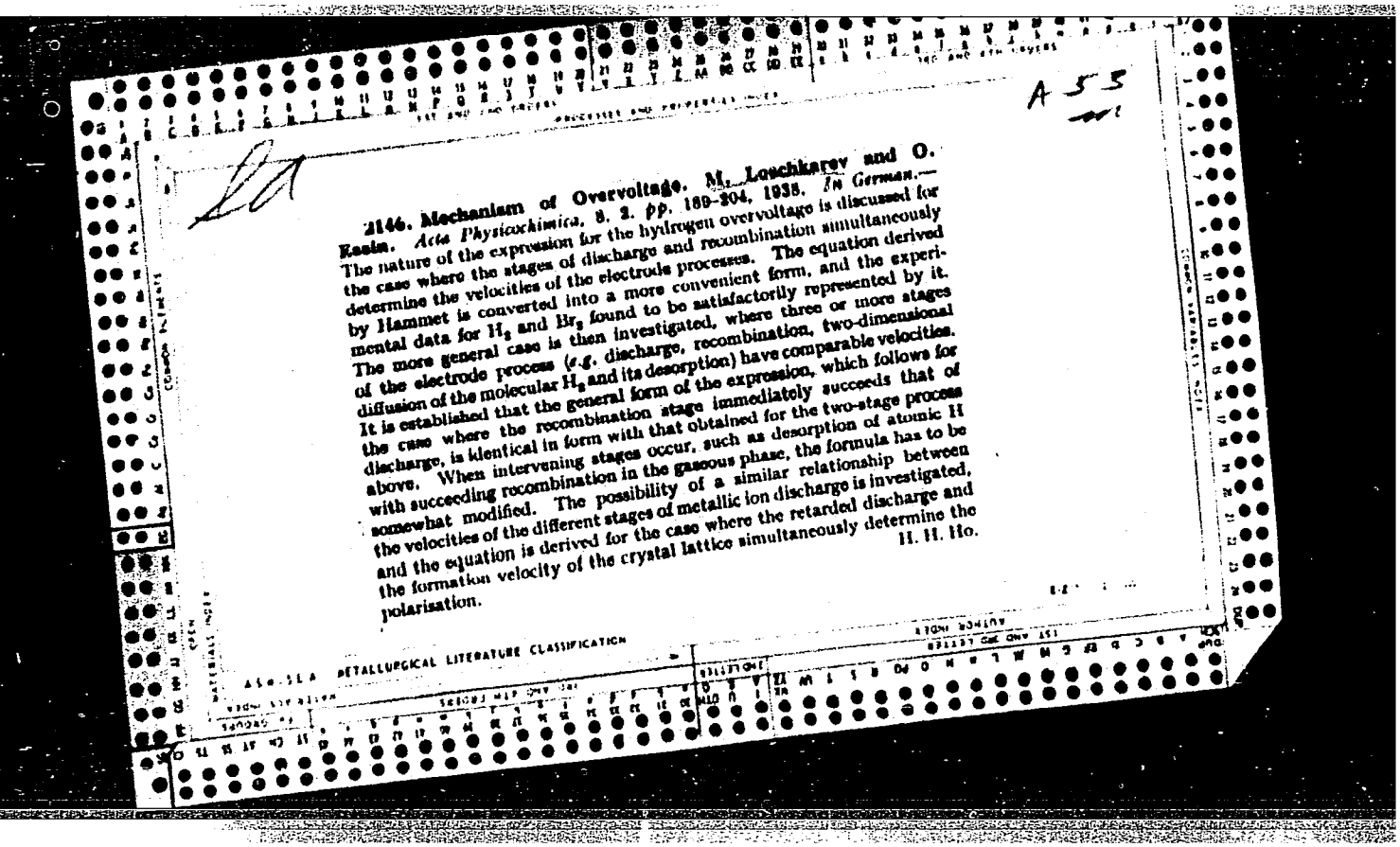


CA

4

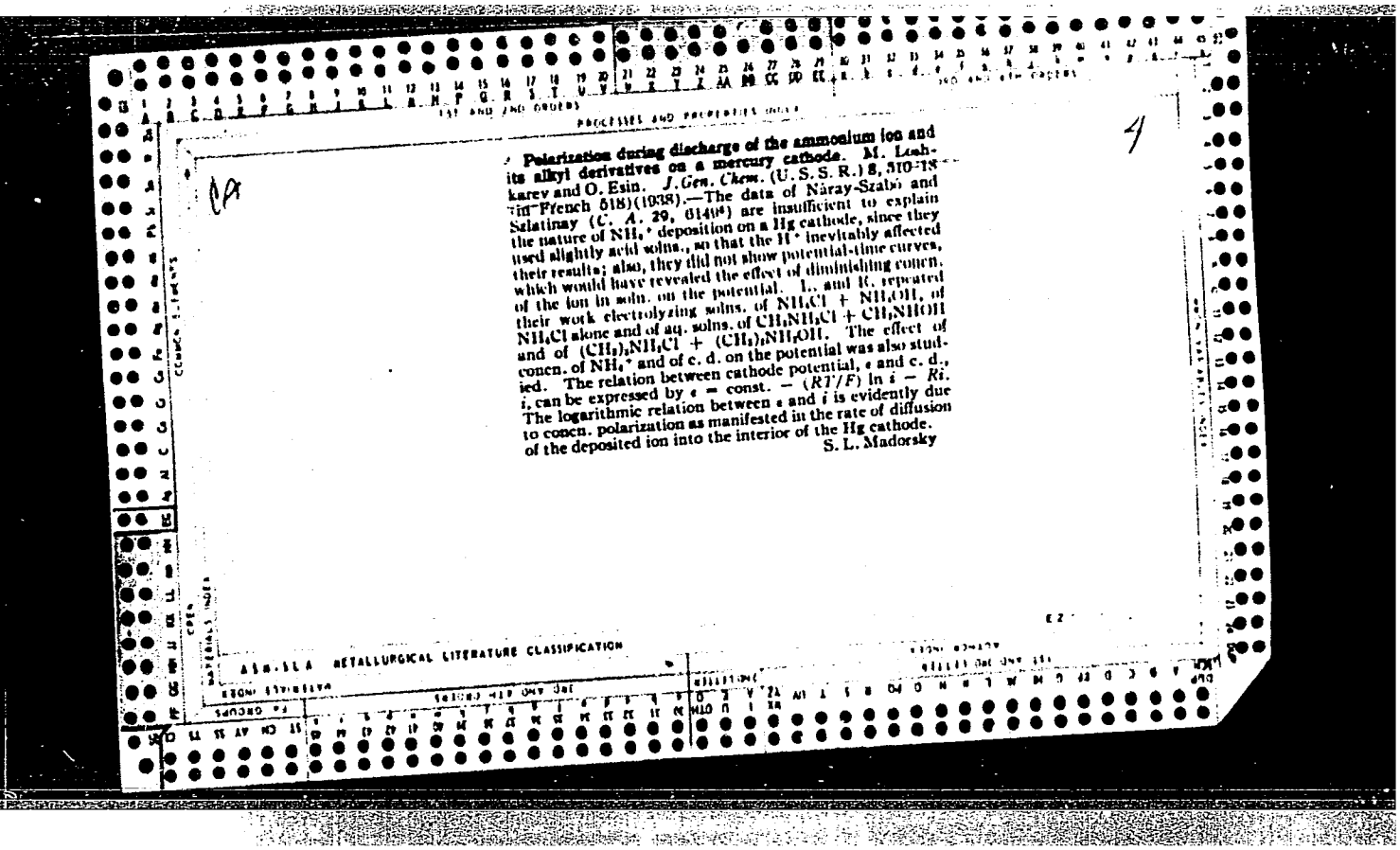
Polarisation during the precipitation of alkali metals on a mercury cathode. O. A. Esin, M. Loshkarev and K. Nodiakii. *J. Phys. Chem.* (U. S. S. R.) 10, 132–44 (1937).—From e.m.f. curves for deposition potential vs. c. d. for the discharge of Na and K ions from concd. aq. solns. of the chlorides and hydroxides on a moving Hg cathode E., L. and S. find that the polarization potential v is a function of c. d., D; $v = -0.058 \lg (1 + D'/K_1)$ where K_1 is proportional to the initial concn. of amalgam and the rate of flow of the Hg. Polarization is not due to a delayed discharge nor to over-satn. but probably due to delayed diffusion of Na or K into the Hg. Data obtained with a stationary Hg cathode with const. stirring of the soln. verify the above conclusions and show that K_1 does not depend on the solvent used. The data are summarized in 5 tables and 11 graphs. F. A. Rathmann

A10-51A METALLURGICAL LITERATURE CLASSIFICATION



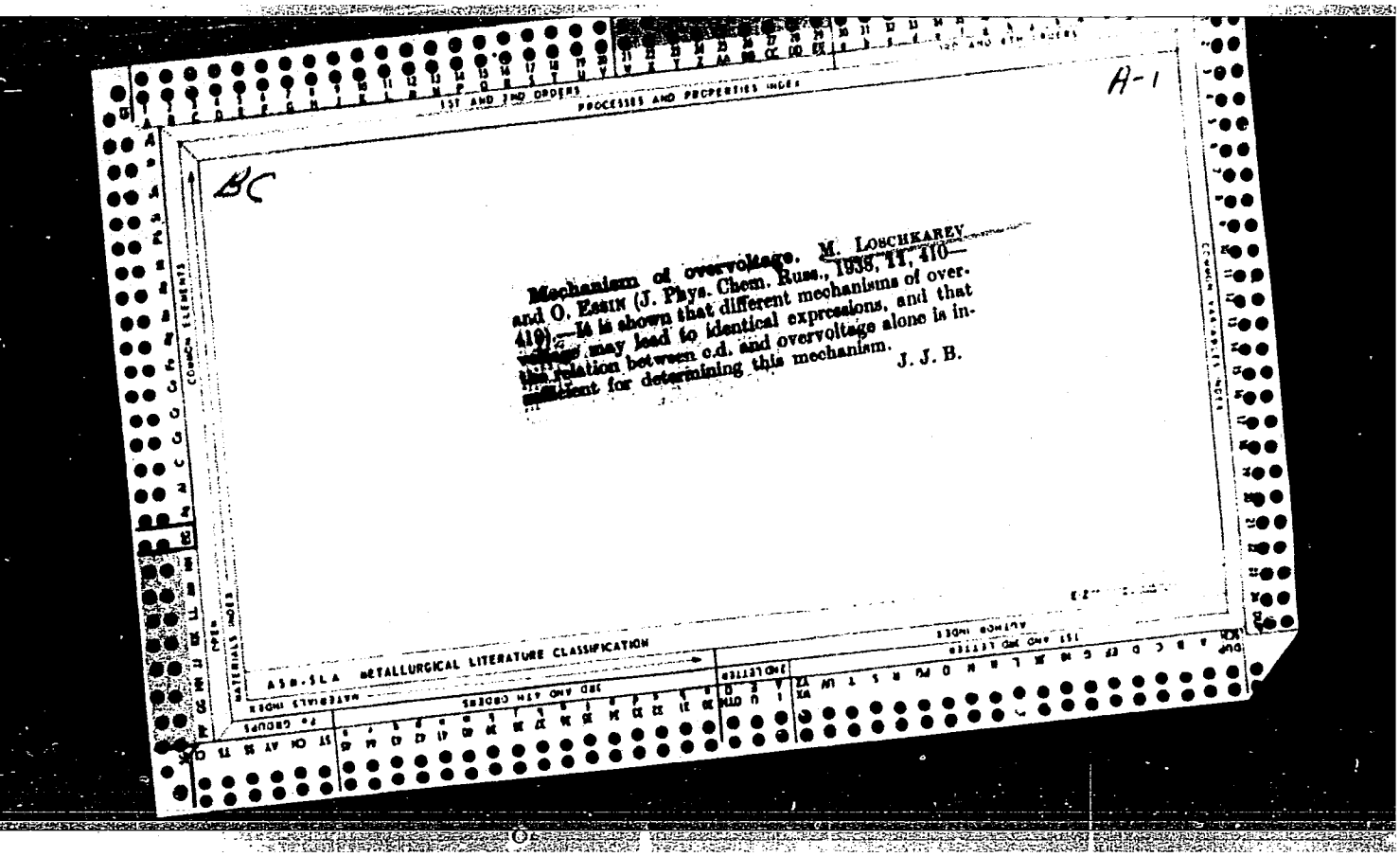
2146. **Mechanism of Overvoltage.** M. Loschkarev and O. Kasin. *Acta Physicochimica*, 8, 2, pp. 189-204, 1938. *In German.*—The nature of the expression for the hydrogen overvoltage is discussed for the case where the stages of discharge and recombination simultaneously determine the velocities of the electrode processes. The equation derived by Hammet is converted into a more convenient form, and the experimental data for H_2 and Br_2 found to be satisfactorily represented by it. The more general case is then investigated, where three or more stages of the electrode process (*e.g.* discharge, recombination, two-dimensional diffusion of the molecular H_2 and its desorption) have comparable velocities. It is established that the general form of the expression, which follows for the case where the recombination stage immediately succeeds that of discharge, is identical in form with that obtained for the two-stage process above. When intervening stages occur, such as desorption of atomic H with succeeding recombination in the gaseous phase, the formula has to be somewhat modified. The possibility of a similar relationship between the velocities of the different stages of metallic ion discharge is investigated, and the equation is derived for the case where the retarded discharge and the formation velocity of the crystal lattice simultaneously determine the polarisation.

H. H. Ho.



Polarization during discharge of the ammonium ion and its alkyl derivatives on a mercury cathode. M. Loshkarev and O. Esin. *J. Gen. Chem.* (U. S. S. R.) 8, 510-18 (in French 518)(1938).—The data of Náray-Szabó and Szlatinay (*C. A.* 29, 6140[8]) are insufficient to explain the nature of NH_4^+ deposition on a Hg cathode, since they used slightly acid solns., so that the H^+ inevitably affected their results; also, they did not show potential-time curves, which would have revealed the effect of diminishing concn. of the ion in soln. on the potential. L. and E. repeated their work electrolyzing solns. of NH_4Cl + NH_4OH, of NH_4Cl alone and of aq. solns. of CH_3NH_2Cl + CH_3NHOH and of $(CH_3)_2NH_2Cl$ + $(CH_3)_2NH_2OH$. The effect of concn. of NH_4^+ and of c. d. on the potential was also studied. The relation between cathode potential, ϵ and c. d., i, can be expressed by ϵ = const. − (RT/F) ln i − Ri. The logarithmic relation between ϵ and i is evidently due to concn. polarization as manifested in the rate of diffusion of the deposited ion into the interior of the Hg cathode.

S. L. Madorsky

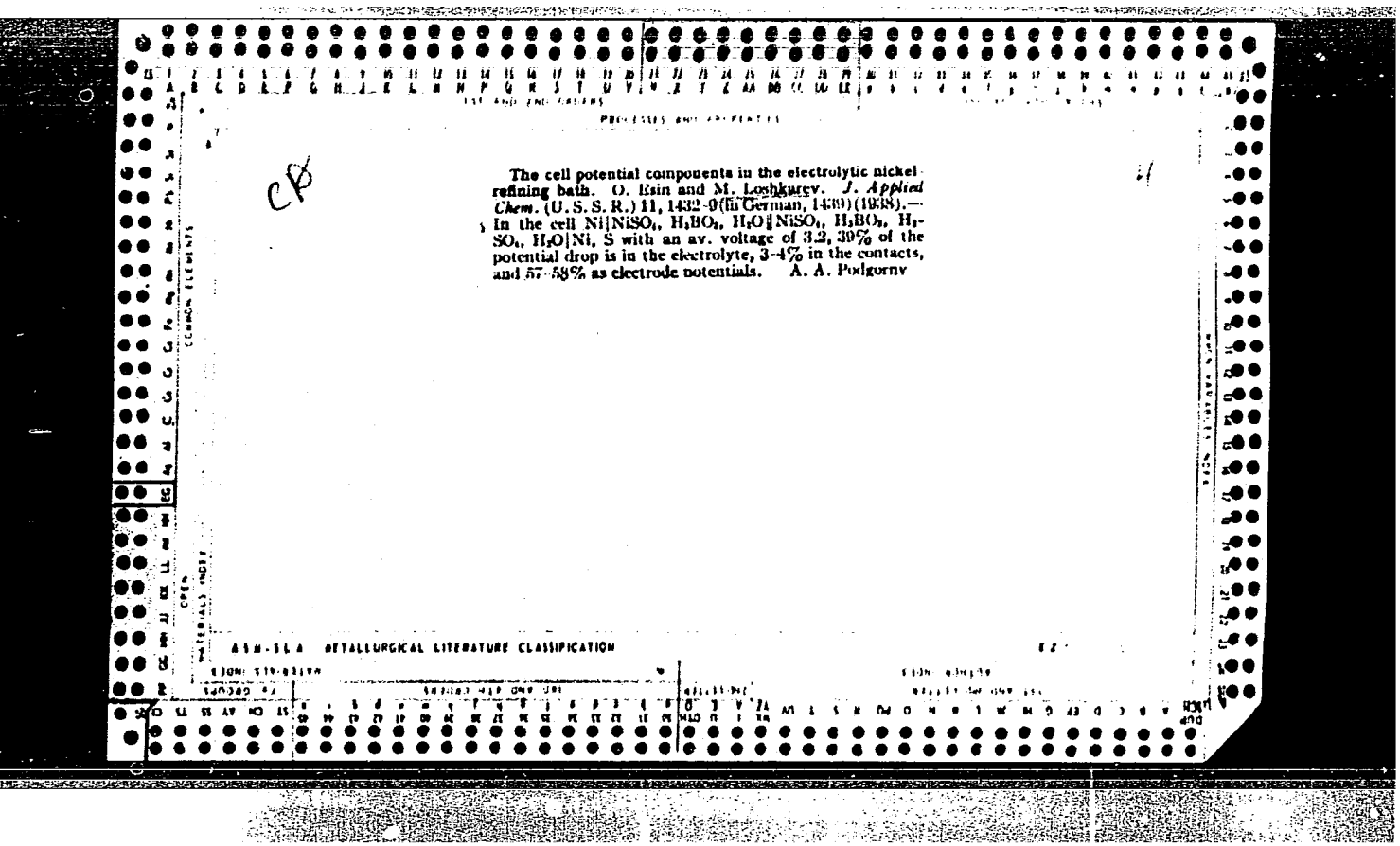


A-1

BC

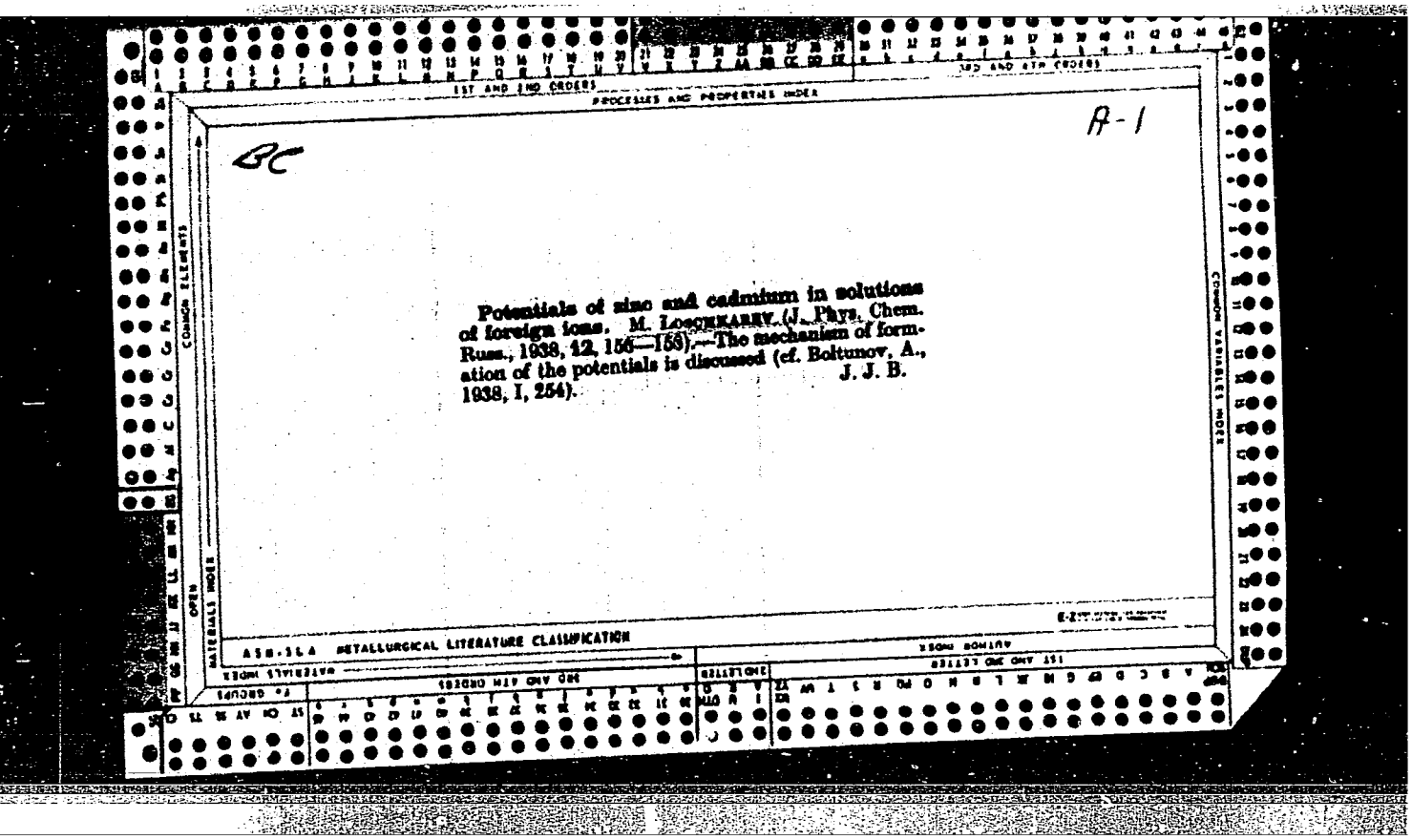
Mechanism of overvoltage. M. LOSCHKAREV and O. ESSIN (J. Phys. Chem. Russ., 1938, 11, 410—419).—It is shown that different mechanisms of overvoltage may lead to identical expressions, and that the relation between c.d. and overvoltage alone is insufficient for determining this mechanism.

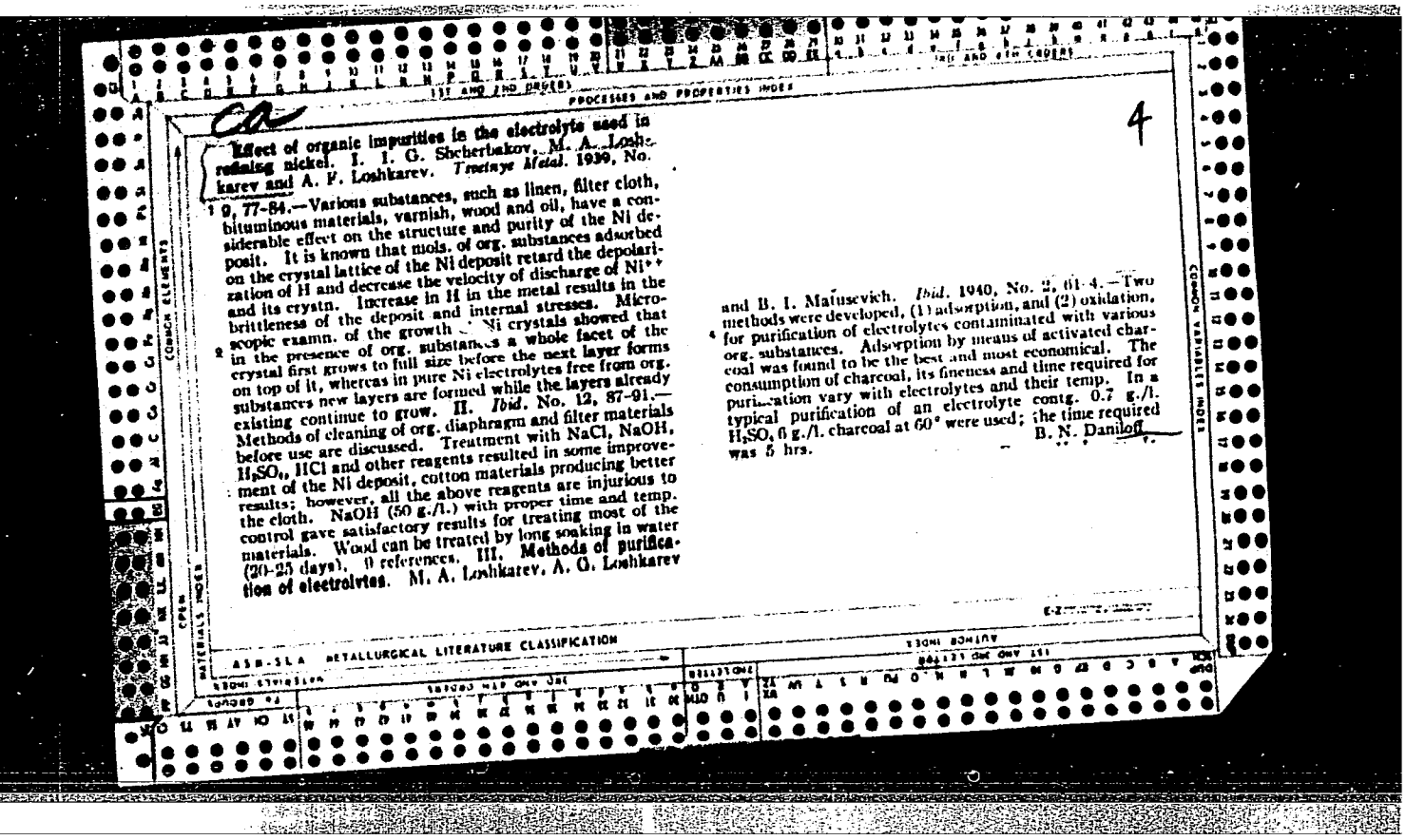
J. J. B.



The cell potential components in the electrolytic nickel-refining bath. O. Esin and M. Loshkarev. *J. Applied Chem.* (U.S.S.R.) 11, 1432-9 (in German, 1439) (1938).—In the cell Ni|$NiSO_4$, H_3BO_3, H_2O‖$NiSO_4$, H_3BO_3, H_2SO_4, H_2O|Ni, S with an av. voltage of 3.2, 39% of the potential drop is in the electrolyte, 3-4% in the contacts, and 57-58% as electrode potentials. A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



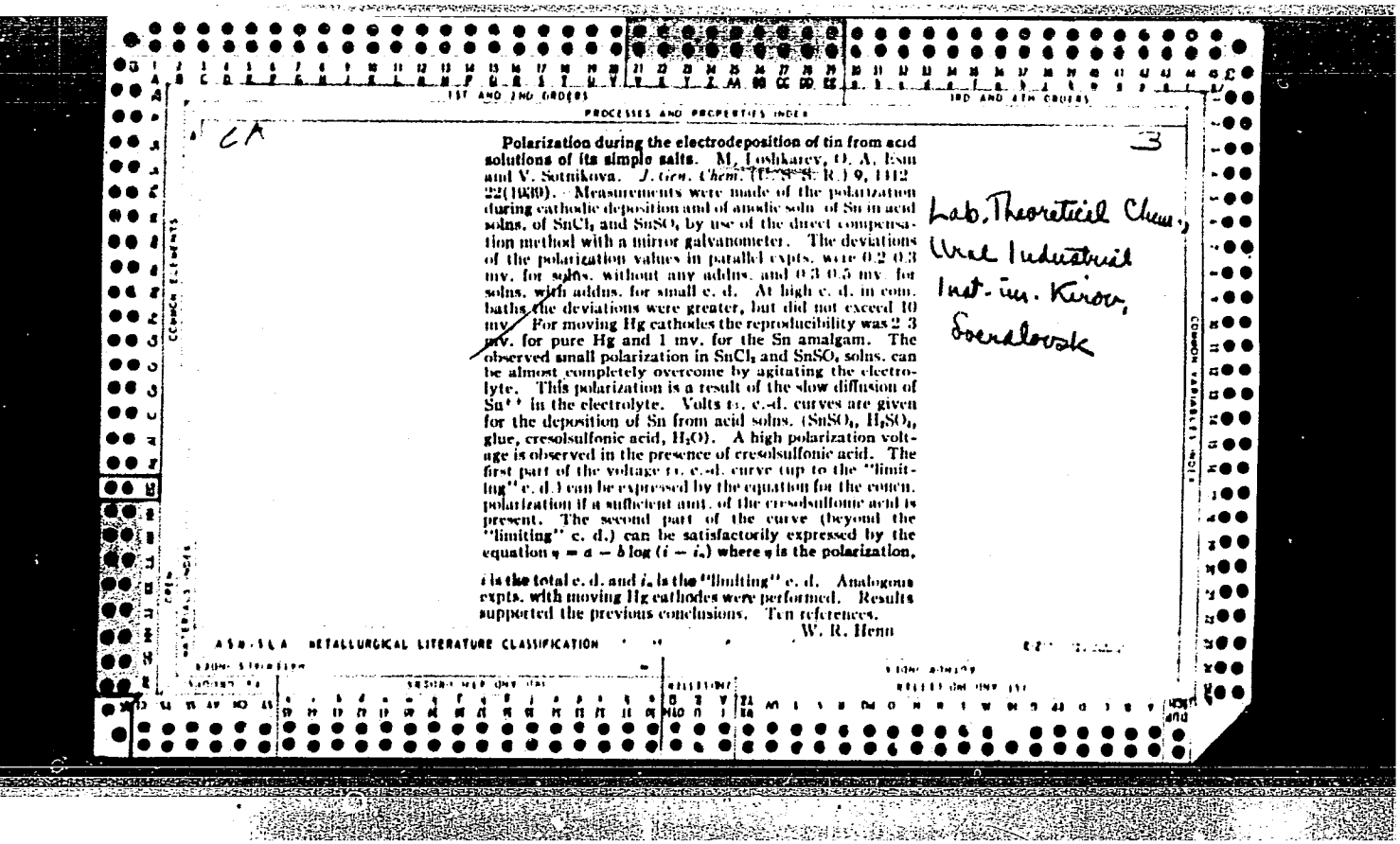


CR

4

Effect of organic impurities in the electrolyte used in refining nickel. I. I. G. Shcherbakov, M. A. Loshkarev and A. F. Loshkarev. *Tsvetnye Metal.* 1939, No. 9, 77–84.—Various substances, such as linen, filter cloth, bituminous materials, varnish, wood and oil, have a considerable effect on the structure and purity of the Ni deposit. It is known that mols. of org. substances adsorbed on the crystal lattice of the Ni deposit retard the depolarization of H and decrease the velocity of discharge of Ni^{++} and its crystn. Increase in H in the metal results in the brittleness of the deposit and internal stresses. Microscopic examn. of the growth of Ni crystals showed that in the presence of org. substances a whole facet of the crystal first grows to full size before the next layer forms on top of it, whereas in pure Ni electrolytes free from org. substances new layers are formed while the layers already existing continue to grow. II. *Ibid.* No. 12, 87–91.—Methods of cleaning of org. diaphragm and filter materials before use are discussed. Treatment with NaCl, NaOH, H_2SO_4, HCl and other reagents resulted in some improvement of the Ni deposit, cotton materials producing better results; however, all the above reagents are injurious to the cloth. NaOH (50 g./l.) with proper time and temp. control gave satisfactory results for treating most of the materials. Wood can be treated by long soaking in water (20–25 days). 9 references. III. **Methods of purification of electrolytes.** M. A. Loshkarev, A. G. Loshkarev and B. I. Matusevich. *Ibid.* 1940, No. 2, 61–4.—Two methods were developed, (1) adsorption, and (2) oxidation, for purification of electrolytes contaminated with various org. substances. Adsorption by means of activated charcoal was found to be the best and most economical. The consumption of charcoal, its fineness and time required for purification vary with electrolytes and their temp. In a typical purification of an electrolyte contg. 0.7 g./l. H_2SO_4 6 g./l. charcoal at 60° were used; the time required was 5 hrs.

B. N. Daniloff



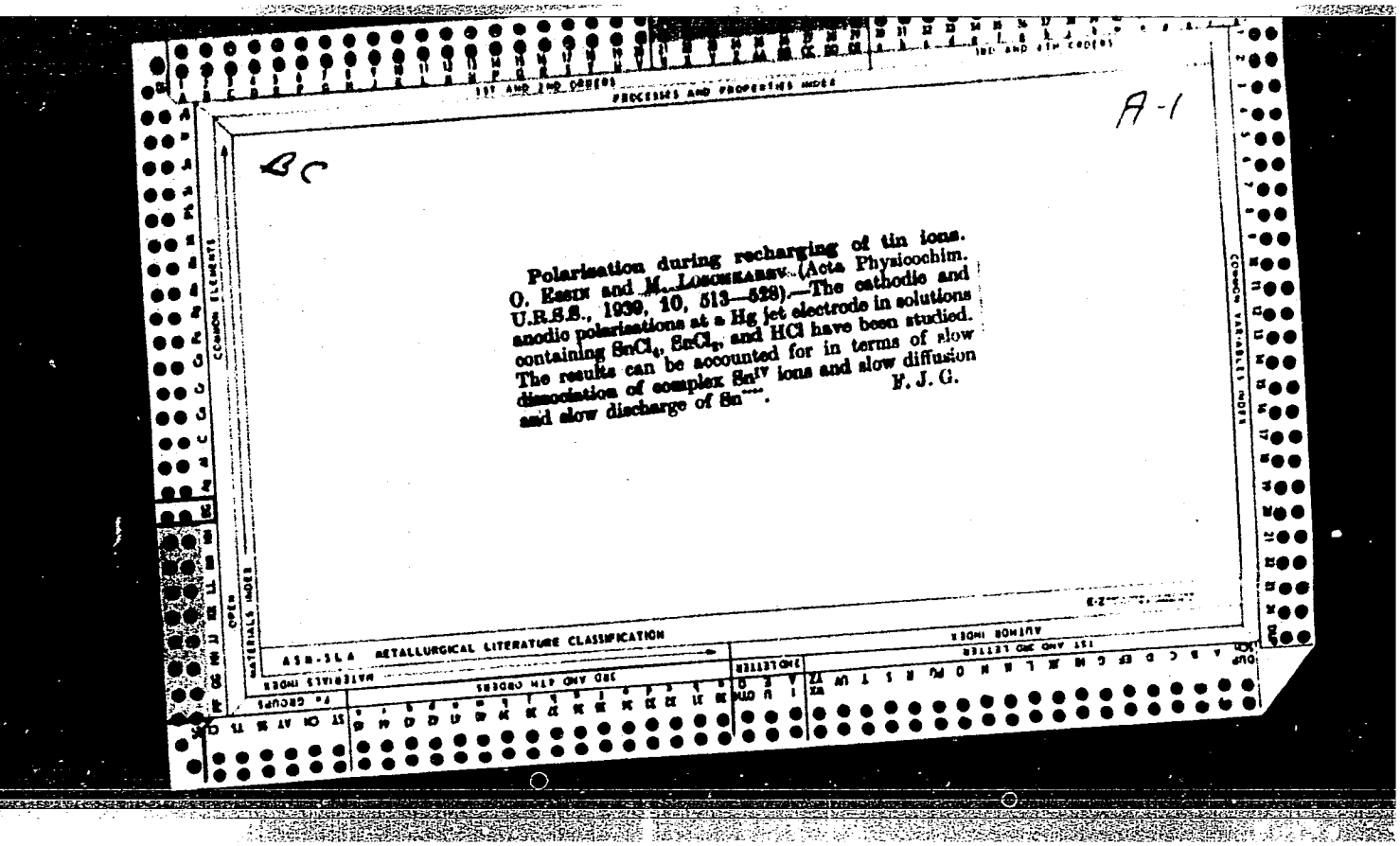
CA

3

Polarization during the electrodeposition of tin from acid solutions of its simple salts. M. Loshkarev, O. A. Esin and V. Sotnikova. *J. Gen. Chem. (U.S.S.R.)* 9, 1112-22(1939). Measurements were made of the polarization during cathodic deposition and of anodic soln. of Sn in acid solns. of $SnCl_2$ and $SnSO_4$ by use of the direct compensation method with a mirror galvanometer. The deviations of the polarization values in parallel expts. were 0.2-0.3 mv. for solns. without any addns. and 0.3-0.5 mv. for solns. with addns. for small c. d. At high c. d. in com. baths the deviations were greater, but did not exceed 10 mv. For moving Hg cathodes the reproducibility was 2-3 mv. for pure Hg and 1 mv. for the Sn amalgam. The observed small polarization in $SnCl_2$ and $SnSO_4$ solns. can be almost completely overcome by agitating the electrolyte. This polarization is a result of the slow diffusion of Sn^{++} in the electrolyte. Volts vs. c.d. curves are given for the deposition of Sn from acid solns. ($SnSO_4$, H_2SO_4, glue, cresolsulfonic acid, H_2O). A high polarization voltage is observed in the presence of cresolsulfonic acid. The first part of the voltage vs. c.d. curve (up to the "limiting" c. d.) can be expressed by the equation for the concn. polarization if a sufficient amt. of the cresolsulfonic acid is present. The second part of the curve (beyond the "limiting" c. d.) can be satisfactorily expressed by the equation $\eta = a - b \log (i - i_0)$ where η is the polarization, i is the total c. d. and i_0 is the "limiting" c. d. Analogous expts. with moving Hg cathodes were performed. Results supported the previous conclusions. Ten references.

W. R. Henn

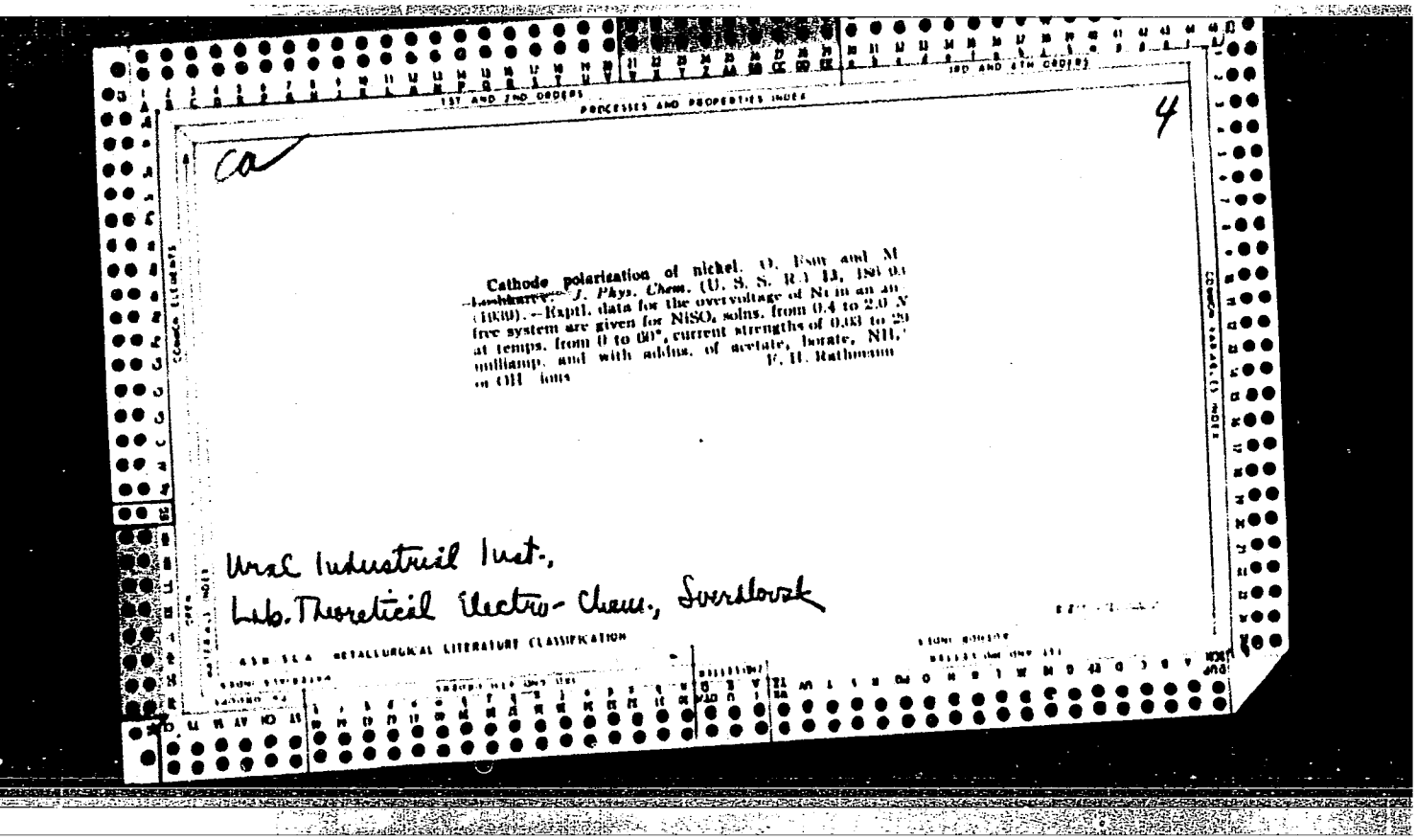
Lab. Theoretical Chem., Ural Industrial Inst. im. Kirov, Sverdlovsk



A-1

AC

Polarisation during recharging of tin ions. O. Essin and M. Loschkarev. (Acta Physicochim. U.R.S.S., 1939, 10, 513—528).—The cathodic and anodic polarisations at a Hg jet electrode in solutions containing $SnCl_4$, $SnCl_2$, and HCl have been studied. The results can be accounted for in terms of slow dissociation of complex Sn^{IV} ions and slow diffusion and slow discharge of Sn^{++}. F. J. G.



PROCESSES AND PROPERTIES INDEX

4

Ca

Cathode polarization of nickel. O. Esin and M [illegible]. *J. Phys. Chem.* (U. S. S. R.) 13, 180 (1939).—Rapid. data for the overvoltage of Ni in an air-free system are given for $NiSO_4$ solns. from 0.4 to 2.0 *N* at temps. from 0 to 60°, current strengths of 0.03 to 20 milliamp. and with additns. of acetate, borate, NH_4^+ or OH ions. V. H. Rathmann

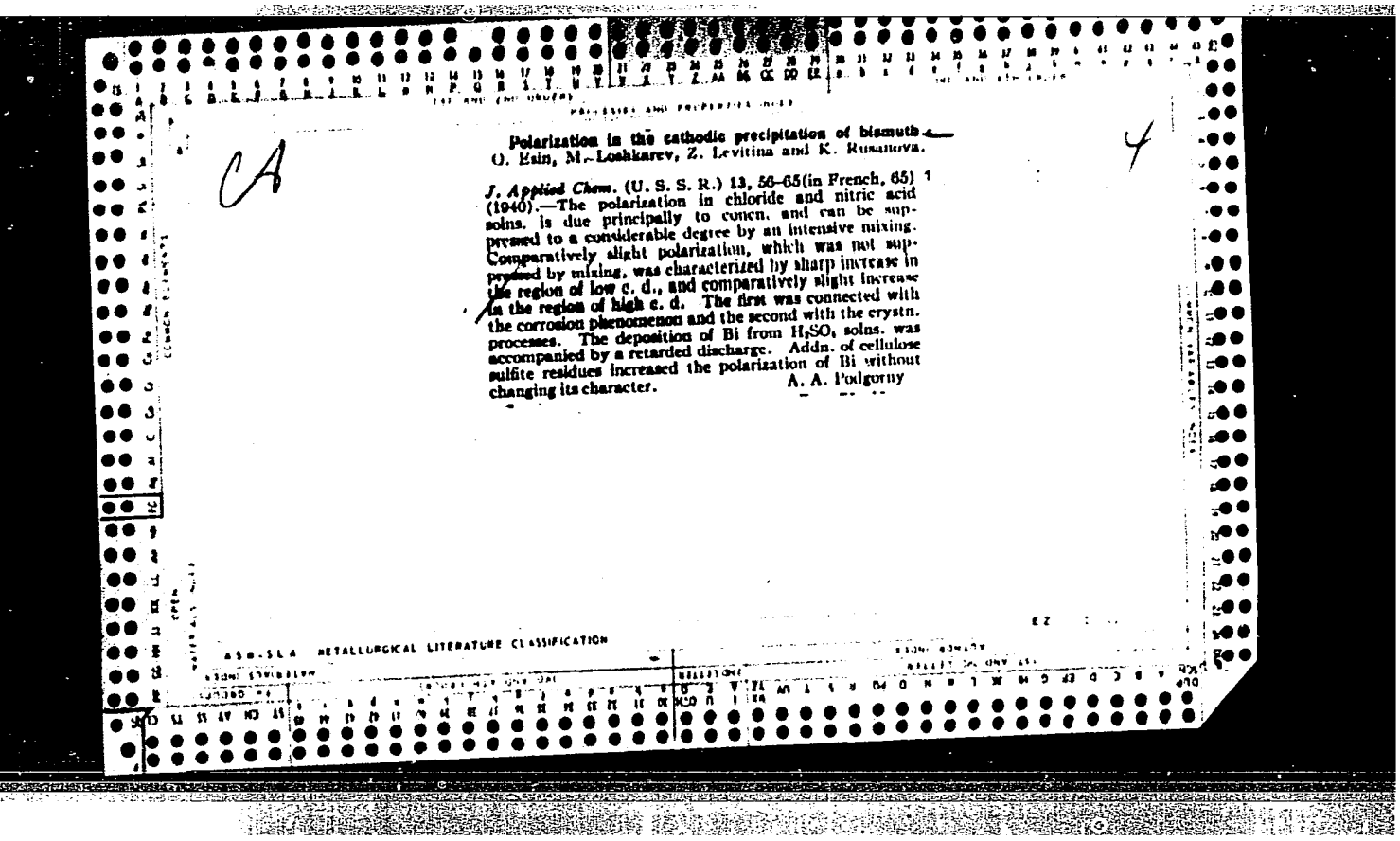
Ural Industrial Inst.,
Lab. Theoretical Electro-Chem., Sverdlovsk

6 SR 5 6 A METALLURGICAL LITERATURE CLASSIFICATION

SHCHERBAKOV, I. G.: LOSHKAREV, M. A.; LOSHKAREV, A. G.

"The Role of Some Organic Admixtures in the Electrolyte Used in Refining Nickel", Tsvet. Met. 14, No. 9, Sept. 1939.

Report U-1506, 4 Oct. 1951.



CA

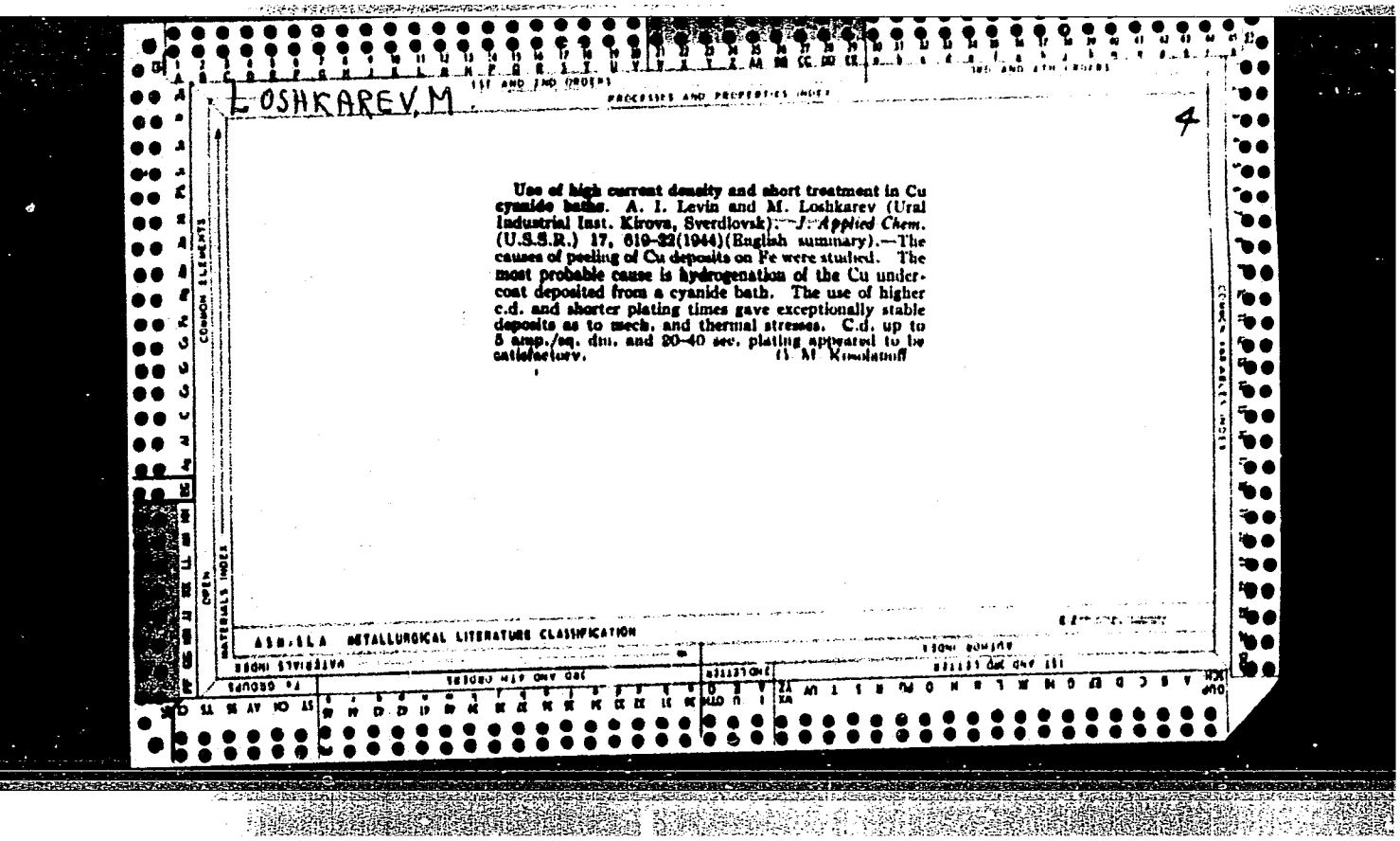
4

Polarization in the cathodic precipitation of bismuth.
O. Esin, M. Loshkarev, Z. Levitina and K. Rusanova.

J. Applied Chem. (U. S. S. R.) 13, 56–65(in French, 65) (1940).—The polarization in chloride and nitric acid solns. is due principally to concn. and can be suppressed to a considerable degree by an intensive mixing. Comparatively slight polarization, which was not suppressed by mixing, was characterized by sharp increase in the region of low c. d., and comparatively slight increase in the region of high c. d. The first was connected with the corrosion phenomenon and the second with the crystn. processes. The deposition of Bi from H_2SO_4 solns. was accompanied by a retarded discharge. Addn. of cellulose sulfite residues increased the polarization of Bi without changing its character.

A. A. Pol'gorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

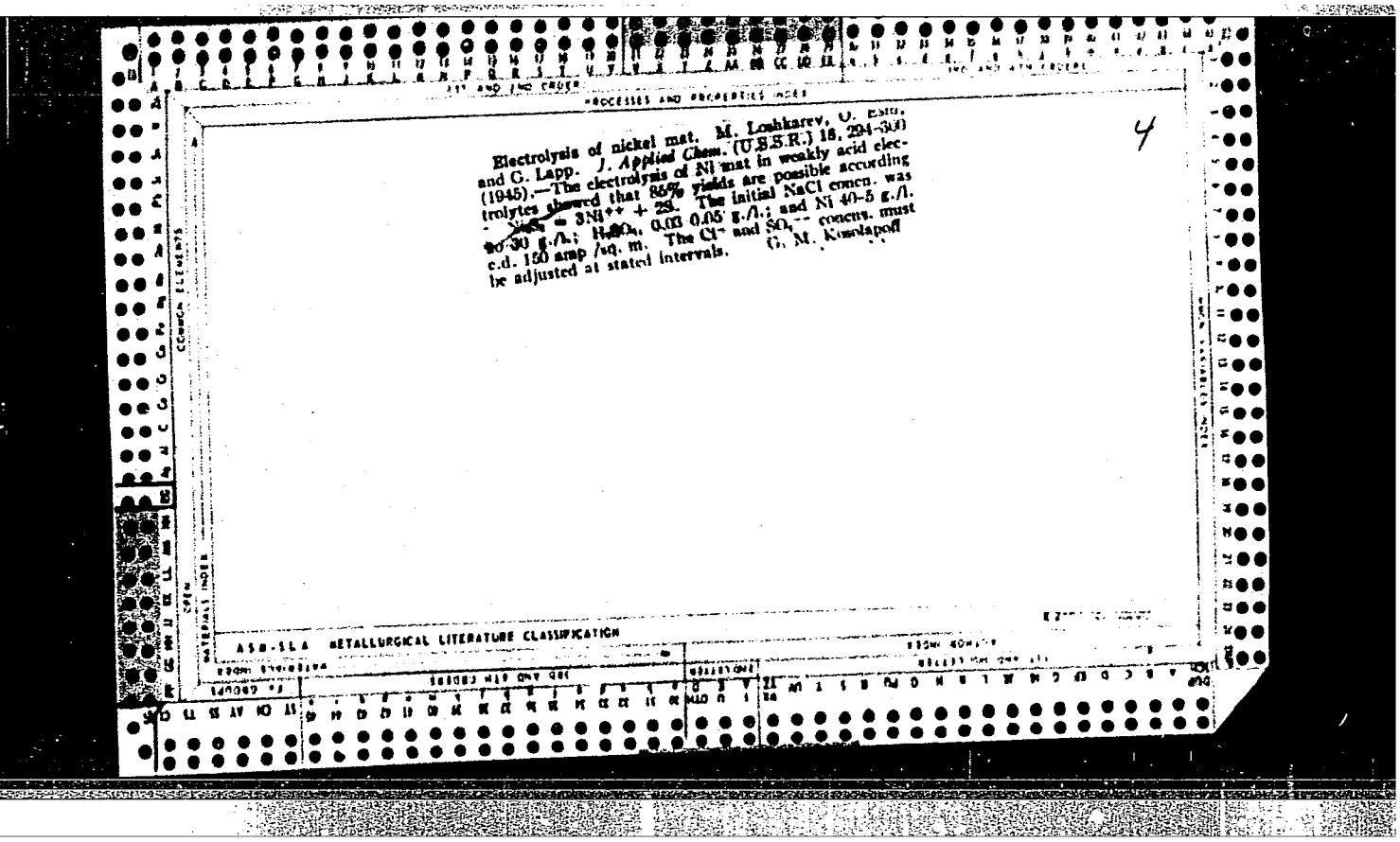


LOSHKAREV, M

4

Use of high current density and short treatment in Cu cyanide baths. A. I. Levin and M. Loshkarev (Ural Industrial Inst. Kirova, Sverdlovsk).—*J. Applied Chem.* (U.S.S.R.) 17, 619–22(1944)(English summary).—The causes of peeling of Cu deposits on Fe were studied. The most probable cause is hydrogenation of the Cu undercoat deposited from a cyanide bath. The use of higher c.d. and shorter plating times gave exceptionally stable deposits as to mech. and thermal stresses. C.d. up to 5 amp./sq. dm. and 20–40 sec. plating appeared to be satisfactory. (J. M. Kissalaniff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

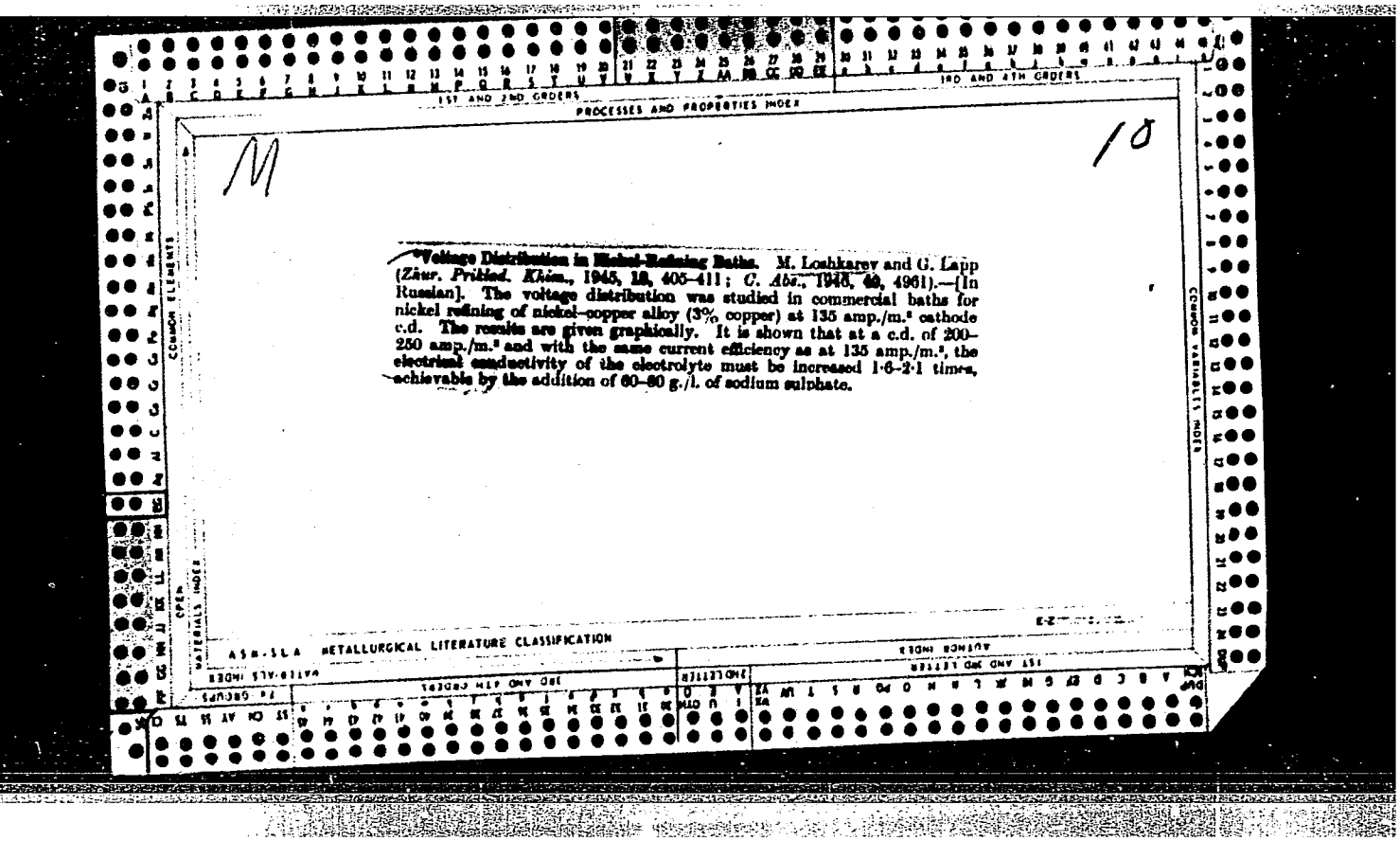


Electrolysis of nickel mat. M. Loshkarev, O. Esin, and G. Lapp. *J. Applied Chem.* (U.S.S.R.) 18, 294-300 (1945).—The electrolysis of Ni mat in weakly acid electrolytes showed that 86% yields are possible according to $NiS + 3Ni^{++} + 2S$. The initial NaCl concn. was 30-50 g./l.; H_2BO_3, 0.03-0.05 g./l.; and Ni 40-5 g./l. c.d. 150 amp./sq. m. The Cl^- and SO_4^{--} concns. must be adjusted at stated intervals.

G. M. Kondakoff

4

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



M

10

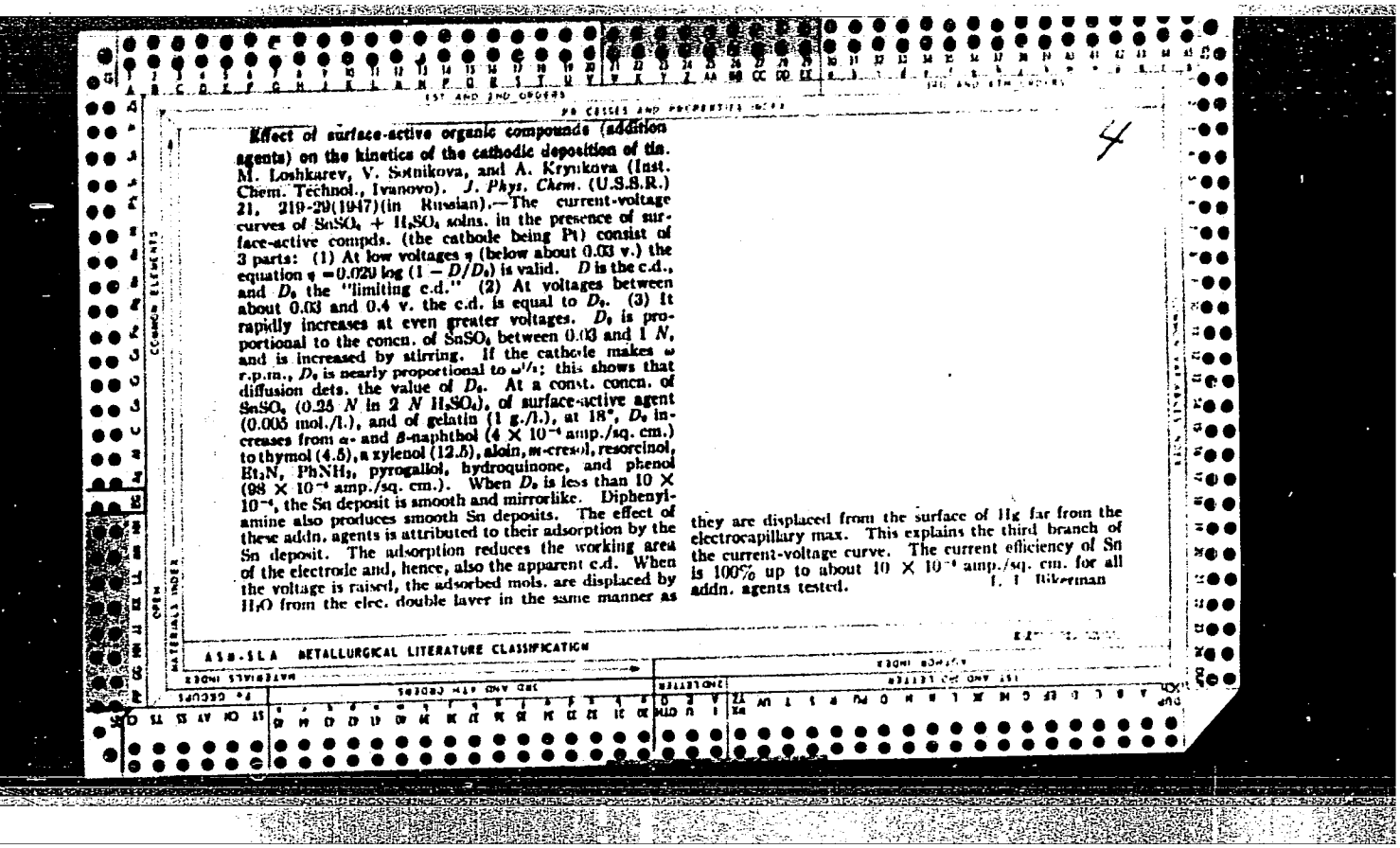
Voltage Distribution in Nickel-Refining Baths. M. Loshkarev and G. Lapp (*Zhur. Prikład. Khim.*, 1945, **18**, 405–411; *C. Abs.*, 1945, **40**, 4961).—[In Russian]. The voltage distribution was studied in commercial baths for nickel refining of nickel–copper alloy (3% copper) at 135 amp./m.² cathode c.d. The results are given graphically. It is shown that at a c.d. of 200–250 amp./m.² and with the same current efficiency as at 135 amp./m.², the electrical conductivity of the electrolyte must be increased 1·6–2·1 times, achievable by the addition of 60–80 g./l. of sodium sulphate.

Bv. Abs.

B1-7, Electrochemistry

Cathodic production of dispersed nickel. M. Lukhtarev, O. Gurmentaleva, and A. Kryukova *J. appl. Chem. U.S.S.R.*, 1940, **13**, 793—800).—Optimum conditions for the electrolytic deposition of finely-divided Ni were investigated, using Ni plated Fe sheets as cathode. Deposition of $Ni(OH)_2$ at high pH is prevented by addition of $(NH_4)_2SO_4$, which forms a stable sol. complex with it. The min. c.d. above which deposition of pure Ni powder from a solution containing $NiSO_4.7H_2O$ 20, $(NH_4)_2SO_4$ 20, and NaCl 10 g. per l. at pH 4—4·8 and 30—35° can be expected is calculated to be 170 amp. per sq. m.; in practice, deposition commences at 200—250 amp. per sq. m. Increased concn. of Ni produces a corresponding increase of min. c.d. The effect of increasing c.d. on the product and its yield was studied. A max. current yield of 65% for the powdered product is reached at 500 amp. per sq. m., but yield of compact metal falls sharply from the start. The % activity, calculated from the wt. of Cu displaced from solution, rises sharply to a const. value of ~80% at c.d. >300 amp. per sq. m. Fineness of the powder rises rapidly, the mean particle size being 40—60μ at 500 amp. per sq. m. In presence of Ag^+, Cu^{++}, Sn^{++}, or Cd^{++}, deposition of dispersed Ni occurs; in presence of Zn^{++}, the Ni is compact. In presence of Cu^{++} in a solution containing $NiSO_4.7H_2O$ 200, $(NH_4)_2SO_4$ 10, and NaCl 7 g. per l. at 30° and with a c.d. of 200 amp. per sq. m., the % of dispersed deposit rises with increasing Cu content: the activity is a max. (88%) at 1·8 g. per l. of Cu. The Cu in the deposit increases from 0·8 to 13·9% for solutions containing 0·3 to 3·0 g. of Cu per l.

P. B. Ivanov



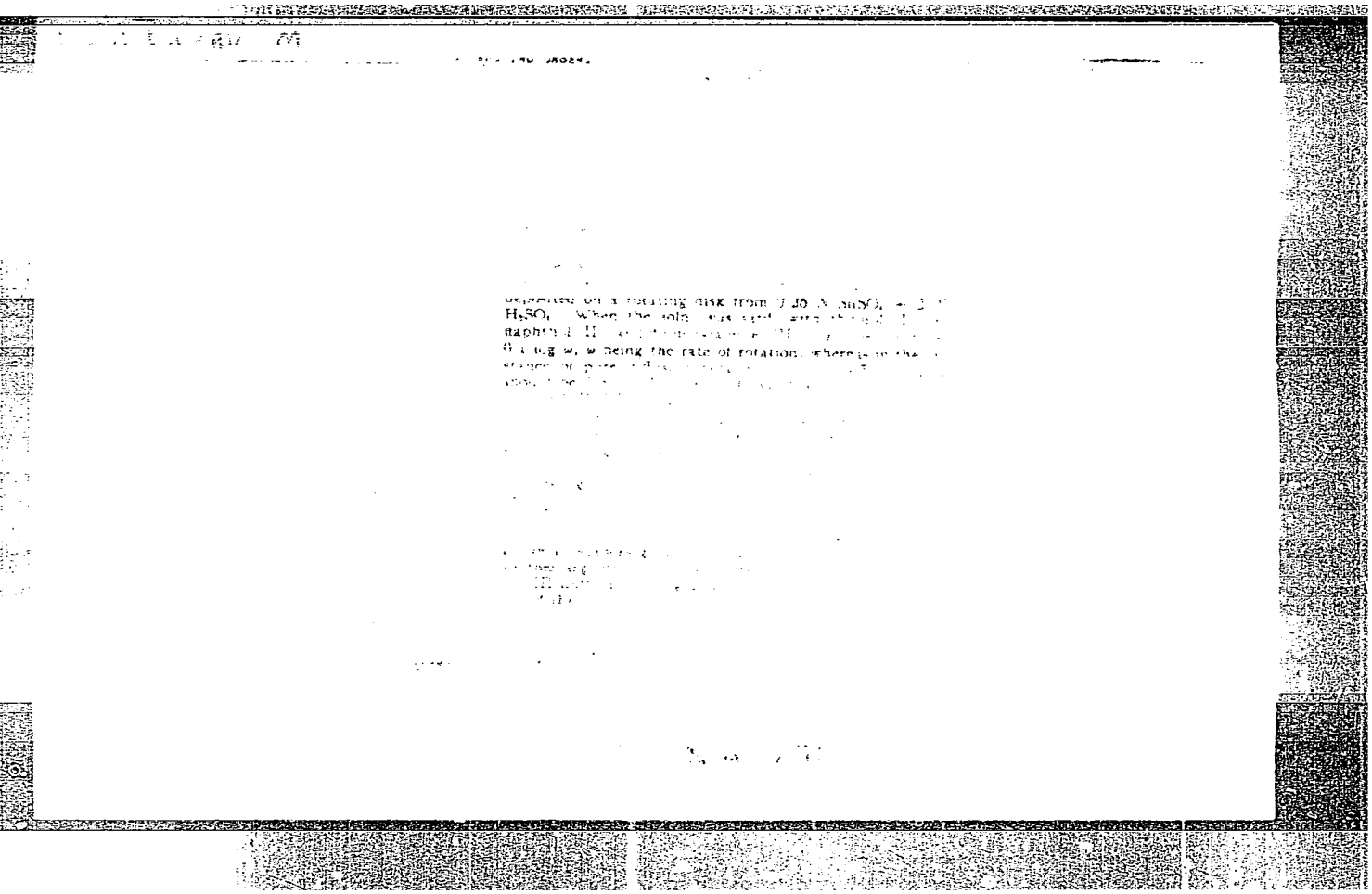
Effect of surface-active organic compounds (addition agents) on the kinetics of the cathodic deposition of tin. M. Loshkarev, V. Sotnikova, and A. Krynkova (Inst. Chem. Technol., Ivanovo). *J. Phys. Chem.* (U.S.S.R.) 21, 219-29(1947)(in Russian).—The current-voltage curves of $SnSO_4$ + H_2SO_4 solns. in the presence of surface-active compds. (the cathode being Pt) consist of 3 parts: (1) At low voltages η (below about 0.03 v.) the equation $\eta = 0.029 \log (1 - D/D_0)$ is valid. D is the c.d., and D_0 the "limiting c.d." (2) At voltages between about 0.03 and 0.4 v. the c.d. is equal to D_0. (3) It rapidly increases at even greater voltages. D_0 is proportional to the concn. of $SnSO_4$ between 0.03 and 1 N, and is increased by stirring. If the cathode makes ω r.p.m., D_0 is nearly proportional to $\omega^{1/2}$; this shows that diffusion dets. the value of D_0. At a const. concn. of $SnSO_4$ (0.25 N in 2 N H_2SO_4), of surface-active agent (0.005 mol./l.), and of gelatin (1 g./l.), at 18°, D_0 increases from α- and β-naphthol (4×10^{-4} amp./sq. cm.) to thymol (4.5), a xylenol (12.5), aloin, *m*-cresol, resorcinol, Et_2N, $PhNH_2$, pyrogallol, hydroquinone, and phenol (98×10^{-4} amp./sq. cm.). When D_0 is less than 10×10^{-4}, the Sn deposit is smooth and mirrorlike. Diphenylamine also produces smooth Sn deposits. The effect of these addn. agents is attributed to their adsorption by the Sn deposit. The adsorption reduces the working area of the electrode and, hence, also the apparent c.d. When the voltage is raised, the adsorbed mols. are displaced by H_2O from the elec. double layer in the same manner as they are displaced from the surface of Hg far from the electrocapillary max. This explains the third branch of the current-voltage curve. The current efficiency of Sn is 100% up to about 10×10^{-4} amp./sq. cm. for all addn. agents tested. I. I. Likerman

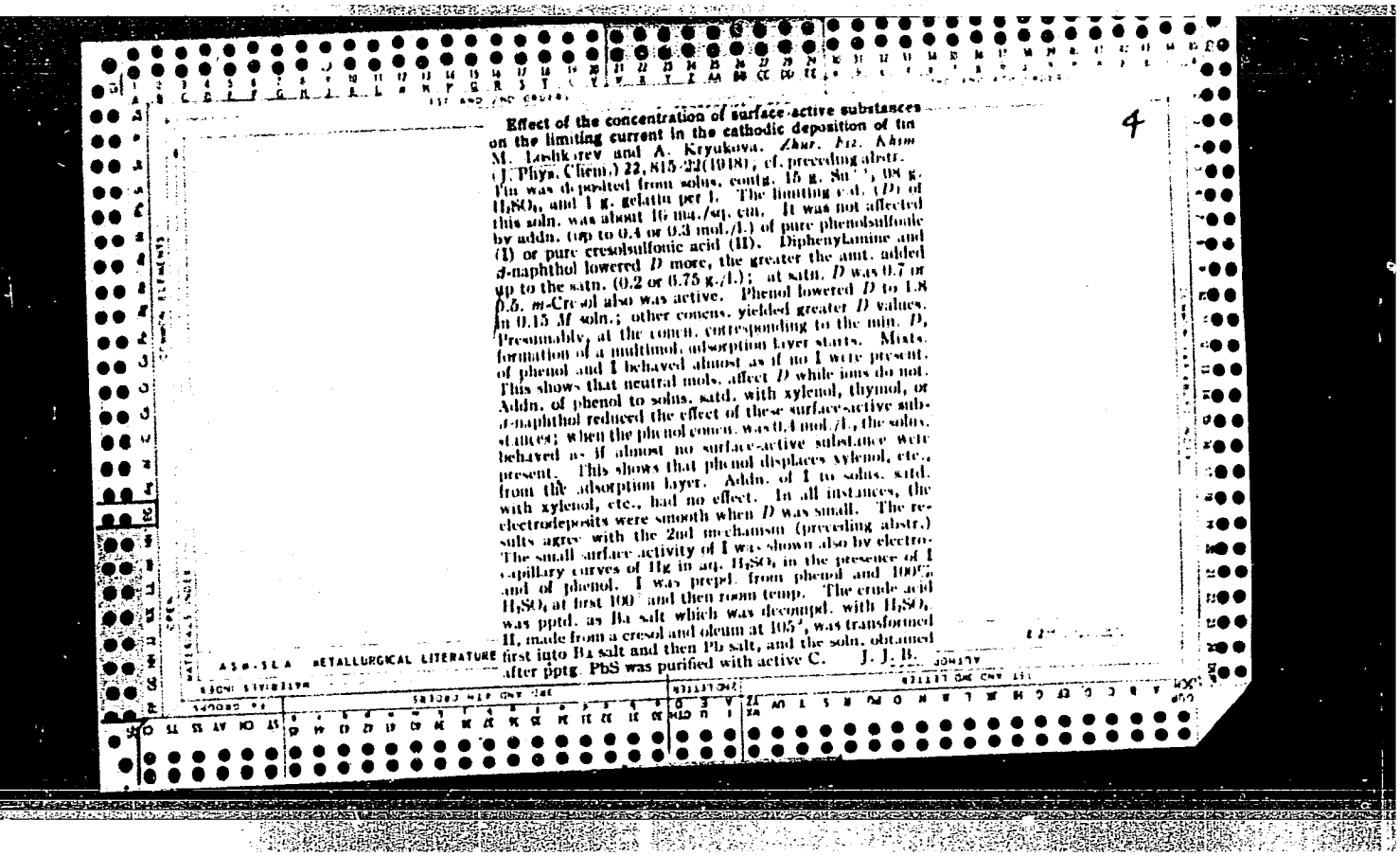
M

6-52

***Electrolytes for the Refining and Electrodeposition of Lead. I. Influence of Surface-Active Substances on the Kinetics of the Cathode Process and the Structure of the Deposit.** M. Loshkarev and I. Mark (*Zhur. Prikład. Khim.*, 1948, **21**, (6), 589–599).—[In Russian]. The deposition of lead from baths containing 1·0 g.-equivalent/l. lead and 0·2 g.-equivalent/l. free acid was investigated, using HNO_3, sulphamic, *m*-benzene disulphonic, *p*-phenolsulphonic, and *m*-cresolsulphonic acids. The influence of the purity of the acid and the presence of surface-active agents (resorcinol, aloin, and β-naphthol, with and without gelatin) on the cathodic polarization and the nature of the deposits was studied, and the electrocapillary curves for the organic acids were compared with that for H_2SO_4. Dendritic deposits were obtained with many of the baths investigated, but the *p*-phenolsulphonate and *m*-benzene-disulphonate baths containing 1 g./l. gelatin are recommended as giving (at 20° C., c.d. 200 amp./m.²) fine-grained deposits suitable for electrodeposition or electrolytic refining, provided pure acids are used. Polarization curves for sulphate and phenolsulphonate tin-plating baths containing surface active agents are also given.—G. V. E. T.

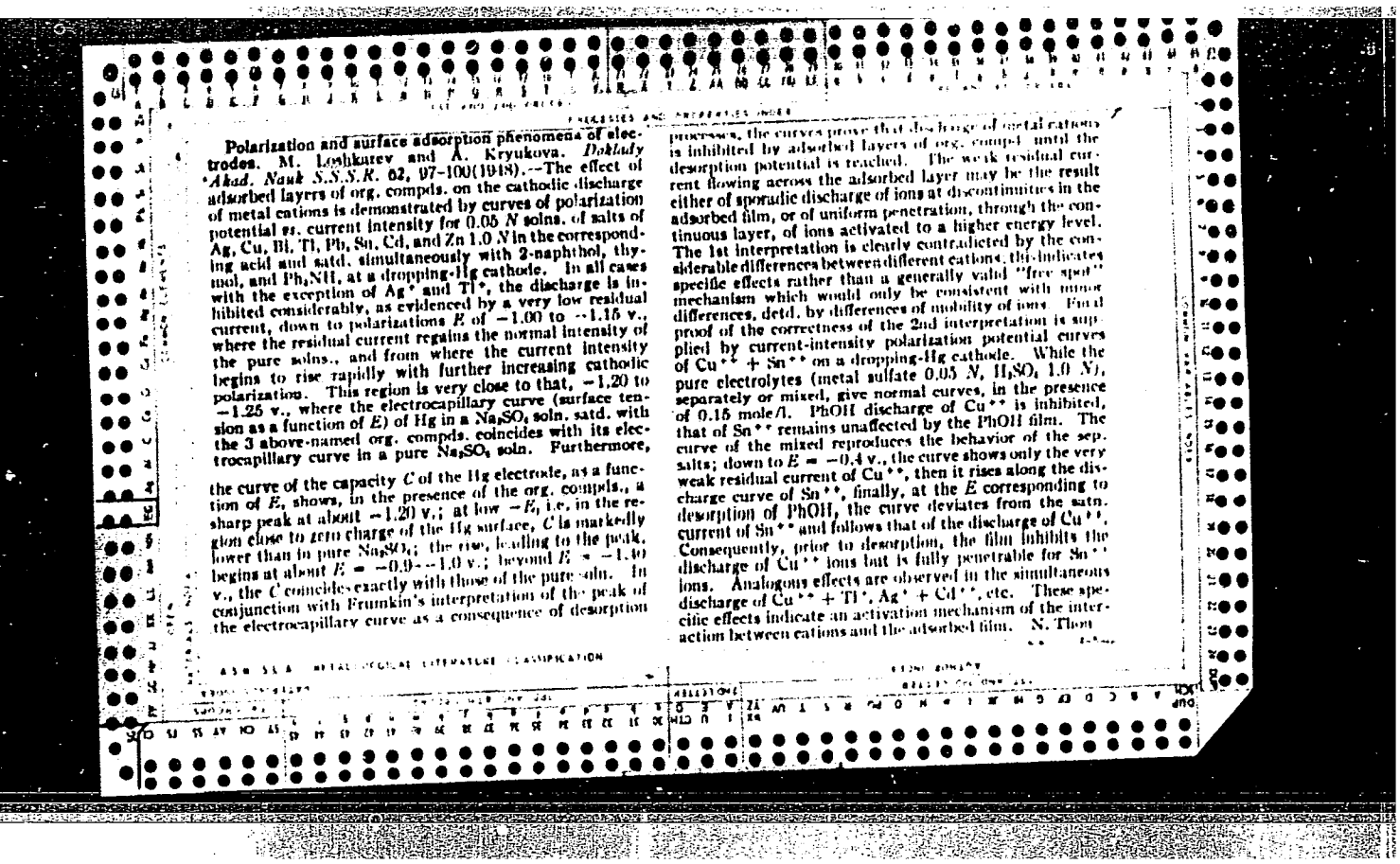
Dec. 49





Effect of the concentration of surface-active substances on the limiting current in the cathodic deposition of tin

M. Loshkarev and A. Kryukova. *Zhur. Fiz. Khim* (J. Phys. Chem.) 22, 815-22(1948); cf. preceding abstr. Sn was deposited from solns. contg. 15 g. $SnSO_4$, 98 g. H_2SO_4, and 1 g. gelatin per l. The limiting cd. (*D*) of this soln. was about 16 ma./sq. cm. It was not affected by addn. (up to 0.4 or 0.3 mol./l.) of pure phenolsulfonic (I) or pure cresolsulfonic acid (II). Diphenylamine and β-naphthol lowered *D* more, the greater the amt. added up to the satn. (0.2 or 0.75 g./l.); at satn. *D* was 0.7 or 0.5. *m*-Cresol also was active. Phenol lowered *D* to 1.8 in 0.15 *M* soln.; other concns. yielded greater *D* values. Presumably, at the concn. corresponding to the min. *D*, formation of a multimol. adsorption layer starts. Mixts. of phenol and I behaved almost as if no I were present. This shows that neutral mols. affect *D* while ions do not. Addn. of phenol to solns. satd. with xylenol, thymol, or β-naphthol reduced the effect of these surface-active substances; when the phenol concn. was 0.4 mol./l., the solns. behaved as if almost no surface-active substance were present. This shows that phenol displaces xylenol, etc., from the adsorption layer. Addn. of I to solns. satd. with xylenol, etc., had no effect. In all instances, the electrodeposits were smooth when *D* was small. The results agree with the 2nd mechanism (preceding abstr.) The small surface activity of I was shown also by electrocapillary curves of Hg in aq. H_2SO_4 in the presence of I and of phenol. I was prepd. from phenol and 100% H_2SO_4 at first 100° and then room temp. The crude acid was pptd. as Ba salt which was decompd. with H_2SO_4, H, made from a cresol and oleum at 105°, was transformed first into Ba salt and then Pb salt, and the soln. obtained after pptg. PbS was purified with active C. J. J. B.



Polarization and surface adsorption phenomena of electrodes. M. Loshkarev and A. Kryukova. *Doklady Akad. Nauk S.S.S.R.* 62, 97–100(1948).—The effect of adsorbed layers of org. compds. on the cathodic discharge of metal cations is demonstrated by curves of polarization potential *vs.* current intensity for 0.05 *N* solns. of salts of Ag, Cu, Bi, Tl, Pb, Sn, Cd, and Zn 1.0 *N* in the corresponding acid and satd. simultaneously with 2-naphthol, thymol, and Ph_2NH, at a dropping-Hg cathode. In all cases with the exception of Ag^+ and Tl^+, the discharge is inhibited considerably, as evidenced by a very low residual current, down to polarizations E of −1.00 to −1.15 v., where the residual current regains the normal intensity of the pure solns., and from where the current intensity begins to rise rapidly with further increasing cathodic polarization. This region is very close to that, −1.20 to −1.25 v., where the electrocapillary curve (surface tension as a function of E) of Hg in a Na_2SO_4 soln. satd. with the 3 above-named org. compds. coincides with its electrocapillary curve in a pure Na_2SO_4 soln. Furthermore, the curve of the capacity C of the Hg electrode, as a function of E, shows, in the presence of the org. compds., a sharp peak at about −1.20 v.; at low $-E$, i.e., in the region close to zero charge of the Hg surface, C is markedly lower than in pure Na_2SO_4; the rise, leading to the peak, begins at about E = −0.9–−1.0 v.; beyond E = −1.40 v., the C coincides exactly with those of the pure soln. In conjunction with Frumkin's interpretation of the peak of the electrocapillary curve as a consequence of desorption processes, the curves prove that discharge of metal cations is inhibited by adsorbed layers of org. compd. until the desorption potential is reached. The weak residual current flowing across the adsorbed layer may be the result either of sporadic discharge of ions at discontinuities in the adsorbed film, or of uniform penetration, through the continuous layer, of ions activated to a higher energy level. The 1st interpretation is clearly contradicted by the considerable differences between different cations, this indicates specific effects rather than a generally valid "free spot" mechanism which would only be consistent with minor differences, detd. by differences of mobility of ions. Final proof of the correctness of the 2nd interpretation is supplied by current-intensity polarization potential curves of $Cu^{++} + Sn^{++}$ on a dropping-Hg cathode. While the pure electrolytes (metal sulfate 0.05 *N*, H_2SO_4 1.0 *N*), separately or mixed, give normal curves, in the presence of 0.15 mole/l. PhOH discharge of Cu^{++} is inhibited, that of Sn^{++} remains unaffected by the PhOH film. The curve of the mixed reproduces the behavior of the sep. salts; down to E = −0.4 v., the curve shows only the very weak residual current of Cu^{++}, then it rises along the discharge curve of Sn^{++}, finally, at the E corresponding to desorption of PhOH, the curve deviates from the satn. current of Sn^{++} and follows that of the discharge of Cu^{++}. Consequently, prior to desorption, the film inhibits the discharge of Cu^{++} ions but is fully penetrable for Sn^{++} ions. Analogous effects are observed in the simultaneous discharge of $Cu^{++} + Tl^+$, $Ag^+ + Cd^{++}$, etc. These specific effects indicate an activation mechanism of the interaction between cations and the adsorbed film. N. Thon

LOSHKAREV, M.

PA 48/49T16

USSR/Chemistry - Dispersion Mar 49
Chemistry - Cathode

"Dispersed Metal Deposits Occurring at High Voltages," M. Loshkarev, A. Ozerov, N. Kudryavtsev, 8 pp

"Zhur Priklad Khim" Vol XXII, No 3
pp 294-305

Explains action of diffusion processes on structure of deposits on cathode. Shows that, with high electrolyzing currents, metal precipitates in dispersed form. Precipitation of copper from $CuSO_4$ changed from solid to dispersed state as relative current at cathode

48/49T16

USSR/Chemistry - Dispersion (Contd) Mar 49

was increased. In all cases diffused precipitation begins with maximum diffusion current. Submitted 1 May 48.

48/49T16

PA 47/49T18

LOSHKAREV, M.

USSR/Chemistry - Polarization Feb 49

"A New Form of Chemical Polarization: I, Cathode Separation of Metals on Mercury Where Admixtures Are Present," M. Loshkarev, A. Kryukova, Ivanovo Chemicotechnol Inst, 12 pp

"Zhur Fiz Khim" Vol XXIII, No 2

Studied polarization in the separation of a number of metals on mercury from solutions saturated with beta-naphthol, thymol, diphenylamine, and other surface-active substances. Established that the adsorption layer forming on mercury in electrolytes saturated with surface-active substances named has a marked retarding effect on

47/49T18

USSR/Chemistry - Polarization (Contd) Feb 49

discharge of Cu^{++}, Bi^{+++}, Pb^{++}, Sn^{++}, Cd^{++} and Zn^{++} ions and has considerable permeability with respect to Ag^{+}, Hg^{++}, and Tl^{+}. Submitted 3 Jun 48.

47/49T18

LOSHKAREV, M.

PA 47/49T19

USSR/Chemistry - Polarization
Chemistry - Adsorption

Feb 49

"A New Form of Chemical Polarization: II, Experimental Proof of the Existence of Adsorption Layers and Investigation of Their Properties," M. Loshkarev, A Krivtsov, A. Kryukova, 11 pp

"Zhur Fiz Khim" Vol XXIII, No 2

Measured double-layer capacitance for various electrode potentials in Na_2SO_4 solutions with additions of beta-naphthol, thymol, diphenylamine, and other surface-active substances Existence of dense adsorption layers is

47/49T19

USSR/Chemistry - Polarization (Contd)

Feb 49

confirmed by sharp drop in double-layer capacitance for zero surface potential in solutions with these additions. Submitted 3 Jun 48.

47/49T19

CA

4

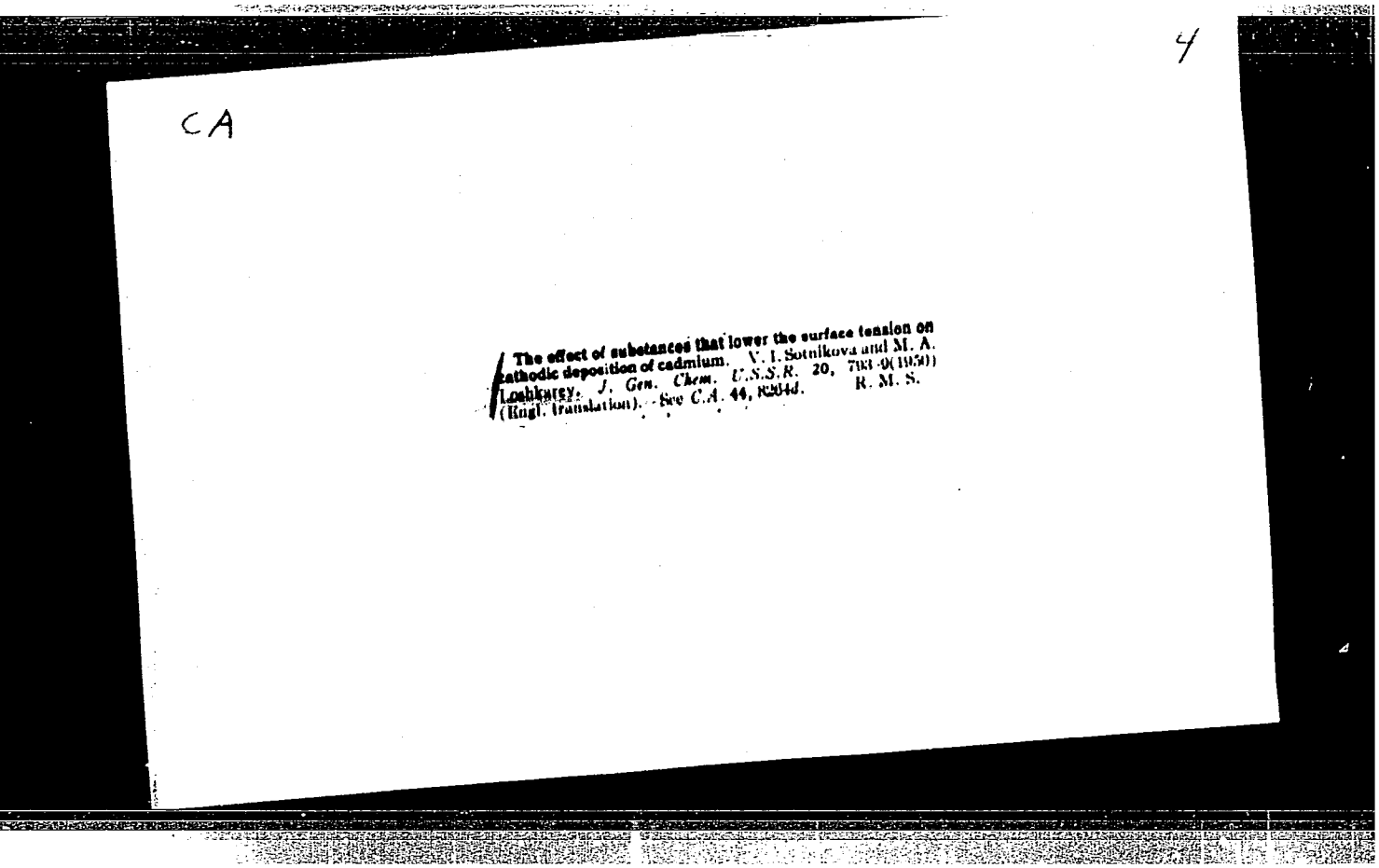
A new type of chemical polarization. III. Effect of organic additions on the overvoltage during liberation of hydrogen and chromium and charge variation of titanium and vanadium ions. M. A. Loshkarev and A. A. Krynkova (Inst. Chem. Technol., Dnepropetrovsk, Ukraine). *Zhur. Fiz. Khim.* 23, 1457-63(1949); cf. *C.A.* 43, 5316c. — Deposition of Cr from 0.05 *N* $Cr_2(SO_4)_3$ + *N* H_2SO_4 on a dropping-Hg cathode was retarded by org. addns.; e.g., at the voltage $V = -1$ v. the current was 0.15 milliamp. in noncontaminated soln., and 0.007 and 0.010 when the soln. was satd. with camphor or eugenol, resp. At $V = -1.35$ v. the addns. became noneffective. The effects of PhAc, Ph_2NH, 2-naphthol, eugenol, thymol, camphor, and $(PhCH_2)_3N$ on the H overvoltage were similar. Heyrovsky, *et al.* (*C.A.* 41, 5402i) found that addns. affected deposition of Zn, Pb, etc., but not of Ag and Tl^+, and concluded that discharge of multivalent ions has another mechanism than discharge of univalent ions. This was disproved by the effect of thymol, etc. on the reactions $V^{++++} \rightarrow V^{+++}$ and $Ti^{++++} \rightarrow Ti^{+++}$ at the cathode and the reverse reactions at the anode. The retardation due to addns. disappeared at *V* more neg. than −1.1 v. and more pos. than 0.1 v., i.e. at voltages causing desorption. The V^{+++} soln. was 0.1 *N* and contained *N* H_2SO_4; and the Ti soln. was 0.1 *N* $Ti(SO_4)_2$ + *N* H_2SO_4. J. J. B.

CA

4

Effect of surface-active substances on the cathodic deposition of cadmium. V. Sotnikova and M. Loshkarev. *Zhur. Obshchel Khim.* (J. Gen. Chem.) 20, 753-61(1950). In an electrolyte $CdSO_4$ 0.25 *N*, H_2SO_4 0.065 *N*, the limiting diffusion c.d., *i*, 15 ma./sq. cm. at 18°, is lowered only to 10-12 ma./sq.cm. by the addn. of 5 g./l. of gelatin. A much more substantial lowering of *i* is obtained by the addn., along with the gelatin, of 1 g./l. of one of the surface-active compds., Ph_2NH, xylenol, 1-$C_{10}H_7OH$, 2-$C_{10}H_7OH$, or thymol; these depress *i* to, resp., 0.0, 0.0, 0.8, 0.4, and 4.8 ma./sq. cm. Simultaneous addn. of the soln. with all 5 of the above substances, along with 5 g. l. of gelatin, depressed *i* to as low as 0.4. Under these conditions, the Cd deposit becomes very bright. Strong effects of lowering of *i*, increase of the polarization, and brightening of the deposit, are obtained by the addn. of various pairs of the above substances to the gelatin-containg electrolyte, particularly the pair 1-$C_{10}H_7OH$ + Ph_2NH. The polarization exceeds that accompanying the deposition of metals of the Fe group; it is a linear function of the log of the c.d. In analogy with similar observations on the effects of surface-active substances on the electrodeposition of Sn, these effects are attributed to the formation of a cathode film impermeable to metal cations except at sufficiently high polarizations. It is noteworthy that such a film can form only in the combined presence of a colloid (gelatin) and at least two surface-active compds.

N. Thon



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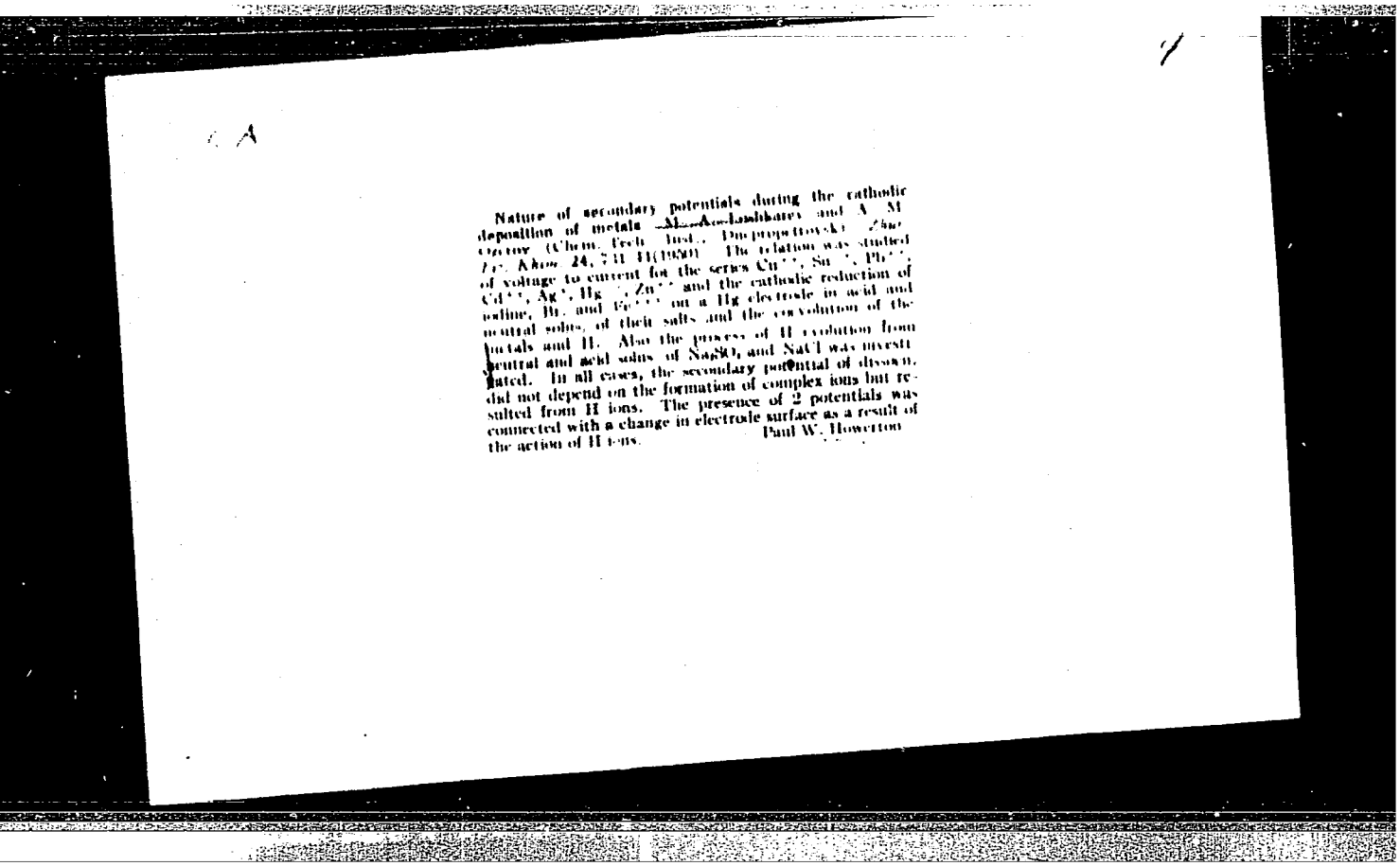
CA

The effect of substances that lower the surface tension on cathodic deposition of cadmium. V. I. Sotnikova and M. A. Loshkarev. *J. Gen. Chem. U.S.S.R.* 20, 783-9(1950) (Engl. translation). See *C.A.* 44, 8204d. R. M. S.



Nature of secondary potentials during the cathodic deposition of metals. M. A. Loshkarev and A. M. Gurov (Chem. Tech. Inst., Dnepropetrovsk). Zhur. Fiz. Khim. 24, 731-41(1950). The relation was studied of voltage to current for the series Cu^{++}, Sn^{++}, Pb^{++}, Cd^{++}, Ag^{+}, Hg^{++}, Zn^{++} and the cathodic reduction of iodine, Br, and Fe^{+++} on a Hg electrode in acid and neutral solns. of their salts and the evolution of the metals and H. Also the process of H evolution from neutral and acid solns. of Na_2SO_4 and NaCl was investigated. In all cases, the secondary potential of dissoln. did not depend on the formation of complex ions but resulted from H ions. The presence of 2 potentials was connected with a change in electrode surface as a result of the action of H ions.

Paul W. Howerton

LOSHKAREV, M. A.

USSR/Chemistry - Electrolytic Deposition of Alloys — Dec 50

"Adsorptive Chemical Polarization and Cathodic Plating From Uncomplex Electrolytes," M. A. Loshkarev, M. P. Grechukhina, Chemicotechnol Inst, Dnepropetrovsk

"Zhur Fiz Khim" Vol XXIV, No 12, 1502-1510

Addition of small quantities of gelatin and surface-active admixtures (α-naphthol and diphenylamine to phenolsulfonic acid electrolyte in cathodic deposition of Pb-Sn alloys produced high polarization,

[redacted] 170T21

USSR/Chemistry - Electrolytic Deposition (Contd) — Dec 50

dense adsorption layers on cathode surface, and dense, fine-grained deposits. Deposition of Cu-Pb and Cu-Sn alloys was more difficult at low limiting current.

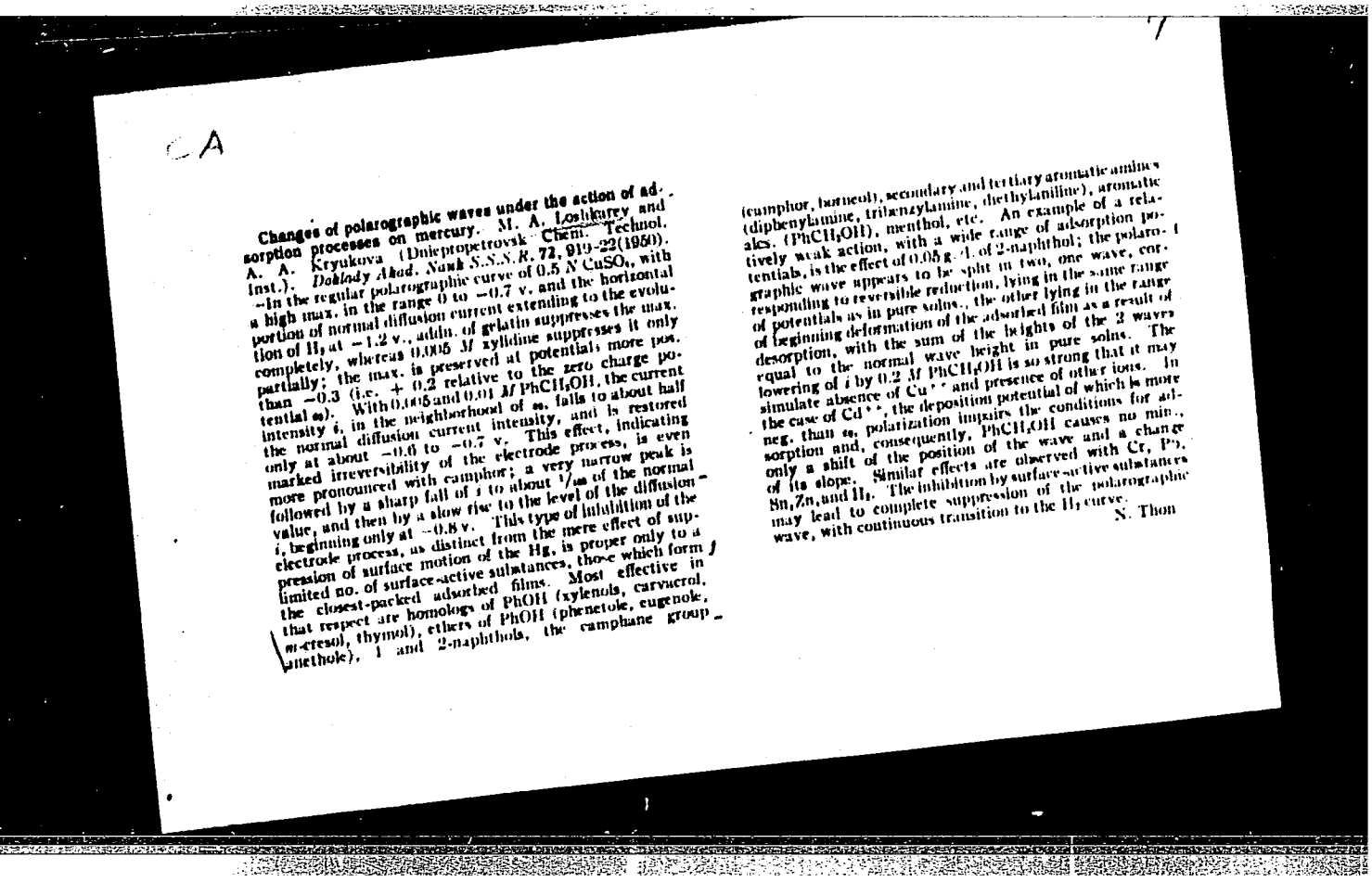
IA 170T21

[redacted] 170T21

LOSHKAREV, M.A.

The theory of adsorption chemical polarization. M. A. Loshkarev (F. E. Dzerzhinskii Chem.-Technol. Inst., Dnepropetrovsk). *Doklady Akad. Nauk S.S.S.R.* 72, 729-32(1950); cf. *C.A.* 43 5315*i*.—Surface-active compds. can appreciably polarize the cathodic deposition of metals from their simple salts. Examples are given for Sn, Pb, Bi, Cd, Zn, Cu, Ni, and V as sulfate solns. (acidified with H_2SO_4) with addns. of α-naphthol, Ph_2NH, and gelatin (simultaneously) or β-naphthol, Ph_2NH, and thymol (simultaneously). The curve of i (c.d.) vs. E (electrode potential) consists of 2 distinct branches: first, a relatively flat portion, designated as the "adsorption threshold current," i_a, and 2nd, a rapid rise upon approaching a "desorption potential. To a first approximation, the rapid rise in current is given by: $\eta = a - b \log (i - i_a)$ (I), where η is the polarization and a and b are consts. This equation is not satisfactory for the transition between the 2 branches of the i vs. E curve. A more general equation is obtained by using Frumkin's relation (*C.A.* 20, 1932) for the energy of adsorption on charged surfaces. One obtains for T = const., $i = K' C_{M^{z+}} a^{-a_1\phi^2 + a\phi_N\phi}$, where $C_{M^{z+}}$ = concn. of discharging ions in the layer of electrolyte adjacent to the film; ϕ = the electrode potential (relative to ϕ_N); ϕ_N = the potential of the electrocapillary max. upon satn. with surface-active substances at the phase boundary. K', a_1, and a are consts. Upon substituting exptl. values, this equation becomes $1.5 \phi^2 + \phi_N\phi = b \log i$ + const. Good correspondence is found for Cu deposition on an Hg electrode from 0.05*N* $CuSO_4$, 1.0-*N* H_2SO_4 satd. with β-naphthol, Ph_2NH, and thymol (simultaneously). One can further substitute $i - i_0$ for i as occurs in I. The correction term, i_0, then represents the penetrability of the film under stable conditions ($\phi = 0$). Considering that $i = i_0 + i_d$, where i_d = the increase of current as a result of deformation of the adsorption layer, one concludes that i_0 and i_d are functions of the energy of activation of the corresponding processes of penetration of ions through the adsorption layer. Applying the corrected equation to the data for Cu ($i_0 = 6.5 \times 10^{-4}$ amp./sq. cm.) a straight line is obtained for all but the highest c.ds. (diffusion limited). In the threshold region, $i_0 > i - i_0$, while in the region of steep i vs. E, $i - i_0 > i_0$. Polarization on Hg (in the presence of β-naphthol, Ph_2NH, and thymol together) is large for ions of Cu^{++}, Bi^{3+}, Sn^{++}, Cd^{++}, and Zn^{++}. The same films are completely permeable to Ag^+ and Tl^+ (greater ionic radius) and to Fe^{3+} and Hg^{++} (tendency to form complexes with phenols and related aromatic amines).

R. D. Misch



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Changes of polarographic waves under the action of adsorption processes on mercury. M. A. Loshkarev and A. A. Kryukova (Dniepropetrovsk Chem.-Technol. Inst.). *Doklady Akad. Nauk S.S.S.R.* 72, 919-22(1950). —In the regular polarographic curve of 0.5 *N* $CuSO_4$, with a high max. in the range 0 to −0.7 v. and the horizontal portion of normal diffusion current extending to the evolution of H_2 at −1.2 v., addn. of gelatin suppresses the max. completely, whereas 0.005 *M* xylidine suppresses it only partially; the max. is preserved at potentials more positive than −0.3 (i.e. + 0.2 relative to the zero charge potential e_0). With 0.005 and 0.01 *M* $PhCH_2OH$, the current intensity i, in the neighborhood of e_0, falls to about half the normal diffusion current intensity, and is restored only at about −0.6 to −0.7 v. This effect, indicating marked irreversibility of the electrode process, is even more pronounced with camphor; a very narrow peak is followed by a sharp fall of i to about 1/10 of the normal value, and then by a slow rise to the level of the diffusion i, beginning only at −0.8 v. This type of inhibition of the electrode process, as distinct from the mere effect of suppression of surface motion of the Hg, is proper only to a limited no. of surface-active substances, those which form the closest-packed adsorbed films. Most effective in that respect are homologs of PhOH (xylenols, carvacrol, *m*-cresol, thymol), ethers of PhOH (phenetole, eugenole, anethole), 1 and 2-naphthols, the camphane group (camphor, borneol), secondary and tertiary aromatic amines (dipbenylamine, tribenzylamine, diethylaniline), aromatic alcs. ($PhCH_2OH$), menthol, etc. An example of a relatively weak action, with a wide range of adsorption potentials, is the effect of 0.05 g./l. of 2-naphthol; the polarographic wave appears to be split in two, one wave, corresponding to reversible reduction, lying in the same range of potentials as in pure solns., the other lying in the range of beginning deformation of the adsorbed film as a result of desorption, with the sum of the heights of the 2 waves equal to the normal wave height in pure solns. The lowering of i by 0.2 *M* $PhCH_2OH$ is so strong that it may simulate absence of Cu^{++} and presence of other ions. In the case of Cd^{++}, the deposition potential of which is more neg. than e_0, polarization impairs the conditions for adsorption and, consequently, $PhCH_2OH$ causes no min., only a shift of the position of the wave and a change of its slope. Similar effects are observed with Cr, Pb, Sn, Zn, and H_2. The inhibition by surface-active substances may lead to complete suppression of the polarographic wave, with continuous transition to the H_2 curve.

N. Thon

C. A.
1951

Electrochemistry
4

Change in polarographic waves under the influence of adsorptive processes on mercury. M. A. Loshkarev and A. Krynkova. *Zhur. Anal. Khim.* 6, 166-77(1951); cf. *C. A.* **44**, 8827*d*. The effects studied were those of gelatin, xylidine, benzyl alc., camphor, carvacrol, methyl blue, β-naphthol, menthol, and tribenzylamine. Formation of adsorbed layers changed both the shape and the position of polarographic waves of Cu, Cd, Co, and Sn in H_2SO_4. This was caused by hampering surface movement of the Hg as well as by blocking electrode processes. In cases where the addns. had a strong effect, the polarographic waves were shifted toward more electroneg. potentials and close to the desorption potential of the addn. Among the substances having a strong effect were benzyl alc., carvacrol, and tribenzylamine. Where the effect of the addns. was not quite so strong, the polarographic wave was distorted either by its lowering near the potential of discharge of the Hg, or by a change in the wave's slope, or by the wave's sepn. into 2 segments. Among the substances having such effect were small concns. of $C_6H_5CH_2OH$ and β-naphthol. The observed phenomena are attributed to the formation of a barrier potential near the interphase. This potential is attributable to the considerable repelling forces between the discharging ions and the mols. of the adsorbed monomol layer.

M. Hosch

USSR/Chemistry - Electrolysis Apr 51

"New Electrolytes for Tinplating," V. I. Sotnikova, M. A. Loshkarev

"Zhur Prik Khim" Vol XXIV, No 4, p 361

Examd dispersion capacity of Stannic sulfate electrolytes with addn of colloid and of α- and β-naphthol, thymol, and diphenylamine. Detd porosity of deposits under same conditions. In accord with previously established presence of great chem polarization in electrolytic deposition of tin from solns with above additives, found dispersion capacity and fine cryst structure of deposits and low porosity

182T41

USSR/Chemistry - Electrolysis (Contd) Apr 51

of deposits. Calcd consumption of additives. With
higher quality of plating as compared to that ob-
tained from phenol baths, consumption of additives
is 30-50 times less than that of phenol under same
conditions.

182T41

LOSHKAREV, M. A.

LOSHKAREV, M. A.

183T47

USSR/Chemistry - Electrolytic Refining of Metals — Jun 51

"Lowering of the Overvoltage of Hydrogen," M. A. Loshkarev, A. M. Ozerov

"Zhur Prik Khim" Vol XXIV, No 6, pp 597-603

Examd overvoltage of hydrogen in 1-n H_2SO_4 soln and in 22% KOH on compact and dispersed electrolytic deposits of Pt, Ag, Cu, Bi, Sn, Ni, and Fe, and on 2-component metallic systems Cu-Ag, Sn-Cu, Fe-Ni. Overvoltage can be reduced by more than 0.4 v with use of electrolytically prepd powdered electrodes.

183T47

USSR/Chemistry - Electrolytic Refining of Metals (Contd) — Jun 51

Lowering of overvoltage is due not only to lowering of actual cd in connection with increase in actual cathode surface, but occurs to large extent at expense of increase in const of rate of discharge of H ions.

183T47

LOSHKAREV, M. A.

*Influence of Tribenzylamine on the Electrocrystallization of Tin. A. A. Krynkova and M. A. Loshkarev (*Doklady Akad. Nauk S.S.S.R.*, 1951, 81, (6), 1097–1100).—[In Russian]. Polarization curves for the electrodeposition of Sn from baths at 20° C. contg.: 0·27*N* Sn^{+2}, 2*N* H_2SO_4, gelatin 1 g./l., and an addn. agent (diphenylamine, β-naphthol, thymol, or tribenzylamine) are given. The curves for molecular addn. agents are similar in character to those for additives forming ionic adsorbed layers, but the polarization caused by tribenzylamine is appreciably greater than that for molecularly adsorbed agents; this is attributed to a shift in the desorption potential. Curves for gelatin-free baths are here also given; the magnitudes of the stable currents are here somewhat greater. With the baths contg. thymol or diphenylamine, the quality of the deposits is poor if the gelatin is omitted, but dense fine-grained deposits of Sn are produced in baths contg. tribenzylamine, even if this is present only in low concentrations (0·005 *M*) and gelatin is absent. The relation between the polarization (η) and the c.d. (D) in the region of potential corresponding to a sharp increase in current is $\eta = a - b \log (D - D_{\text{stable}})$, which was also found to hold for the deposition of Cd on the dropping Hg electrode. Raising the temp. from 0° to 40° C. lowers η less for baths contg. tribenzylamine than for those contg. thymol.

(6)—C. V. E. T.

USSR/Chemistry - Electrolysis, Polaro- graphy May 52

"The Effect of Adsorption Layers on the Discharge of Monovalent Metals on Mercury," M. A. Loshkarev, A. A. Kryukova, Chem-Technol Inst, Dnyepropetrovsk

"Zhur Fiz Khim" Vol XXVI, No 5, pp 731-736

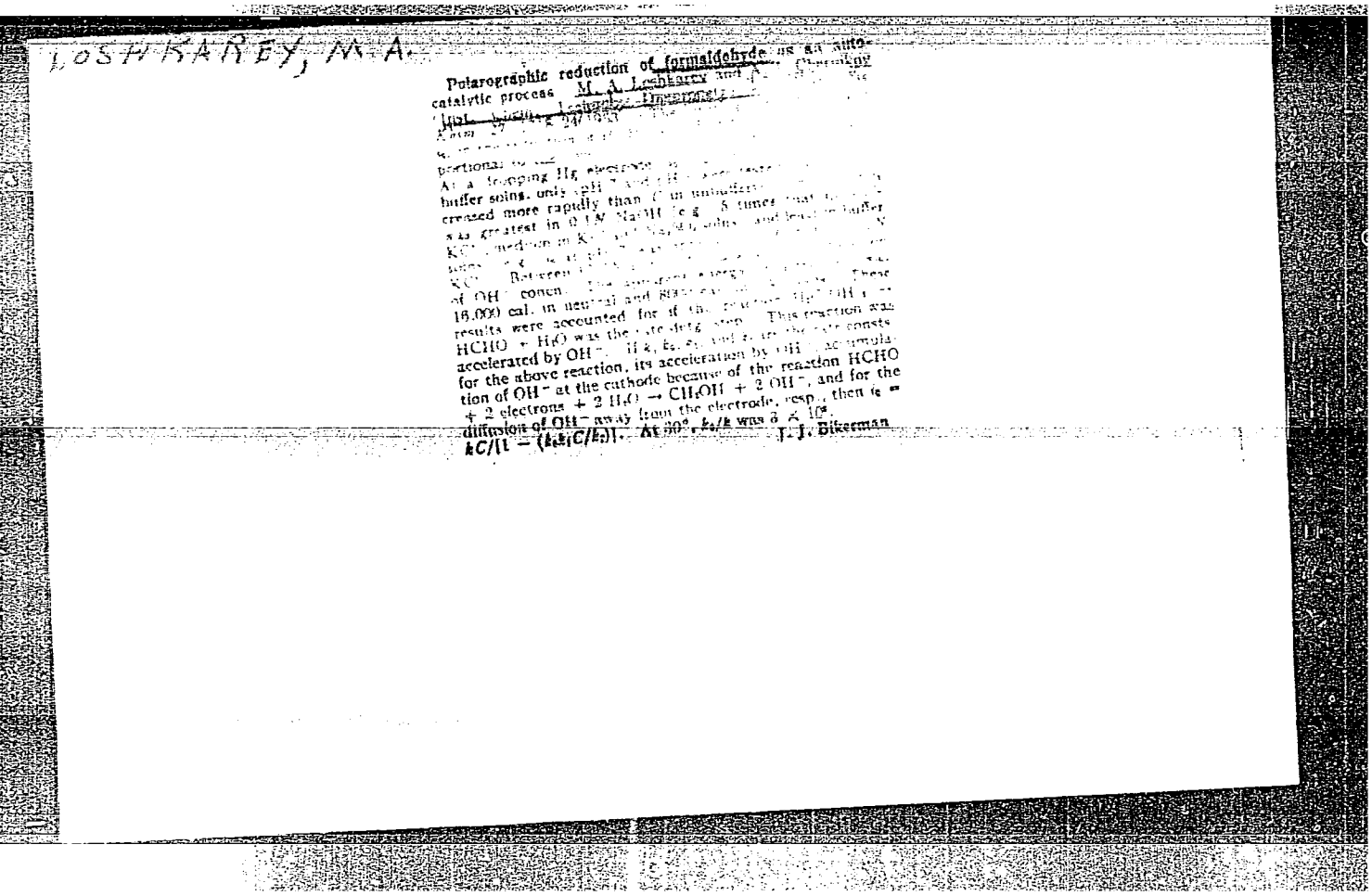
Cathodic deposition of Tl from acidic sols is inhibited by tribenzylamine or tetrabutylammonium, particularly at low temps. It is much more difficult to lower the rate of discharge of Ag ions, but tetrabutylammonium does produce a double lowering of the limiting current (min at E= -0.8 V). At low temps, the inhibiting effect is increased,

219T10

just as with Tl. Aniline also produces strong inhibition of discharge of Ag ions. These results show that typical electrode reactions of the 1st order, i.e., those accompanied by the transfer of one electron, can be inhibited by adsorption layers of org cations (layers of neutral org compds proved to be ineffective). This proves that the views of Heyrovskiy's school on the mechanism of electrode reactions are wrong and that the USSR theory of chem-polarization by adsorption is correct.

219T10

LOSHKAREV, M.A.



LOSHKAREV, M. A.

Polarographic reduction of formaldehyde as an auto-
catalytic process. M. A. Loshkarev and [illegible]

[illegible]

[illegible]

partional to [illegible]

At a dropping Hg electrode [illegible]

buffer solns. units [illegible] in unbuffered [illegible]

creased more rapidly than [illegible] 5 times [illegible]

was greatest in 0.1 M [illegible] and less [illegible]

KCl [illegible]

[illegible]

KCl. Between [illegible] These

of OH⁻ concn. [illegible]

18,000) cal. in neutral and [illegible]

results were accounted for if the [illegible] This reaction was

HCHO + H₂O was the [illegible] the rate consts

accelerated by OH⁻. [illegible]

for the above reaction, its acceleration by [illegible] accumula-

tion of OH⁻ at the cathode because of the reaction HCHO

+ 2 electrons + 2 H₂O → CH₃OH + 2 OH⁻, and for the

diffusion of OH⁻ away from the electrode, resp., then $i_c = kC/(1 - (k_1C/k_2))$. At 30°, k_1/k_2 was 3 × 10⁻⁵.

J. J. Bikerman

LOSHKAREV, M. A.

The kinetics of the polarographic reduction of acetophenone and benzaldehyde in moderately acid solution. A. I. Chernikov and M. A. Loshkarev (F. E. Dzerzhinskii Chem.-Tekhnol. Inst., Dnepropetrovsk). *Dopovidi Akad. Nauk Ukr. R.S.R.* 1955, 545–50(Russian summary).—The influence of adsorption phenomena on the character of the polarization curves is elucidated. For the case of a 2-wave polarogram, the 1st of the waves corresponded to the reduction in the presence of an adsorption film, the 2nd one to the reduction in the absence of such film. The limiting current of the first reduction wave was of kinetic origin and not of diffusion origin, whereas the electrode reduction reaction showed a 1-proton mechanism. W. J.

SOV/137-57-6-9772

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 6, p 66 (USSR)

AUTHORS: Loshkarev, M.A., Dubyago, Ye.I.

TITLE: Electrocrystallization of Bismuth From Perchloric Electrolyte (Elektrokristallizatsiya vismuta iz khlornokislogo elektrolita)

PERIODICAL: Tr. Dnepropetr. khim.-tekhnol. in-t, 1956, Nr 5, pp 186-200

ABSTRACT: A study is made of cathodic deposition of Bi from a perchloric electrolyte. It is found that the process of electrocrystallization is accompanied by substantial chemical polarization which rises sharply as temperature diminishes and which depends upon the concentration of Bi^{3+} ions, the acidity of the electrolyte, and - to a slight degree - upon hydrodynamic conditions. Cathodic deposits of Bi from perchloric baths are structurally susceptible to refining. Introduction of surface-active substances such as β-naphthol, disulfamine, tannin, albumin, and others into the electrolyte leads to a pronounced improvement in the structure of the cathodic precipitates. An electrolyte containing 35-70 g Bi/liter as $Bi(ClO_4)_3$, 150 g perchloric acid/liter and additions of surface-active substances is recommended for cathodic precipitation of Bi for technical purposes.

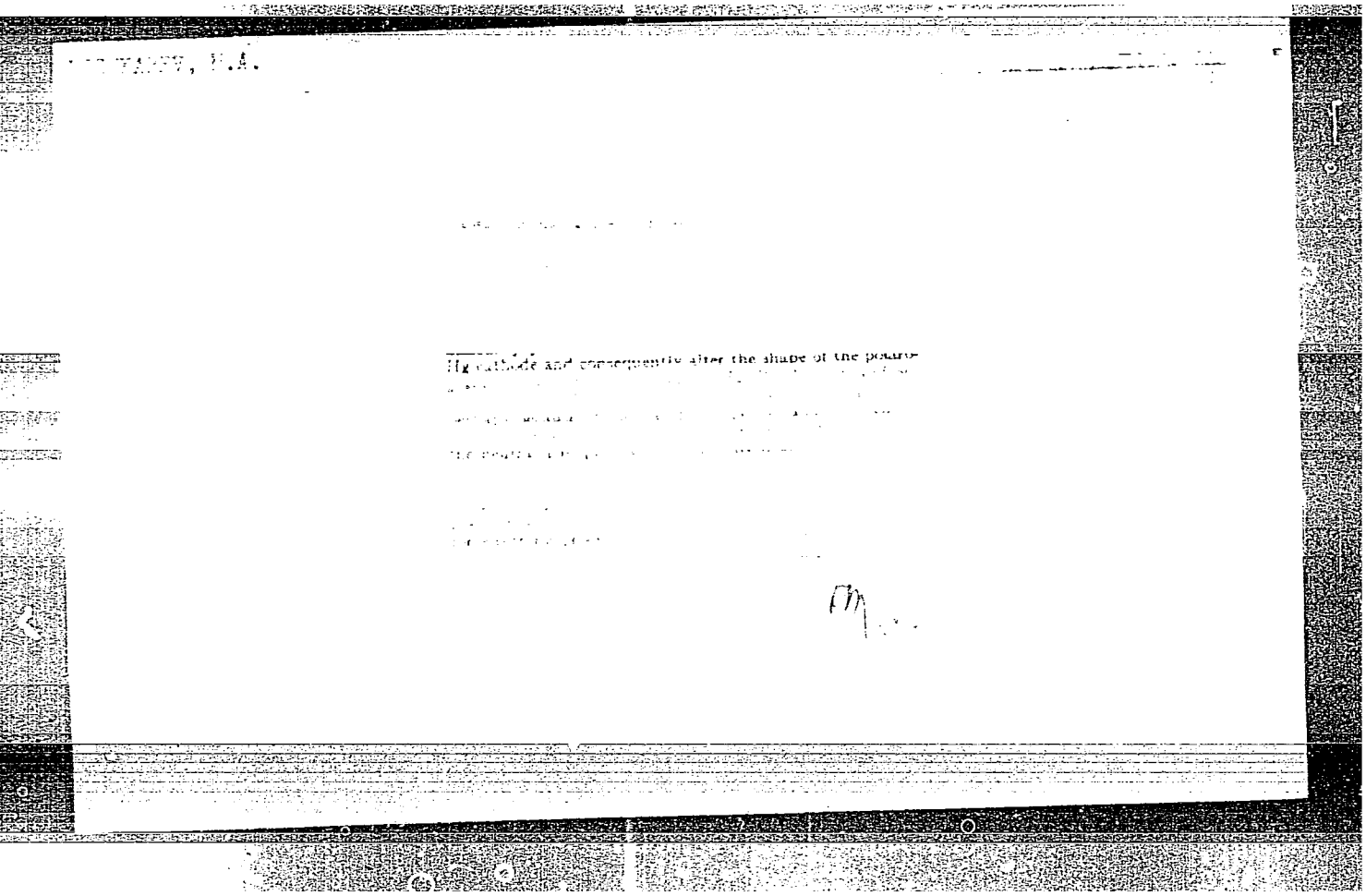
Card 1/2

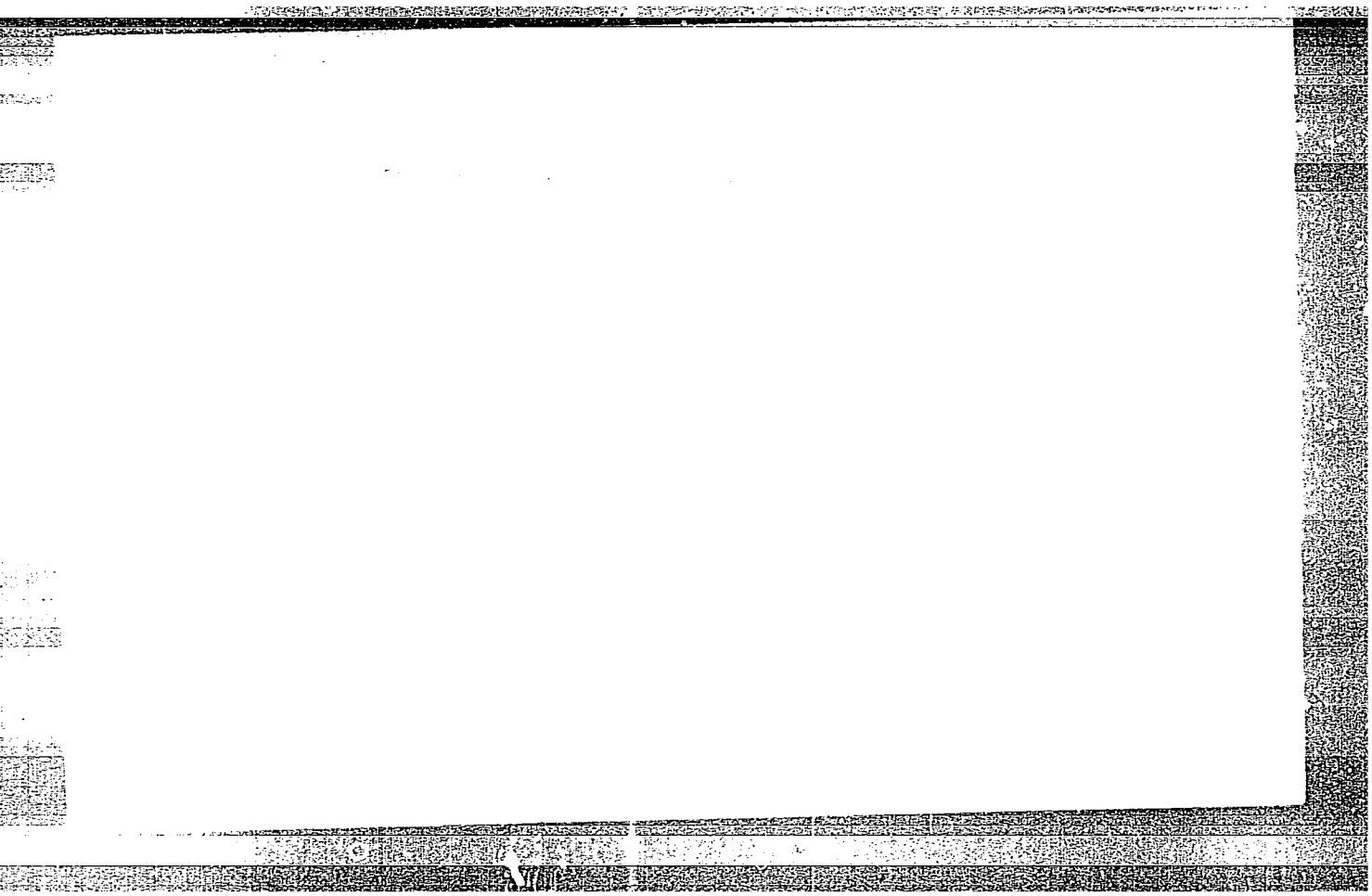
SOV/137-57-6-9772

Electrocrystallization of Bismuth From Perchloric Electrolyte

Under these conditions current density is 60 amps/dm^2. G.S.

Card 2/2





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LOSHKAREV, M.A.

USSR/Physical Chemistry - Electrochemistry B-12

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3948

Author : Loshkarev M.A., Sevryugina M.P.
Inst : Dnepropetrovsk Chemico-Technological Institute
Title : A New Group of Inhibitors of Cathode Separation of Metals

Orig Pub : Dokl. AN SSSR, 1956, 108, No 1, 111-114; Tr. Dnepropetr. khim.-tekhnol. in-ta, 1956, No 5, 129-134

Abstract : A study was made of the effect of a number of surface active condensation products of ethylene oxide on kinetics of metal ions discharge at Hg electrode. Polarograms recorded with solutions containing ions Zn^{2+}, Cd^{+2}, Cr^{3+}, Cu^{2+}, Sn^{2+} (0.05 g-equivalent/liter) and 1N H_2SO_4 with additions of 2 g/liter OS-20 and 0.05 g/liter and more of equalizer "A", have shown inhibition of the discharge of these ions, that terminates with OS-20 at -1.4 to -1.5 v (saturated calomel electrode). Adsorption

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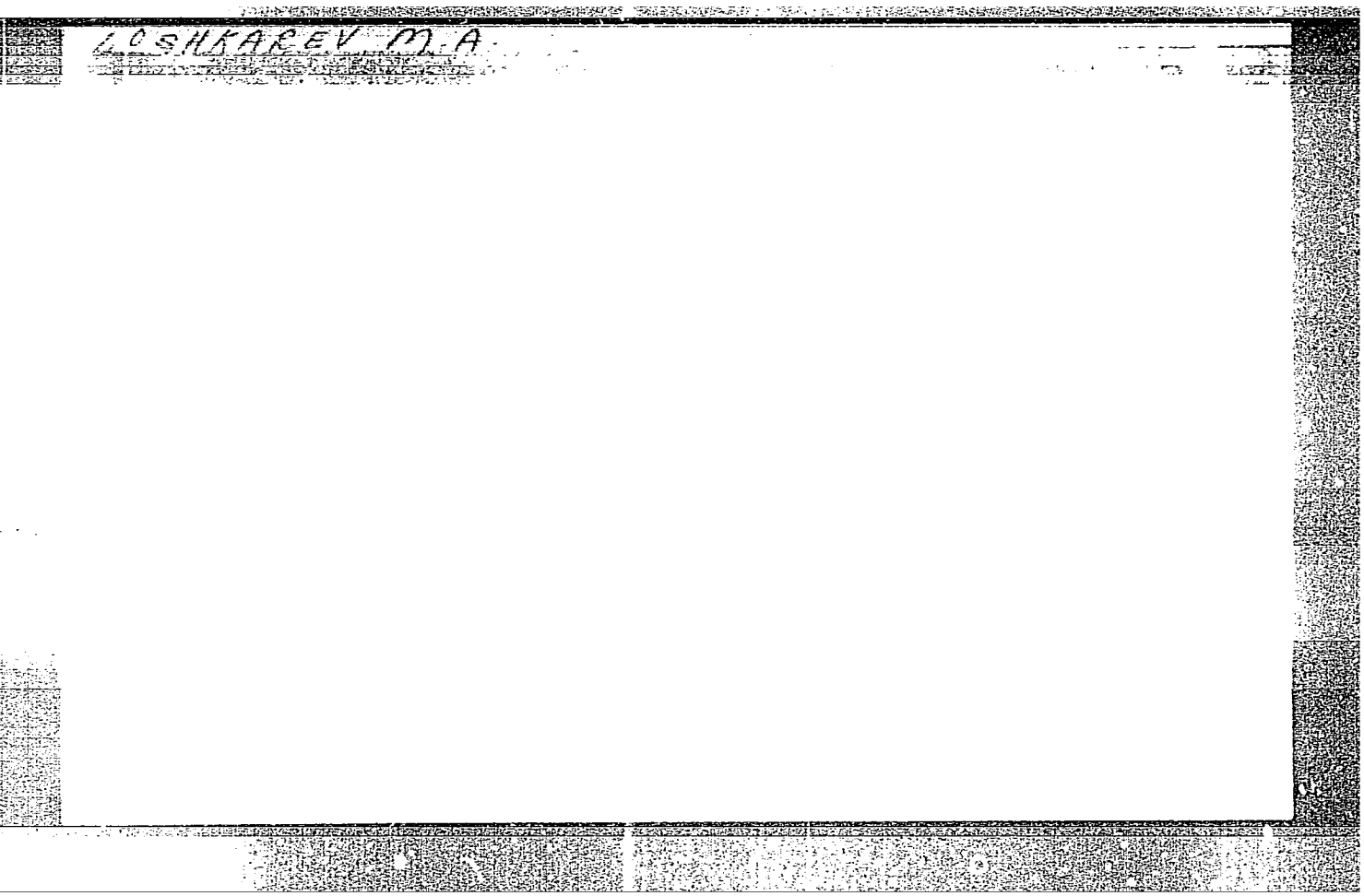

Translation from: Referativnyy zhurnal, Mekhanika, 1959, Nr 7, p 120 (USSR) SOV/124-59-7-7924

AUTHOR: Loshkarev, M.A.

TITLE: Investigation of the State of Stress in a Thick-Walled Cylinder Weakened by a Vent

PERIODICAL: V sb.: Vopr. prochnosti v khim. mashinostr. Moscow, Mashgiz, 1958, pp 44 - 53

ABSTRACT: The results are quoted of an experimental investigation of the stress concentration arising within a thick-walled cylinder weakened by a radial through vent and subjected to internal pressure. The stresses were determined by the tensometric method with the application of tensometric wire pick-ups (on the internal surface) and a small-base induction strain-gauge (on the external surface). The numerical values of the concentration coefficients are given in dependence on the ratio of the internal diameter of the cylinder to the external one and on the ratio of the diameter of the vent to the diameter of the cylinder. As a result of the investigation it was found out that the stress

Card 1/2

Investigation of the State of Stress in a Thick-Walled Cylinder Weakened by a Vent

concentration increases with an increase in the thickness of the wall and also with an increase in the diameter of the radial vent. The cited results pertain to the case, when the pressure acts upon the internal surface of the cylinder and the radial vent and, moreover, upon the surface of the covers sealing the cylinder at the ends. The results from investigating the stresses in a cylinder weakened by an external non-through hole are cited. The stresses were measured on the external surface of the cylinder near the hole edge and on the internal surface in the spot under the hole. It was found out that the state of stress on the internal surface of the cylinder did not practically vary (within the limits of elastic deformations), even for a considerable depth of the hole.

S.V. Boyarshinov

Card 2/2

5(4)

AUTHORS: Loshkarev, M. A., Burmistrov, S. I., SOV/153-58-2-3/20
Tsymbal, R. M.

TITLE: Kinetics of the Nitrosation of Secondary Aromatic Amines (Kinetika nitrozirovaniya vtorichnykh aromaticheskikh aminov) Communication I. Velocity of the Nitrosation of Tropaeolin in Sulfuric Acid Solutions (Soobshcheniye I. Skorost' nitrozirovaniya tropeolina v rastvorakh sernoy kisloty)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 2, pp 6 - 16 (USSR)

ABSTRACT: In earlier papers the authors presented the results of their investigations of the equilibrium of the nitrosation reaction of single secondary aromatic amines; the values of their isobaric potentials and of the heat effects of the reactions were calculated. In the present communication the velocity mentioned in the subtitle is studied in dependence on the concentration of the dipole and anion form of tropaeolin, on the HNO_3 content, on the total acidity, and on the

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temperature. The explanation of the influence of these factors must make it much easier to determine the mechanism of the N-nitrosation, as the knowledge in this field is still insufficient. After a survey of publications and a discussion mentioning the viewpoints of some scientists (Refs 2-16) the authors found that the assumptions proposed on the mechanism and the kinetics of the interaction of nitrous acid with the amines are manifold and contradicting. To solve the problem set the reaction mentioned in the subtitle and investigated already earlier to some extent was selected again. It can take part between the nitrosifying agents on the one hand and either the dipole (red) or anion (yellow) tropaeolin form on the other hand. The diazotizing (or nitrosifying, resp.) agents can be: free, non dissociated HNO_2, N_2O_3, $H_2NO_2^+$ cations or $NC^{(+)}$ etc.

Of course, in all these cases several kinetic equations may be obtained that differ with respect to the specific reaction order with regard to HNO_2, $R_2NH_2^{(+)}$, R_2NH and $H_3O^{(+)}$. The velocity of the nitrosation was determined colorimetrically with a green light filter. The reaction velocity was observed by the changes of the concentration of the red dipole form (z). Based on the experimental results and the equations derived therefrom (1) - (14) the authors arrived at the kinetic equation

$v = k'[R_2NH_2^+] \cdot [HNO_2]$ (15), which does not differ from the one derived under the assumption of the interaction between the free nitrous acid and the hybrid ion tropaeolin form. A choice between these two possible mechanisms can be made only in the case of a quantitative estimation of the values of the velocity constant, taking into account the most probable value

Kinetics of the Nitrosation of Secondary Aromatic Amines. 307/[illegible]
Communication I. Velocity of the Nitrosation of Tropaeolin in Sulfuric Acid Solutions

of the equilibrium constant of the formation reaction of the nitroso cation. The authors concluded that: 1) The velocity of the nitrosation of tropaeolin in various concentrations of the nitrous acid and sulfuric acid was investigated. 2) It was found that the reaction of the nitrosation of tropaeolin is strictly reversible; the direct reaction of the nitrosation is of the first order with respect to $R_2NH_2^+$ and HNO_2, whereas the back reaction is directly proportional to the content of the nitroso tropaeolin and the H_3O^+ ions, and does not depend on the HNO_2 concentration. 3) The velocity constant of the reaction and back reaction amounted to 20° $0.55.10^4$, and 0.26 mol/l per minute, respectively. The activation energy of the nitrosation in H_2SO_4 solutions amounts to 15 kcal/mol. 4) Assumptions were mentioned with respect to the reaction mechanism of the tropaeolin nitrosation reaction. There are 5 figures, 2 tables, and 20

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