KALININ, G.P.; LEVIN, A.G.

Calculation of atmospheric precipitation. Trudy GGO no.175:67-75 '65. (MIRA 18:8)

1. TSentral'nyy institut prognozov.

ACC NR: AP7004588 SOURCE CODE: UR/0050/66/000/008/0035/0037

AUTHOR: Levin, A. G. (Candidate of technical sciences); Borshchevskiy, Ye. N.

ORG: Hydrometeorological Scientific Research Center SSSR (Gidrometeorologicheskiy nauchno-issledovatel'skiy tsentr SSSR)

TITLE: Choice of parameters of influence functions using an analog computer

SOURCE: Meteorologiya i gidrologiya, no. 8, 1966, 35-37

TOPIC TAGS: analog computer, oscillograph

ABSTRACT: An electronic analog computer can be used in choosing the parameters of influence functions, making it possible to make multiple comparisons of hydrographs; by the method described in this paper the correction of the parameters of the influence functions is possible directly in the selection process. The PR-27 analog computer is supplemented by an oscillograph having a screen measuring 180 x 220 mm with a tube afterglow up to 30 seconds. The oscillograph screen continuously shows the actual and computed hydrographs. The duration of each cycle of comparison of the hydrographs for 100 days is 12 seconds. By varying values directly in the course of solution the operator at the same time can observe on the screen the resulting changes of the computed hydrograph. The operator thus can make a very great number of comparisons in a short

UDC: 551.482.215:681.142.33

Card 1/2

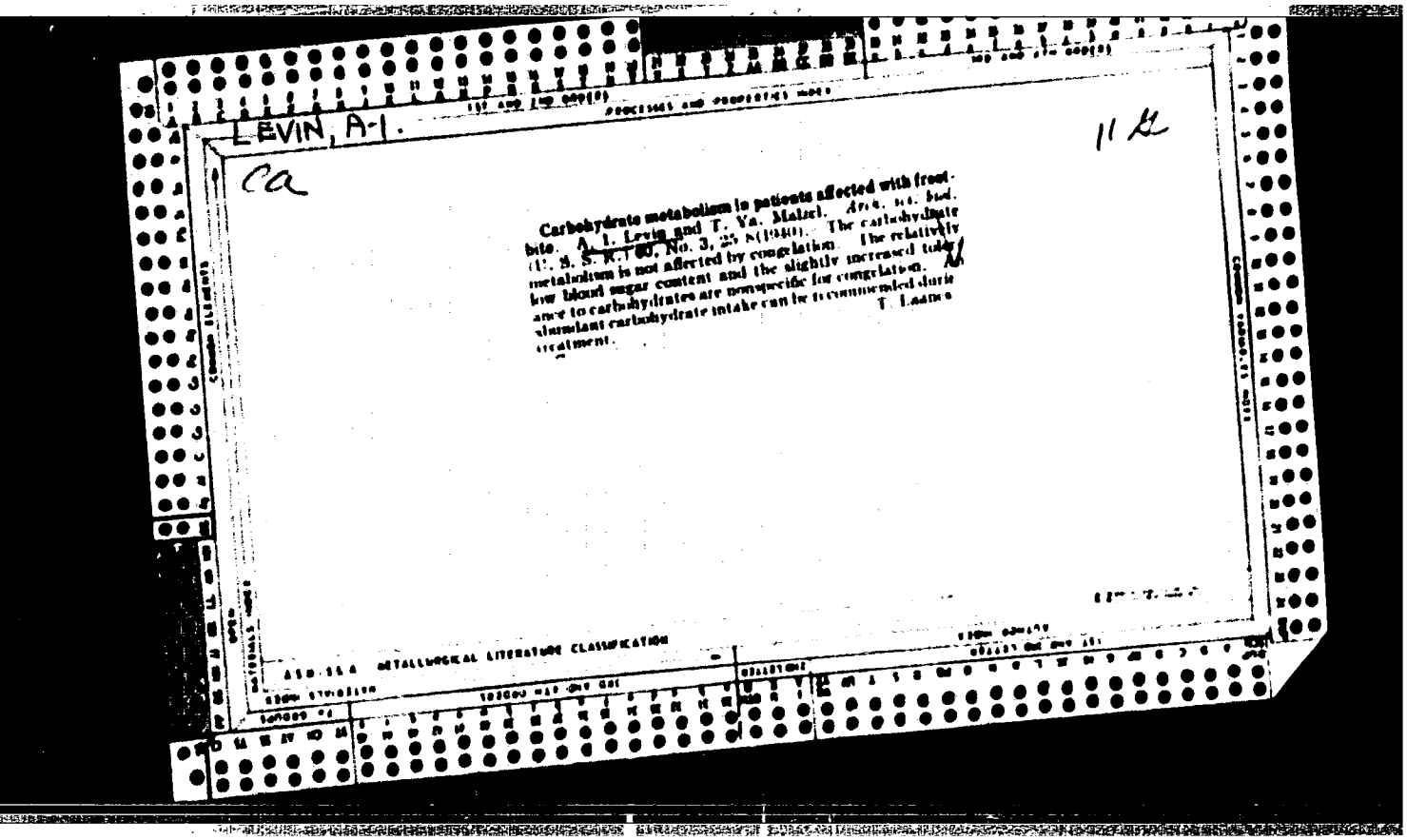
ACC NR: AP7004588

time and obtain the closest coincidence, also establishing the limits within which it is necessary to vary the parameters. This would be extremely tedious and time-consuming by any other method. Orig. art. has: 2 figures.

[JPRS: 38,469]

SUB CODE: 09 / SUBM DATE: 31Jan66 / ORIG REF: 003 / OTH REF: 002

Card 2/2



LEVIN, A. I.; KHALETSKAYA, F. M.

Contribution to the Problem of the Pathogenesis of Frost bite.

The Role of Local Disturbances of the Blood Circulation

Arkhiv Biol Nauk, 60, 1941, 3, 15-24

TUSHINSKIY, M.D.; LEVIN, A.I.

Characteristics of Botkin's diseases (epidemic virus hepatitis) according to clinical data, 1947-1948. Sovet.vrach.aborn. no.17: 13-20 S '49. (CLML 19:2)

1. Of the Propedeutic and Therapeutic Clinic of the First Leningrad Medical Institute imeni I.P.Pavlov.

LEVIN, A.I.; BABOV, D.M.; SHELEKETIN, A.V.

"Pneumoconiosis"; bibliographic index to Russian literature from 1918-1955. Reviewed by A.I.Levin, D.M.Babov, A.V.Sheleketin. Gig. truda i prof.zab. 1 no.5:62-63 S-O '57. (MIRA 10:11)
(BIBLIOGRAPHY--LUNGS--DUST DISEASES)

USSR / Pharmacology, Toxicology. Anti-Inflammatory Drugs. V

Abs Jour: Ref Zhur-Biol., No 9, 1958, 42436.

Author : Levin A. I.
Inst : Not Given.
Title : Butadione Therapy of Reiter's Syndrome.

Orig Pub: Vrachebn. delo, 1957, No 10, 1083-1084.

Abstract: The author reports that butadione appears to be an effective drug in the therapy complex of the socalled Reiter's Syndrome.

Card 1/1

LEVIN, A. I.

LEVIN, A.I., kand.med.nauk

Reorganization of teaching in medical schools. Gig. i san. 23 no.1: 64-65 Ja '58. (MIRA 11:2)

1. Iz Krivoroshskogo instituta gigiyeny truda i professional'nykh zabolevaniy.
(MEDICINE--STUDY AND TEACHING)

LEVIN, A.I.; KRASIL'SHCHIK, D.Z. (Krivoy Rog)

Combination of silicosis, tuberculosis, and cancer of the lungs.
Arkh.pat. 21 no.6:73-74 '59. (MIRA 12:12)

1. Iz Krivoroshskogo instituta gigiyeny truda i profzabolevaniy (dir. - kand.med.nauk Ye.I. Steshenskaya) i tuberkuleznoy bol'nitsy (glavnyy vrach P.G. Zaryankin).
(LUNG NEOPLASMS, compl.
silicosis & tuberc. (Rus))
(TUBERCULOSIS, PULMONARY, compl.
silicosis & lung cancer (Rus))
(SILICOSIS, compl.
pulm. tuberc, & lung cancer (Rus))

KARAPATA, A.P., kand.med.nauk; LEVIN, A.I., kand.med.nauk; LAZIDI, G.Kh.; VOLKOVA, V.M.

Treatment of hypertension with reserpine. Kaz.-med.zhur. 40 no.2:62-65 Mr-Ap '59. (MIRA 12:11)

1. Iz Krivorozhskoy klinicheskoy spetsializirovannoy bol'nitsy (glavvrach - A.G.Shumakov).
(HYPERTENSION) (RESERPINE)

S/081/61/000/011/033/040
B110/B201

AUTHORS: Levin, A. I., Ryskin, M. I.

TITLE: Production of standard fuels and individual hydrocarbons

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 11, 1961, 485, abstract 11M214 (11M214) (Tr. Vses. n.-i. in-t neftekhim. protsessov, 1960, vyp. 1, 129-146)

TEXT: Synthol, a mixture of hydrocarbons of the paraffin series, served as starting material for the production of n-heptane. It consists mainly of C_5-C_9 as well as of the accompanying unsaturated hydrocarbons (up to 40-43% in the low-boiling and up to 20% in the high-boiling fractions) with a possible content of the heptane-heptene fraction of about 20%, inclusive of 13.6% n-heptane. Synthol was subjected to gradual fractionation on a laboratory column with 25 plates and the reflux number 20. Most of the heptene-heptane fraction is contained in the fraction boiling between 96 and 98°C. Unsaturated hydrocarbons were purified by means of sulfuric acid or by hydrogenation of this fraction at 160°C, at a volume rate 0.15 per volume of catalyst (nickel on kieselguhr), and at an H_2

Card 1/3

Production of standard fuels and ...

feeding rate of 8 l/hr. Under equal fractionation conditions the yield of standard heptane obtained by hydrogenation is 23-35% higher than on purification by sulfuric acid. The n-heptane samples so obtained display the following characteristics: d_4^{20} = 0.6831 - 0.6848; n_D^{20} = 1.38777 - - 1.38825, aniline point 70.0-70.1, boiling point 98.0-98.5, octane number 0. The purity of the product obtained was checked by taking a Raman spectrum. The yield of standard heptane is 35.6% of the capacity per working cycle. Standard and commercial isooctane (fuel S) were obtained from alkyl gasoline of Gur'yevskiy NPZ (Gur'yevsk NPZ) in two stages: a) separation of the 80-100°C fraction from the alkylate on the rectification units of the first stage, and b) separation of standard fuels from the 80-100°C fraction on the precision rectification units of the second stage. The 98.2-99.1°C fraction was taken as commercial and the 99.1-99.4°C fraction as standard isooctane. The total yield of standard fuels was 16.7% of the initial gasoline. Standard isooctane had d_4^{20} = 0.6919; n_D^{20} = 1.3917, boiling point = 99.2°C, octane number 100. Analogously, the following substances were separated from the corresponding

Production of standard fuels and ...

S/081/61/000/011/033/040
B110/B201

alkyl-gasoline fractions: isopentane, 2,3-dimethyl butane, and other hydrocarbons. A project of provisional industrial production conditions for standard n-heptane was suggested. The production of standard hydrocarbons was started on an experimental plant. Technical data concerning the planning of an industrial plant for standard fuels are given. [Abstracter's note: Complete translation.]

Card 3/3

ZHELEZNYAK, A.S.; LEVIN, A.I.

Effect of certain structural factors on the effectiveness of laboratory columns with a spiral prismatic packing. Trudy VNIINeftekhim no.1:147-155 '60. (MIRA 14:1)
(Packed towers)

LEVIN, A.I., kand.med.nauk (Krivoy Rog)

Vectorcardiogram in pneumoconiosis. Klin.med. no.4:74-78 '62.
(MIRA 15:5)

1. Iz Krivorozhskogo instituta gigiyeny truda i profzabolevaniy (dir. - kand.med.nauk A.G. Shumakov).
(LUNGS--DUST DISEASES) (VECTORCARDIOGRAPHY)

LEVIN, A.I., kand.med.nauk

Significance of the liquid retention test in pneumoconiosis. (MIRA 16:2)
Vrach.delo no.1:138-140 Ja '63.

1. Krivorozhskiy institut gigiyeny truda i professional'nykh zabolevaniy.
(URINE--ANALYSIS AND PATHOLOGY) (LUNGS--DUST DISEASES)

LEVIN, A.I., kand.med.nauk; KOVAL'CHUK, A.A., kand.med.nauk

Excretion of 17-ketosteroids in pulmonary cardiac insufficiency. Vrach. delo no.8:33-36 Ag '63. (MIRA 16:9)

1. Krivorozhskiy institut gigiyeny truda i professional'nykh zabolevaniy.
(STEROIDS) (COR PULMONALE)

LEVIN, A.I., kand. med. nauk

Use of steroid hormones in pulmonary and cardiac insufficiency. Sov. med. 27 no.12:30-33 D'63 (MIRA 17:4)

1. Iz Krivorozhskogo nauchno-issledovatel'skogo instituta gigiyeny truda i professional'nykh zabolevaniy (dir. - kand.med. anuk A.G. Shumakov).

LEVIN, A.I.

Reflex influences from the receptors of the stomach to the heart under normal and experimental pathological conditions. Trudy Inst. fiziol. 9:241-244 '60. (MIRA 14:3)

1. Laboratoriya kortiko-vistseral'noy patologii (saveduyushchiy - I.T.Kurtsin) Instituta fiziologii im. I.P.Pavlova.
(REFLEXES) (STOMACH)

LEVIN, A.I., prof.; SMOLENSKIY, G.A., kand. med. nauk; [illegible], A.I.

Comparative analysis of the results in treating [illegible]cardia with orinit and manitrit. Sov. med. 28 no.1:28-30 Ja '65. (MIRA 18:5)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - prof. A.I. Levin) Permskogo meditsinskogo instituta.

LEVIN, A.I.

Comparative characteristic of laboratory fractionating columns and caps. Trudy Inst."Khimgaz" no.6:139-156 '51. (MLRA 7:8)
(Distillation, Fractional)

3

USSR

Testing and evaluating methods for laboratory fractionating columns. A. I. Levin and L. O. Semenyuk. *Trudy Voronezh. Gos. Univ. Issledovatel. Inst. Khim. Pererabotki Gazov* (*KHIMIGAZ*) 6, 124–39(1951).—Various methods were investigated for testing lab. fractionating columns used for sepg. binary liquid mixts., and 2 standard methods are recommended: (a) benzene-dichloroethane standard mixt. for the columns having less than 50 theoretical plates, and (b) heptane (b. 98.4°) + isooctane (b. 99.2°) standard mixt. for the columns including up to 300 theoretical plates (ideal stages). For detg. the compn. of the mixt. obtained during the operation, the "stannic points" method (max. crit. temp. points of $SnCl_4$ soln. in components: 160.2° for heptane and 195.5° for isooctane) was successfully applied. Testing methods for fractionating columns include the following detns.: max. downflow liquid rate, static and dynamic "liquid hold-up", equil. time, no. of theoretical plates (ideal stages): (a) in equil. by varied downflow liquid rates and (b) in certain working conditions. W. P.

Levin, N. I.

4

C 7 [illegible]

Influence of certain factors on the effectiveness of laboratory fractionating columns. A. I. Levin, N. Kh. Artyukhovskaya, and L. O. Sarancuyuk. *Trudy Vsesoyuz. Nauch.-Issledovatel. Inst. Khim. Reaktivov i Osobo Chistykh Veshchestv (KHIMGAZ)* 6, 157–77(1951).—A study of certain factors was carried out, e.g.: (a) designing factors: dimensions of columns (4–25 mm. in diam. and 25–170 cm. high), type and size of packing, material and arrangement of packing, verticality and taper of shell, methods of heating and insulating; and (b) technological factors: physicochem. properties of treated mixts. and their compn., initial vol. of mixt. to be sepd.; amt. of "liquid hold up" in packing, specific rate of downflow liquid, rate and total amt. of distd. product and reflux ratio, thermal operating condition, influence of moistening, wastes, etc. The highest fractionating effectiveness was shown by packing 1 × 1 mm. 3-edged spirals (cf. preceding abstr.), while the lowest was with small glass balls. With increasing of column diam. from 4 to 15 mm. the effectiveness of 3-edged spiral packing is also increased by about 20%. Increasing the height of column from 45 to 140 cm., while packing is sectionally arranged, has no effect upon the relative effectiveness of packing, but if the column is continuously packed its height increase from 10 to 100 cm. leads to raise of "height equiv. to a theoretical plate" by 30–35%. Deflection within 45° from a vertical position for the columns of small diam. packed by 3-edged spirals has no practical effect upon column effectiveness. Column tests with the use of 3 different mixts. (benzene-dichloroethane; CCl_4-benzene; heptane-isooctane) show similar results. An evaluation of column effectiveness in equil. is dependent upon the compn. and initial vol. of tested mixt. The no. of theoretical plates (ideal stages) is decreased (according to Obnientsev-Frost's evaluation formula), with the exception of the operating conditions with low rates of distillate output.

W. Forsoviev

LEVIN, A. I.

"Investigation of the Influence of Some Structural and Technological Factors on the Operation of Laboratory Rectification Columns." Cand Tech Sci, Leningrad Sci-Res Inst of Petroleum Refining and Production of Synthetic Liquid Fuel 'LenNII, ' Min Petroleum Industry USSR, Leningrad, 1954. (KL, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Instiutions (12)
SO: Sum. No. 556, 24 Jun 55

LEVIN, A.I.

Choosing a layout for the continuous fractionaltion of synthetic fatty acids. Khim. i tekh.topl. i masel no.8:27-30 Ag '57. (MIRA 10:10)

1.Leningradskiy neftyanoy issledovatel'skiy institut.
(Distillation) (Acids, Fatty)

SOV/65-58-6-6/13

AUTHOR: Levin, A. I.

TITLE: The Composition of Synthetic Fatty Acids Prepared by Oxidation of Solid Paraffins. (Sostav sinteticheskikh zhirnykh kislot, polucheennykh okisleniyem tverdykh parafinov).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.6. pp. 29 - 33. (USSR).

ABSTRACT: The following synthetic fatty acids are prepared in the Shebekino Combine SZhK: $C_5 - C_6$, $C_7 - C_9$, $C_{10} - C_{16}$, $C_{17} - C_{21}$, and also a vat residue containing higher fatty acids than C_{21} and a polymeric residue. The fractional composition of fatty acids was determined by rectification and distillation of samples of acids prepared at Shebekino during 1956. The distillation was carried out under vacuum in a continuous current of heated water vapour(steam) on the apparatus shown in Fig.1. The analysis and distillation of the acids was completed under the leadership of L. O. Semenyuk. The content of fatty acids in the vat residue (over C_{21}) was determined by saponification. Industrial fractions of acids from Shebekino were also tested. Average yield of industrial fractions (1955 - 1956) and their properties are given (Table 1);

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The Composition of Synthetic Fatty Acids Prepared by Oxidation of Solid Paraffins.

distillation curves of industrial samples of fatty acids are shown in Fig.2, and rectification curves of mixtures of fatty acids in Figs. 3 and 4. Table 2: composition of mixtures of fatty acids and industrial fractions from Shebekino. The latter data indicate that each industrial fraction contains a considerable quantity of low-molecular and high-molecular acids which are undesirable admixtures. About 50% of the appropriate acids are contained in industrial fractions (Tables 3). Norms on the required content of these acids in the industrial fractions were computed (Table 4). An increase in the content of these acids (up to 70%- 95%) can be achieved by using repeated rectification. It is pointed out that it is possible to separate the fractions of acids up to C-16 on columns with up to 25 theoretical plates when carrying out the distillation under pressure. There are 4 Tables, 4 Figures, 2 Soviet References.

ASSOCIATION: LenNII

LEVIN, A.I.

Laboratory column for microfractionation. Zhur.prikl.khim. 31 no.11:1655-1661 N '58. (MIRA 12:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov.
(Distillation apparatus)

28(5) SOV/32-25-5-47/56

AUTHOR: Levin, A. I.

TITLE: Rectifying Column With Regularly Arranged Disk-like Filling Bodies (Rektifikatsionnaya kolonka s uporyadochennoy diskovoy nasadkoy)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 5, pp 630-631 (USSR)

ABSTRACT: Rectifying columns with irregularly arranged filling bodies have the disadvantage of causing irregular gas- and liquid distribution which can be avoided by specially arranged filling bodies; and thus a better contact between liquid phase and gas phase can be obtained. The Stedman-type filling body (Ref 1) is one of the best consisting of cone-shaped reticular caps; since its production is difficult, however, this filling body has not been used frequently. In the case under review a similar filling body was made of level reticular disks (Fig) which were reinforced by rings of wire. A column (diameter: 15 mm, height: 35 cm) was produced for testing the filling bodies, and 160 bottoms of copper gauze (16 x 24 openings/cm^2) of the shape mentioned above were inserted at a height of 30 cm. It was found that the column mentioned above is as efficient as

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Rectifying Column With Regularly Arranged Disk-like Filling Bodies SOV/32-25-5-47/56

a column with Stedman filling bodies. There are 1 figure and 3 references, 1 of which is Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov (All-Union Scientific Research Institute of Petro-chemical Processes)

Card 2/2

LEVIN, A.I.; SEMENYUK, L.O.; YELCHANINOVA, B.V.

Rectification of synthetic fatty acids and alcohols. Trudy VNIINeftekhim no.1:5-43 '60. (MIRA 14:1)
(Acids, Fatty) (Alcohols)
(Distillation, Fractional)

LEVIN, A.I.; ZHELEZNYAK, A.S.; SEMENYUK, L.O.

Recovery of low molecular weight monobasic organic acids from aqueous solutions by extraction. Trudy VNIINeftekhim.no.1:84-94 '60. (MIRA 14:1)

(Acids, Organic) (Extraction (Chemistry))

ZHELEZNYAK, A.S.; LEVIN, A.I.

Study of the azeotropism of binary systems. Trudy VNIINeftekhim no.1:95-104 '60. (MIRA 14:1)
(Systems (Chemistry)) (Azeotropy)

POKORSKIY, V.N.; KATSMAN, S.V.; LEVIN, A.I.

Study of synthol for the purpose of obtaining motor fuels. Trudy VNIINeftekhim no.1:105-128 '60. (MIRA 14:1)
(Motor fuels)

LEVIN, A.I.

Laboratory rectification columns. Trudy VNIIneftekhim no.5:3-19 '62. (MIRA 15:7)
(Distillation apparatus)

ARISTOVICH, V.IU.; LEVIN, A.I.; MORACHEVSKIY, A.G.

Liquid - vapor equilibrium in the systems consisting of low molecular weight acids of the aliphatic series and water. Trudy VNIInefteKhim .10.5:84-101 '62. (MIRA 15:7)
(Acids, Fatty)
(Phase rule and equilibrium)

LEVIN, A.I.

Determination of the approximate value of relative volatility of binary systems. Trudy VNIIneftekhim no.5:132-138 '62. (MIRA 15:7)
(Systems (Chemistry))
(Volatility)

LEVIN, A.I.; YELCHANINOVA, B.V.

Thermal stability of high molecular weight fatty acids.
Trudy VNIInoftekhim no.5:139-143 '62. (MIRA 15:7)
(Stearic acid—Thermal properties)

LEVIN, A.I.; GOL'SHMAN, V.G.

Throttling evaporation of synthetic fatty acids. Trudy VNII-neftekhim no.5:144-148 '62. (MIRA 15:7)
(Acids, Fatty)

IGONON, P.G., inzh.; SVITKIN, V.V., inzh.; MITROFANOV, M.G., kand.tekhn.nauk; SLEPTSOV, Yu.S., inzh.; KOLOZHVARI, A.A., inzh.; PASHENKO, M.A., inzh.; ZHIVOLUPOV, M.A., inzh.; Prinimali uchastiye: MUSHENKO, D.V.; TSYSKOVSKIY, V.K.; SHCHEGLOVA, TS.N.; FREYDIN, B.G.; PYL'NIKOV, V.I.; LEVINA, M.I.; LEVIN, A.I.; LUR'YE, Ye.I.; BAYKINA, T.A.; UDOVENKO, S.A; MARCHENKO, T.A.

Effect of the method of liquid paraffin oxidizing on the yield and quality of the obtained fatty acids. Masl.-zhir.prom. 28 no.11:20-23 N '62. (MIRA 15:12)

1. Groznenskiy nauchno-issledovatel'skiy neftyanoy institut (for Igonin, Svitkin, Mirtofanov, Sleptsov, Kolozhvari, Pashenko, Zhivolupov). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov (for Mushenko, TSyskovskiy, Shcheglova, Freydin, Pyl'nikov, Levina, Levin). 3. Lengiprogaz (for Lur'ye, Baykina). 4. VNIISINZh (for Udovenko, Marchenko).

(Paraffins) (Acids, Fatty)

GURYLEV, V.V.; LEVIN, A.I.

Anode behavior of copper in pyrophosphate electrolytes. Zhur. prikl. khim. 37 no.12:2625-2630 D '64.
(MIRA 18:3)

BUSOV, V.M.; LEVIN, A.I.; [illegible], L.M.

Determining the inhibition effect of sodium oleate on the corrosion of copper powders by the method of polarization curves. Zashch.met. 1 no.6:719-720 N-D '65.

(MIRA 19:1)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.

GORODETSKIY, M.S.; LEVIN, A.I.

Approach speed to a given position in position-controlled machine tools. Stan. i instr. 36 no.4:22-25 Ap '65. (MIRA 18:5)

LEVIN, A.I.; CHECHINA, O.N.; SOKOLOV, S.V.

Synthesis of α,ω-dihydroperfluoroparaffins from ω-hydroperfluorinated acids by Kolbes reaction. Zhur. ob. khim. 35 no.10: 1778-1781 O '65. (MIRA 18:10)

KOCHERGOV, V.I.; LEVIN, A.I.; MUKHIN, V.A.

Investigating conditions for the electrolytic refining of copper in a nickel-containing electrolyte. Izv. vys. ucheb. zav.; tsvet. met. 8 no.5:54-58 '65. (MIRA 18:10)

1. Ural'skiy politekhnicheskiy institut, kafedra tekhnologii elektrokhimicheskikh proizvodstv.

LAZAREV, V.F.; OVCHARENKO, V.I.; LEVIN, A.I.; RUDOY, V.M.

Effect of surface-active substances on the process of passivation of a lead electrode. Zhur. prikl. khim. 38 no.6:1304-1309 Je '65. (MIRA 18:10)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.

BAYBULATOVA, Z.K.; LEVIN, A.I.; RIKHTER, V.G.

Relation between the basic structural elements of the Kara-Bogaz region. Izv. AN SSSR Ser. geol. 29 no.7:52-58 Jl '64
(MIRA 18:1)

1. Nauchno-issledovatel'skaya laboratoriya geologicheskikh kriteriyev otsenki perspektiv neftegazonosnosti, Moskva.

LEVIN, A.I., prof.; SMOLENSKIY, G.A., kand. med. nauk

Clinical and biochemical analysis of a rheumatic fever attack with an acute course. Vop. revm. 3 no.4:46-53 O-D '63. (MIRA 17:2)

1. Iz kafedry propedevtiki vnutrennikh bolezney (zav.-prof. A.I. Levin) Permskogo meditsinskogo instita.

L 27399-65

ACCESSION NR: AP5007520 S/0121/64/000/010/0018/0023

AUTHOR: Levin, A. I.

2
B

TITLE: Electrohydraulic feed drive with wide-range, stepless speed control

SOURCE: Stanki i instrument, no. 10, 1964, 18-23

TOPIC TAGS: hydraulic equipment, automation, metalworking machinery

Abstract: This newly designed electrohydraulic feed drive in the automation of metal-working machinery consists of hydraulic motor, hydraulic amplifier, tachometer generator, electro-mechanical converter, electronic amplifier and a compensating network. The theory of the mechanism is illustrated by numerous equations describing all the electrical and mechanical functions, and by corresponding graphs. Experimental data derived from the test model are also given, including oscillograms of speed variation.

The drive guarantees a wide range of speed control, high degree of speed stability, rigidity of mechanical characteristics, linearity of the controlled characteristics, and high-speed reaction during aperiodic transition processes. Orig. art. has 12 figures and 27 formulas.

Card 1/2

L 27399-65

ACCESSION NR: AP5007520

ASSOCIATION: none

SUBMITTED: 00	ENCL: 00	SUB CODE: IE
NO REF SOV: 000	OTHER: 003	JPRS

Card 2/2

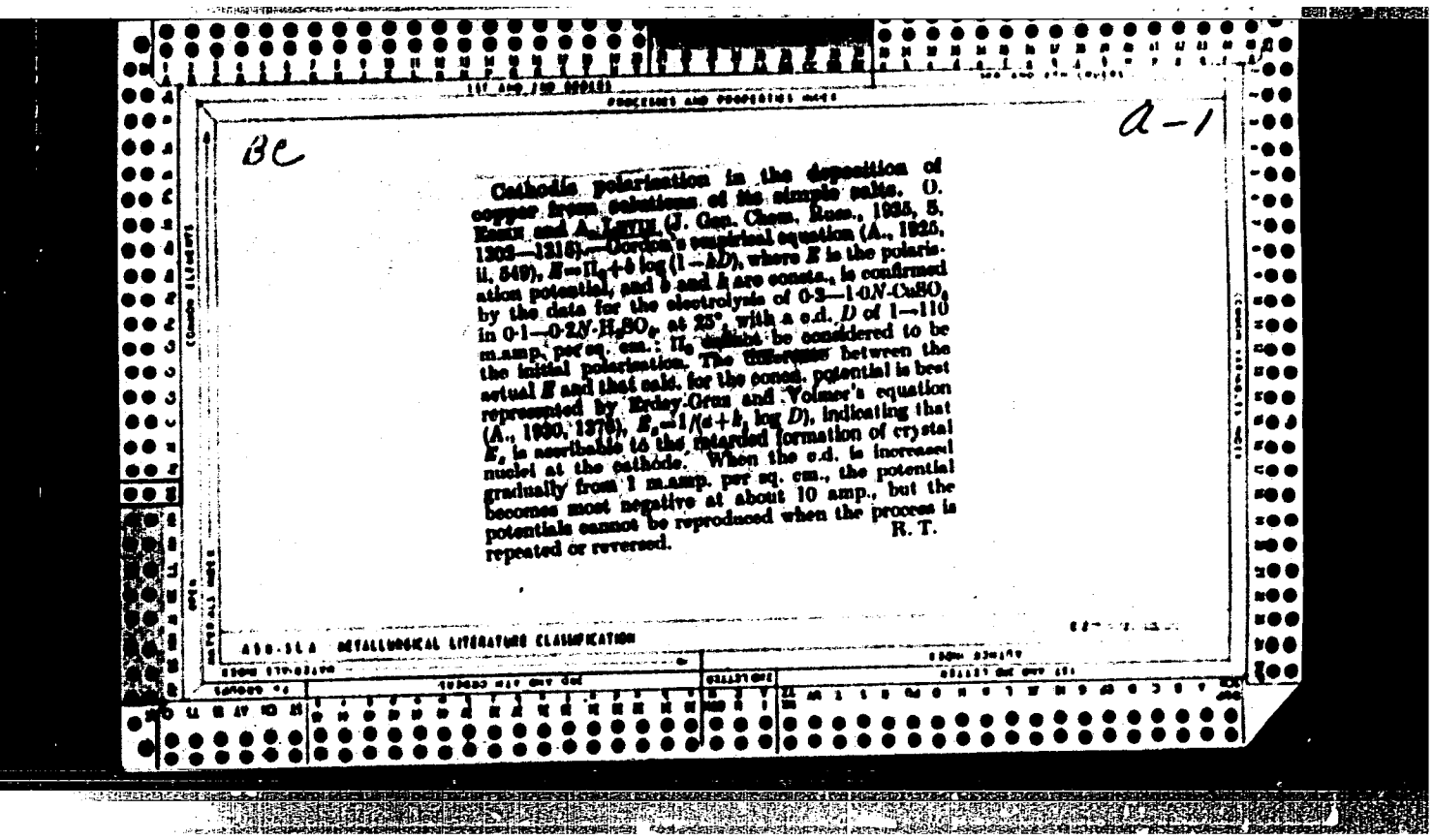
LEVIN, A.I., inzh.; LAZAREV, V.F., inzh.

Concerning the use of a.c. in forming lead plates for storage batteries. Vest. elektroprom. 32 no.6:60-62 Je '61. (MIRA 16:7)
(Storage batteries)

LEVIN, Arnol'd Iosifovich, inzh.; FAYNGERSH, Naum Semoylovich, inzh.; VENGRENYUK, L.I., red.; KARABILOVA, S.F., tekhn.red.

[Use of machinery in building and repairing subscription radio lines and district telephone lines] Mekhanizatsiia rabot po stroitel'stvu i remontu lineino-abonentskoi seti radiofikatsii i VRS. Moskva, Gos.izd-vo lit-ry po voprosam sviazi i radio, 1959. 27 p. (MIRA 12:10)

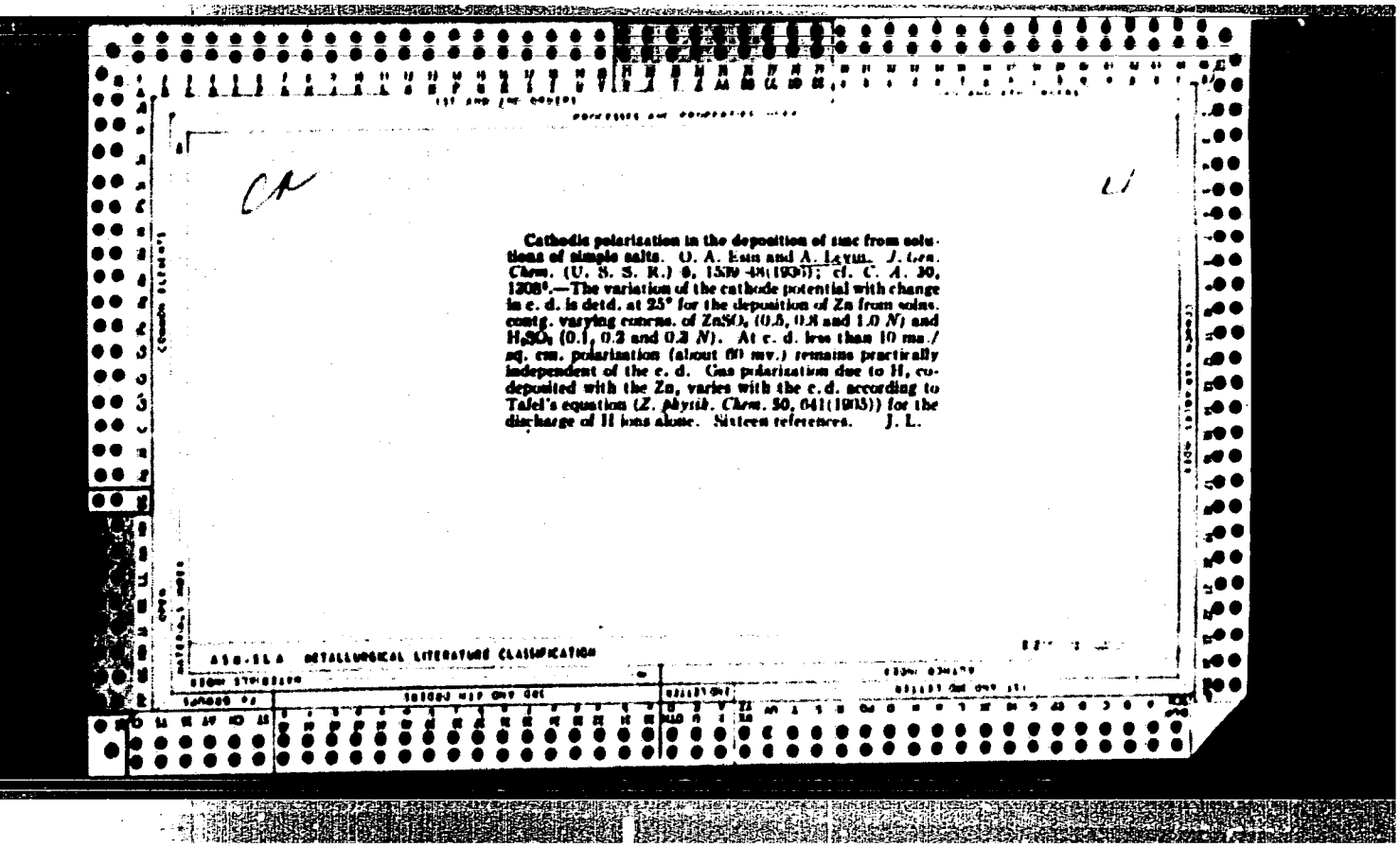
1. Gor'kovskaya oblastnaya direktsiya radiotranslyatsionnoy seti (for Levin, Fayngersh).
(Electric lines--Overhead)



Bc

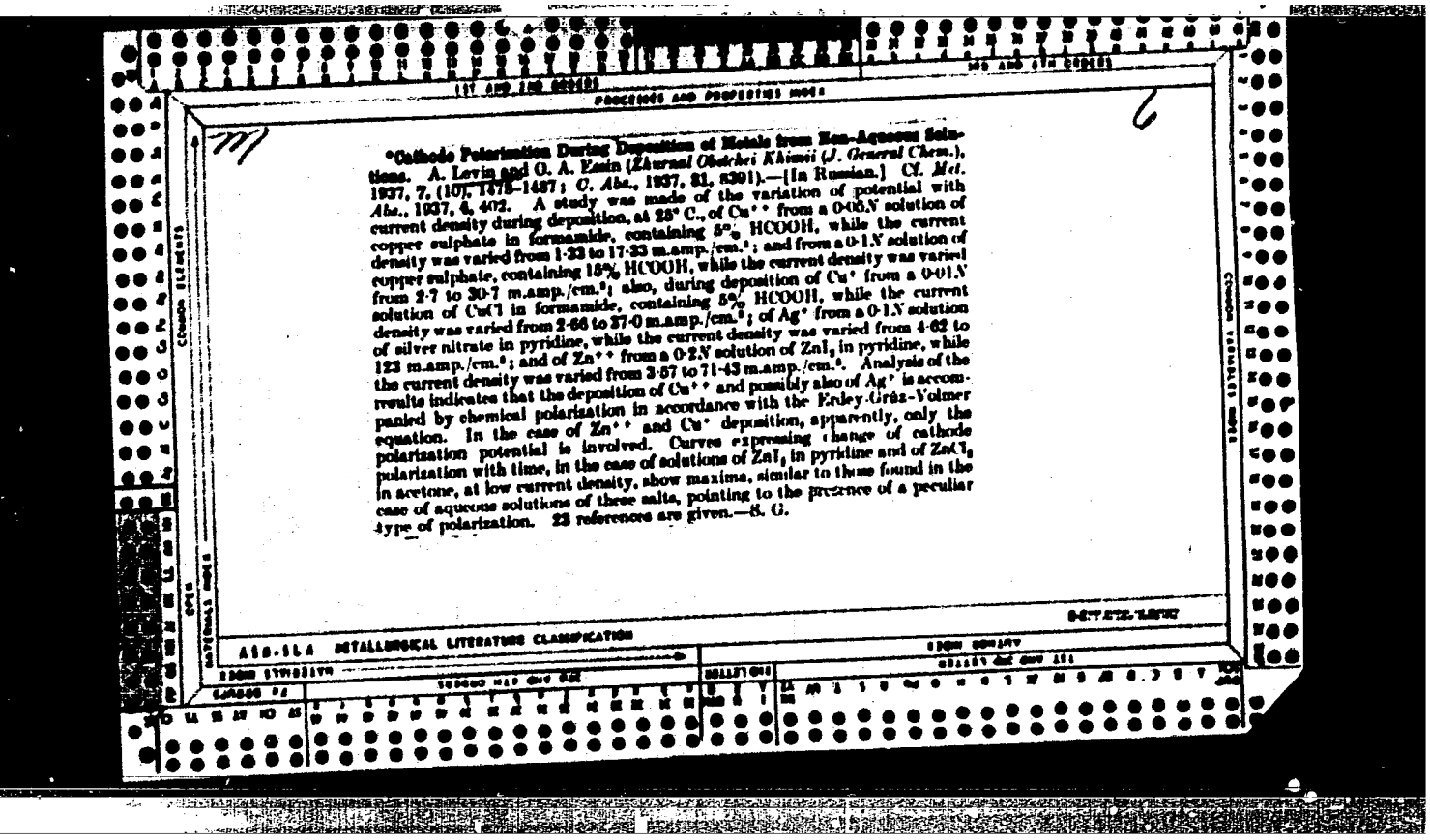
a-1

Cathodic polarisation in the deposition of copper from solutions of its simple salts. O. Reese and A. Lowry (J. Gen. Chem. Russ., 1935, 5, 1303—1316).—Gordon's empirical equation (A., 1925, ii, 849), $E = \Pi_0 + b \log(1 - kD)$, where E is the polarisation potential, and b and k are consts., is confirmed by the data for the electrolysis of 0·3—1·0 N-$CuSO_4$ in 0·1—0·2 N-H_2SO_4 at 25°, with a c.d. D of 1—110 m.amp. per sq. cm.: Π_0 appears to be considered to be the initial polarisation. The difference between the actual E and that calc. for the const. potential is best represented by Erdey-Grúz and Volmer's equation (A., 1930, 1276), $E_x = 1/(a + b_1 \log D)$, indicating that E_x is ascribable to the retarded formation of crystal nuclei at the cathode. When the c.d. is increased gradually from 1 m.amp. per sq. cm., the potential becomes most negative at about 10 amp., but the potentials cannot be reproduced when the process is repeated or reversed. R. T.

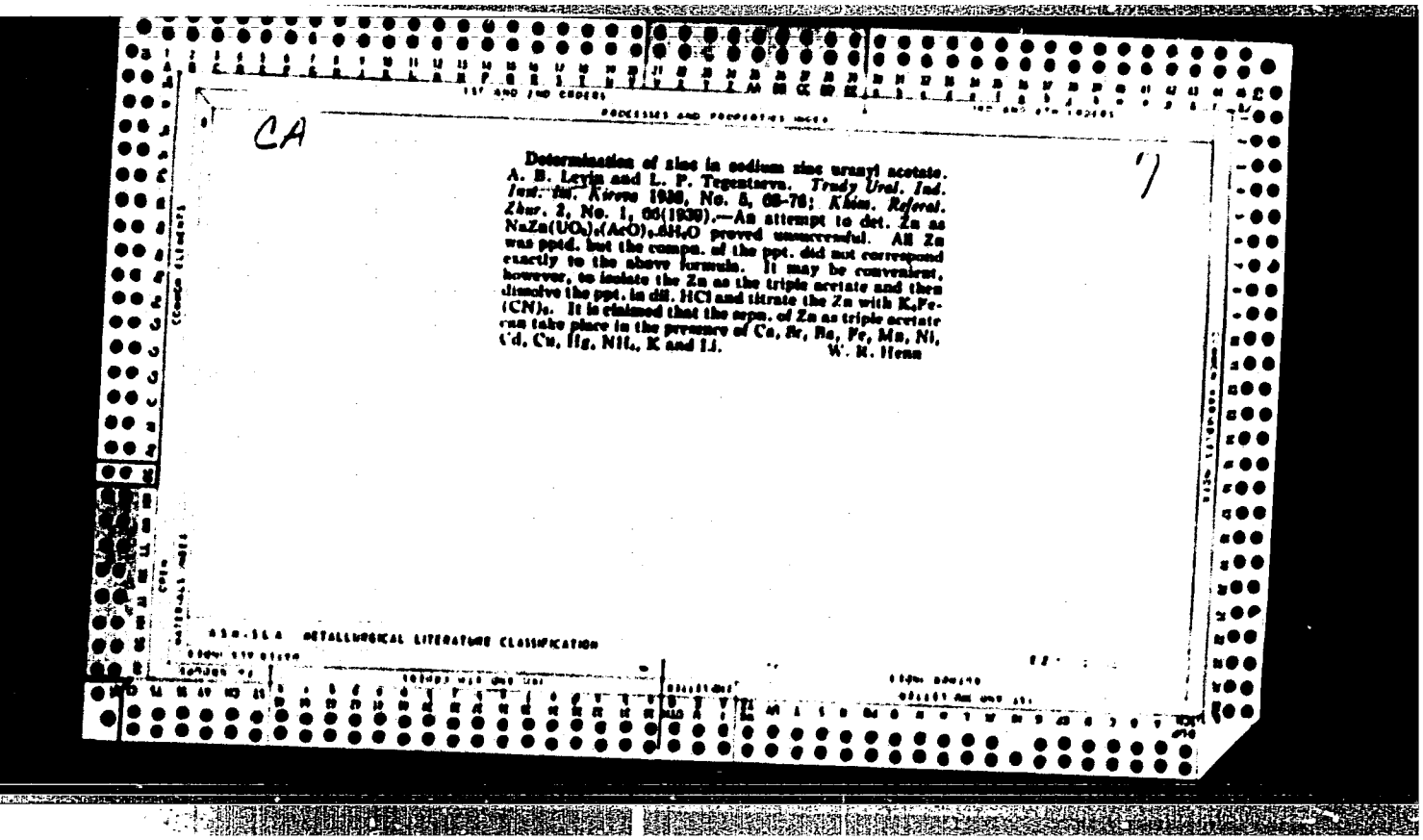


Cathodic polarisation in the deposition of zinc from solutions of simple salts. O. A. Esin and A. Levin. *J. Gen. Chem.* (U. S. S. R.) 6, 1539-48(1936); cf. C. A. 30, 1308⁹.—The variation of the cathode potential with change in c. d. is detd. at 25° for the deposition of Zn from solns. contg. varying concns. of $ZnSO_4$ (0.5, 0.8 and 1.0 *N*) and H_2SO_4 (0.1, 0.2 and 0.3 *N*). At c. d. less than 10 ma./sq. cm. polarization (about 60 mv.) remains practically independent of the c. d. Gas polarization due to H, co-deposited with the Zn, varies with the c. d. according to Tafel's equation (*Z. physik. Chem.* 50, 641(1913)) for the discharge of H ions alone. Sixteen references. J. L.

A50-51A METALLURGICAL LITERATURE CLASSIFICATION



*Cathode Polarisation During Deposition of Metals from Non-Aqueous Solutions. A. Levin and O. A. Esin (*Zhurnal Obshchei Khimii (J. General Chem.)*, 1937, 7, (10), 1475–1487; *C. Abs.*, 1937, 31, 8391).—[In Russian.] Cf. *Met. Abs.*, 1937, 4, 402. A study was made of the variation of potential with current density during deposition, at 25° C., of Cu^{++} from a 0·05*N* solution of copper sulphate in formamide, containing 5% HCOOH, while the current density was varied from 1·33 to 17·33 m.amp./cm.²; and from a 0·1*N* solution of copper sulphate, containing 15% HCOOH, while the current density was varied from 2·7 to 30·7 m.amp./cm.²; also, during deposition of Cu^{+} from a 0·01*N* solution of CuCl in formamide, containing 5% HCOOH, while the current density was varied from 2·66 to 37·0 m.amp./cm.²; of Ag^{+} from a 0·1*N* solution of silver nitrate in pyridine, while the current density was varied from 4·62 to 123 m.amp./cm.²; and of Zn^{++} from a 0·2*N* solution of ZnI_2 in pyridine, while the current density was varied from 3·57 to 71·43 m.amp./cm.². Analysis of the results indicates that the deposition of Cu^{++} and possibly also of Ag^{+} is accompanied by chemical polarisation in accordance with the Erdey-Grúz-Volmer equation. In the case of Zn^{++} and Cu^{+} deposition, apparently, only the polarization potential is involved. Curves expressing change of cathode polarization with time, in the case of solutions of ZnI_2 in pyridine and of $ZnCl_2$ in acetone, at low current density, show maxima, similar to those found in the case of aqueous solutions of these salts, pointing to the presence of a peculiar type of polarization. 23 references are given.—S. G.

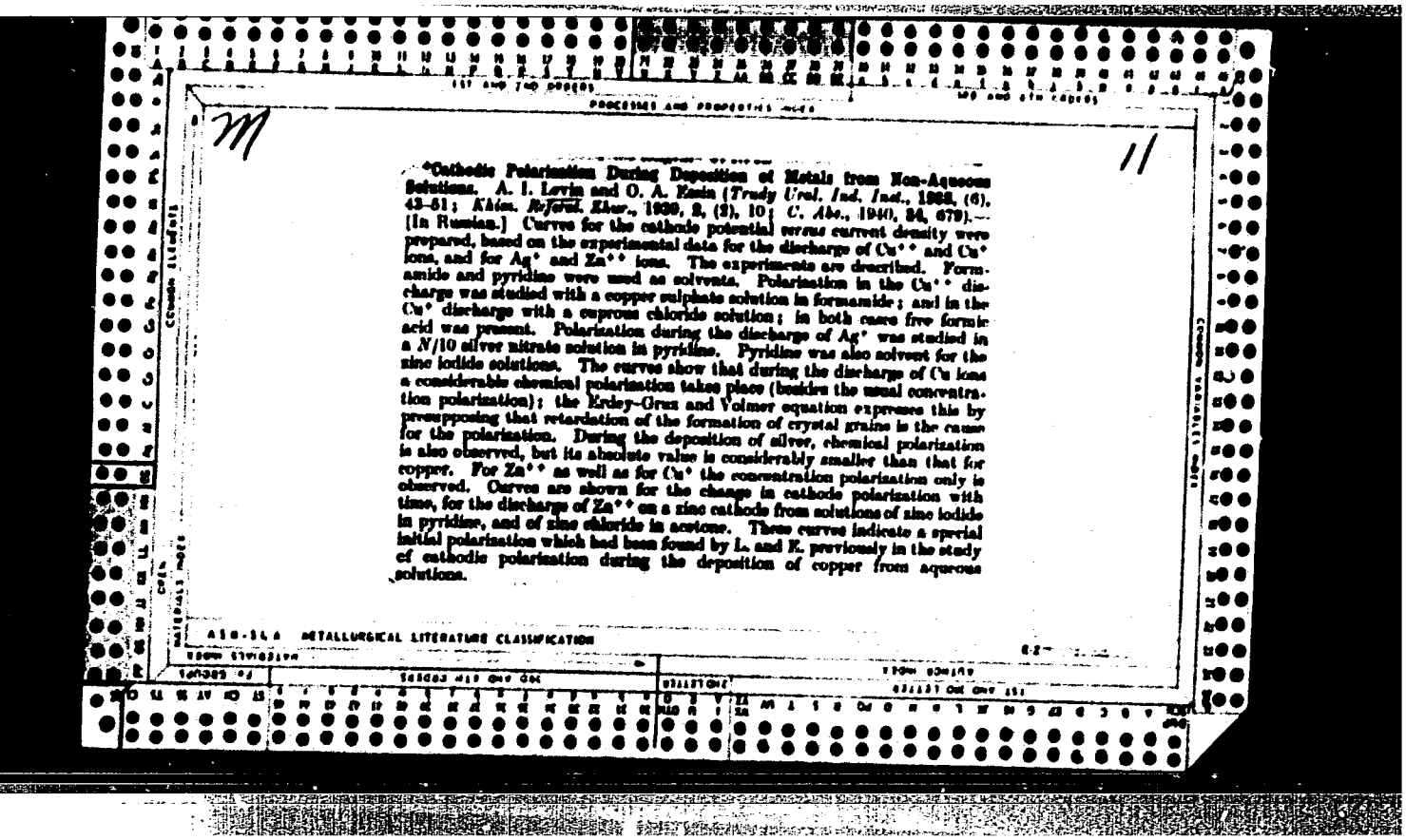


CA

7

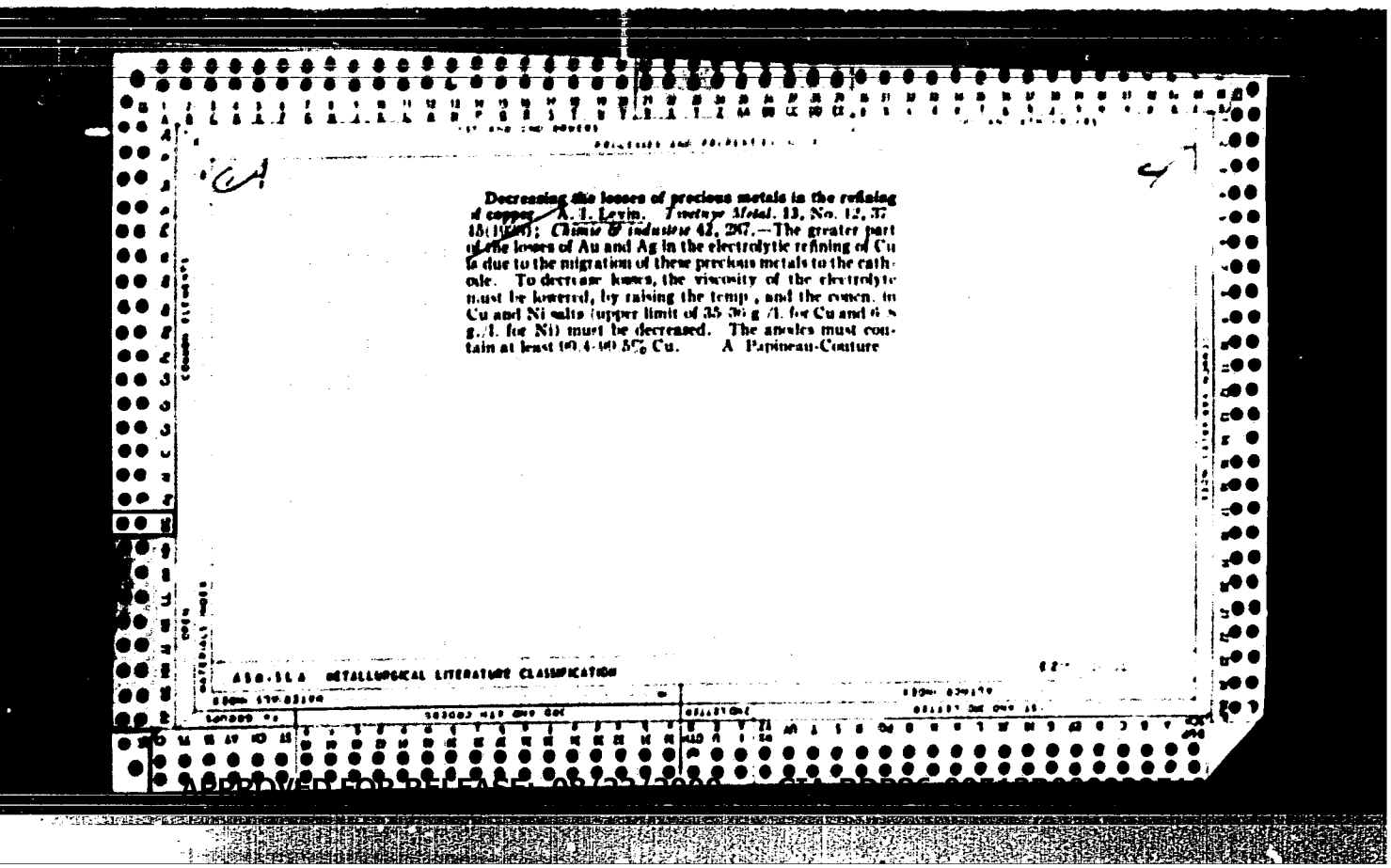
Determination of zinc in sodium zinc uranyl acetate. A. B. Levin and L. P. Tegenteva. *Trudy Ural. Ind. Inst. im. Kirova* 1938, No. 5, 68-76; *Khim. Referat. Zhur.* 2, No. 1, 66(1939).—An attempt to det. Zn as $Na_2Zn(UO_2)_3(AcO)_9.6H_2O$ proved unsuccessful. All Zn was ppted. but the compn. of the ppt. did not correspond exactly to the above formula. It may be convenient, however, to isolate the Zn as the triple acetate and then dissolve the ppt. in dil. HCl and titrate the Zn with $K_4Fe(CN)_6$. It is claimed that the sepn. of Zn as triple acetate can take place in the presence of Ca, Sr, Ba, Fe, Mn, Ni, Cd, Cu, Hg, NH$_4$, K and Li. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



"Cathodic Polarization During Deposition of Metals from Non-Aqueous Solutions. A. I. Levin and O. A. Kasin (*Trudy Ural. Ind. Inst.*, 1938, (6), 43–61; *Khim. Referat. Zhur.*, 1939, 2, (2), 10; *C. Abs.*, 1940, 34, 679).—[In Russian.] Curves for the cathode potential *versus* current density were prepared, based on the experimental data for the discharge of Cu^{++} and Cu^{+} ions, and for Ag^{+} and Zn^{++} ions. The experiments are described. Formamide and pyridine were used as solvents. Polarization in the Cu^{++} discharge was studied with a copper sulphate solution in formamide; and in the Cu^{+} discharge with a cuprous chloride solution; in both cases free formic acid was present. Polarization during the discharge of Ag^{+} was studied in a *N*/10 silver nitrate solution in pyridine. Pyridine was also solvent for the zinc iodide solutions. The curves show that during the discharge of Cu ions a considerable chemical polarization takes place (besides the usual concentration polarization); the Erdey-Gruz and Volmer equation expresses this by presupposing that retardation of the formation of crystal grains is the cause for the polarization. During the deposition of silver, chemical polarization is also observed, but its absolute value is considerably smaller than that for copper. For Zn^{++} as well as for Cu^{+} the concentration polarization only is observed. Curves are shown for the change in cathode polarization with time, for the discharge of Zn^{++} on a zinc cathode from solutions of zinc iodide in pyridine, and of zinc chloride in acetone. These curves indicate a special initial polarization which had been found by L. and K. previously in the study of cathodic polarization during the deposition of copper from aqueous solutions.

A10-54A METALLURGICAL LITERATURE CLASSIFICATION



Decreasing the losses of precious metals in the refining of copper. A. I. Levin. *Tsvetnye Metal.* 13, No. 12, 37-45(1940); *Chimie & industrie* 44, 297.—The greater part of the losses of Au and Ag in the electrolytic refining of Cu is due to the migration of these precious metals to the cathode. To decrease losses, the viscosity of the electrolyte must be lowered, by raising the temp., and the concn. in Cu and Ni salts (upper limit of 35-36 g./l. for Cu and 6-8 g./l. for Ni) must be decreased. The anodes must contain at least 99.4-99.5% Cu. A. Papineau-Couture

A50-55A METALLURGICAL LITERATURE CLASSIFICATION

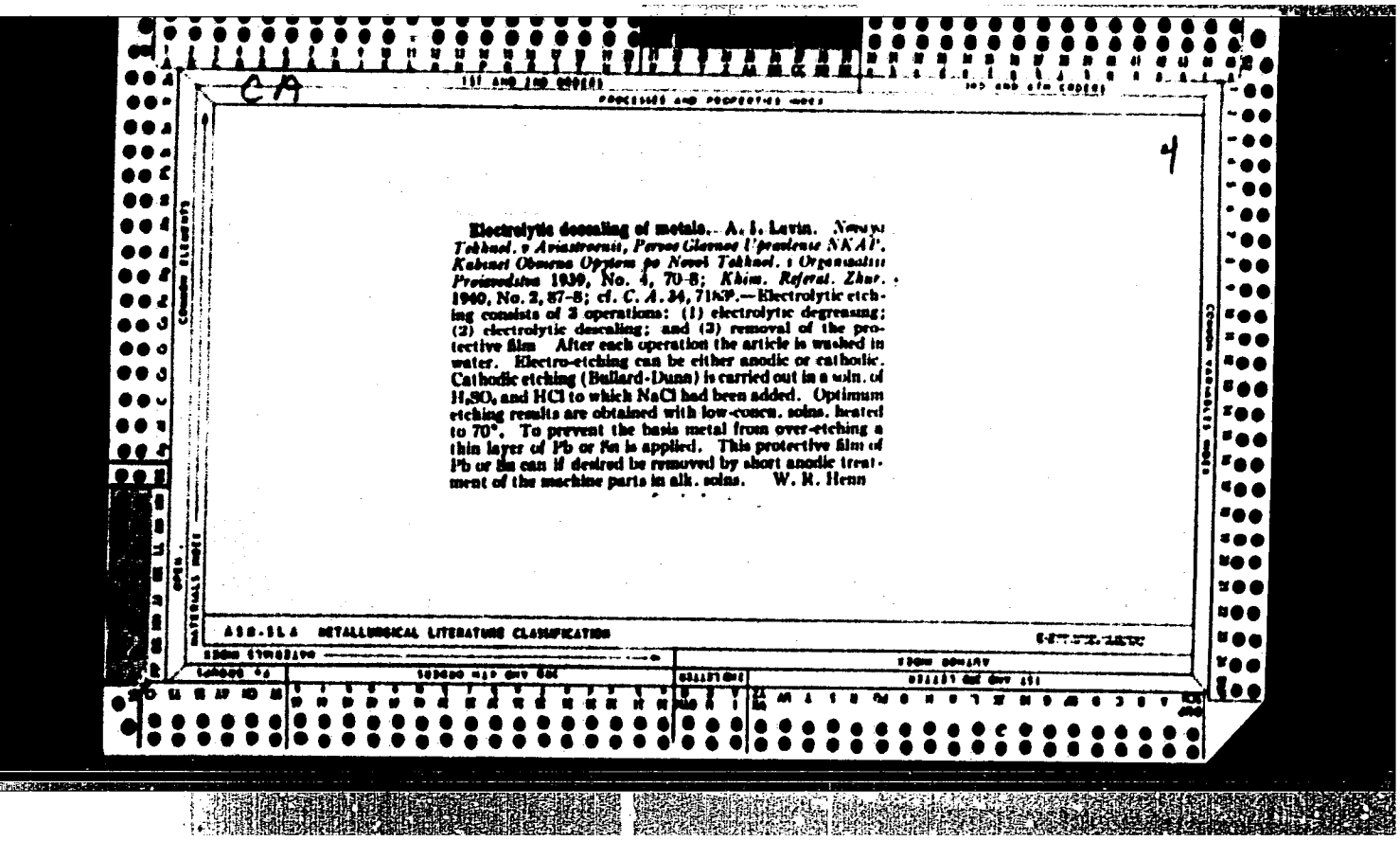
LEVIN, A. I.

4

PROCESSES AND PROPERTIES INDEX

Electrolytic removal of scale. A. I. Levin. *Avtotraktornoe Delo* 1939, No. 2-3, 25-30.—The objects are first degreased electrolytically and then washed in hot and cold water, then immersed in the electrolytic bath where the H bubbles loosen and remove the scale. Pb in the form of a sponge is deposited on the scale-free surface to protect the metal against chem. soln. (Bullard-Dunn process). The Pb-Sb anodes in the bath contain Pb 90-94% and Sb 10-6% and the Si-cast Fe anodes contain Si 20-24, Mn 0.25, C 0.20, P 0.16, S 0.05% and the rest Fe. The ratio of the surface of the Si-cast Fe anodes to the Pb-Sb anodes is 1:1. The objects are removed from the bath and washed twice with water. The Pb and H are removed from the object by anodic treatment in the same kind of soln. as in electrolytic degreasing. The Pb is then dissolved and deposited on Fe cathodes in the form of a dense sponge. B. Z. Kamich

METALLURGICAL LITERATURE CLASSIFICATION

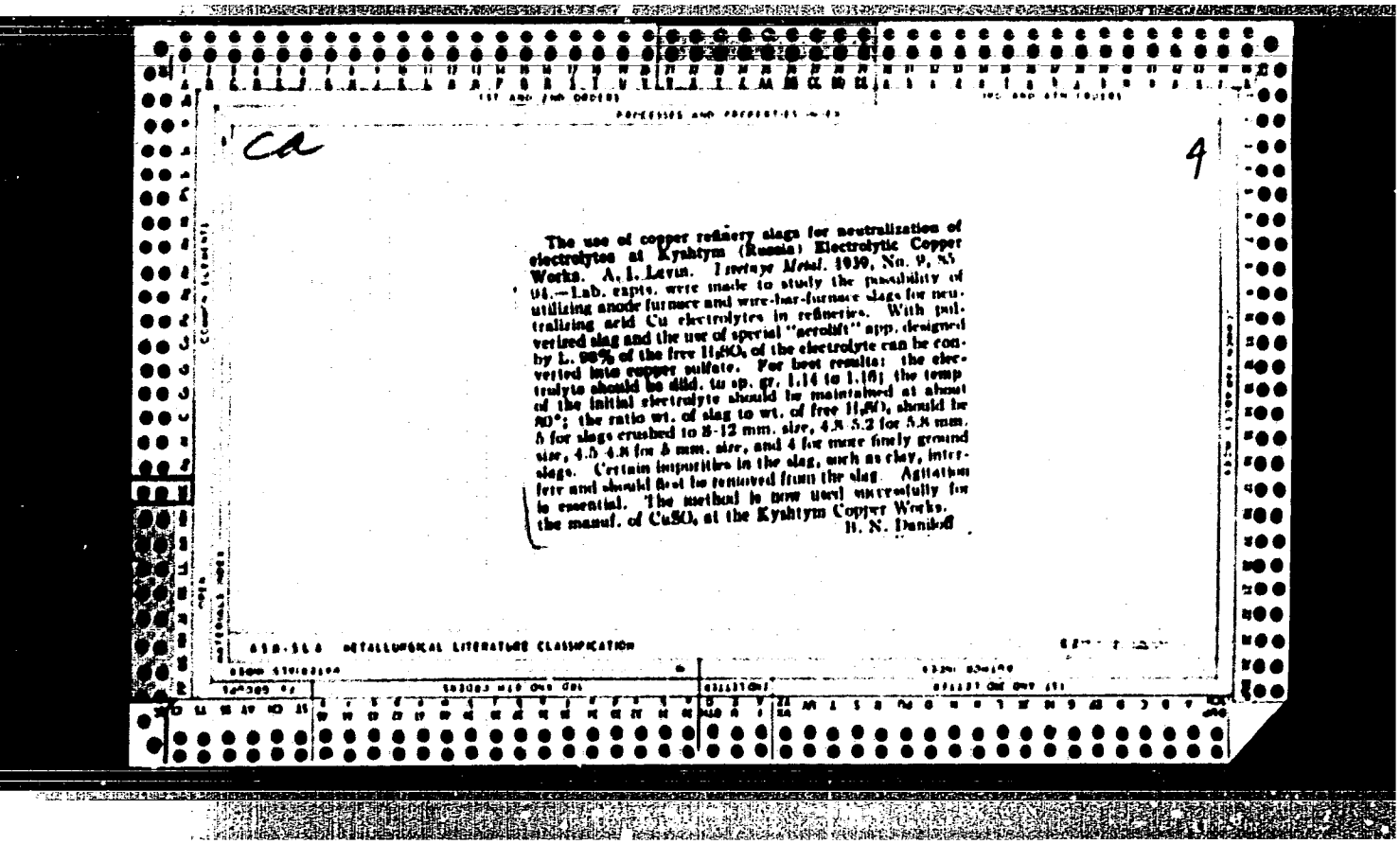


CA

4

Electrolytic descaling of metals. A. I. Lavin. *Novaya Tekhnol. v Aviastroenii, Pervoe Glavnoe Upravlenie NKAP, Kabinet Obmena Opytom po Novoi Tekhnol. i Organizatsii Proizvodstva* 1939, No. 4, 70–8; *Khim. Referat. Zhur.* 1940, No. 2, 87–8; cf. *C. A.* 34, 7187.—Electrolytic etching consists of 3 operations: (1) electrolytic degreasing; (2) electrolytic descaling; and (3) removal of the protective film. After each operation the article is washed in water. Electro-etching can be either anodic or cathodic. Cathodic etching (Bullard-Dunn) is carried out in a soln. of H_2SO_4 and HCl to which NaCl had been added. Optimum etching results are obtained with low-concn. solns. heated to 70°. To prevent the basis metal from over-etching a thin layer of Pb or Sn is applied. This protective film of Pb or Sn can if desired be removed by short anodic treatment of the machine parts in alk. solns. W. R. Henn

A 10-15 A METALLURGICAL LITERATURE CLASSIFICATION

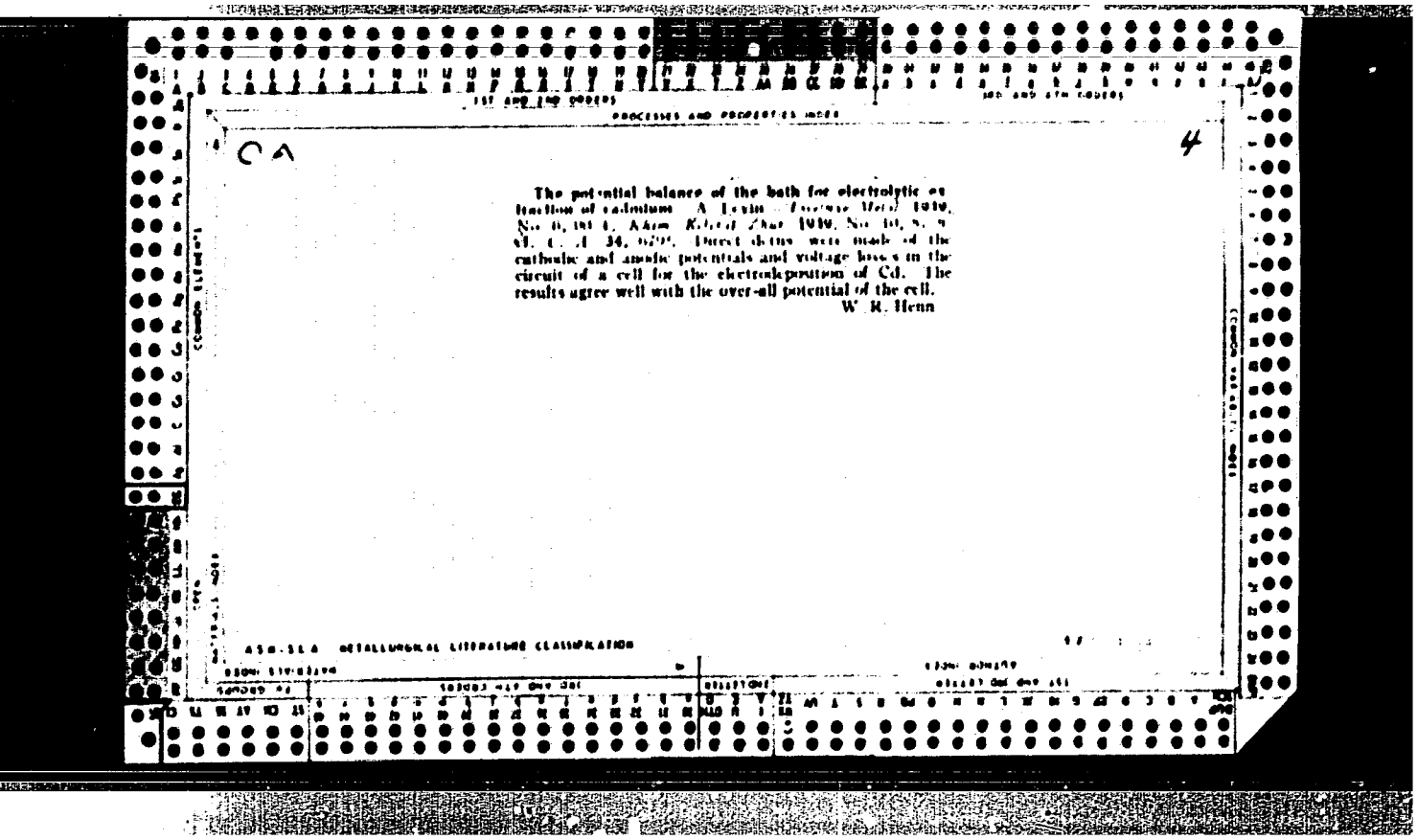


Ca

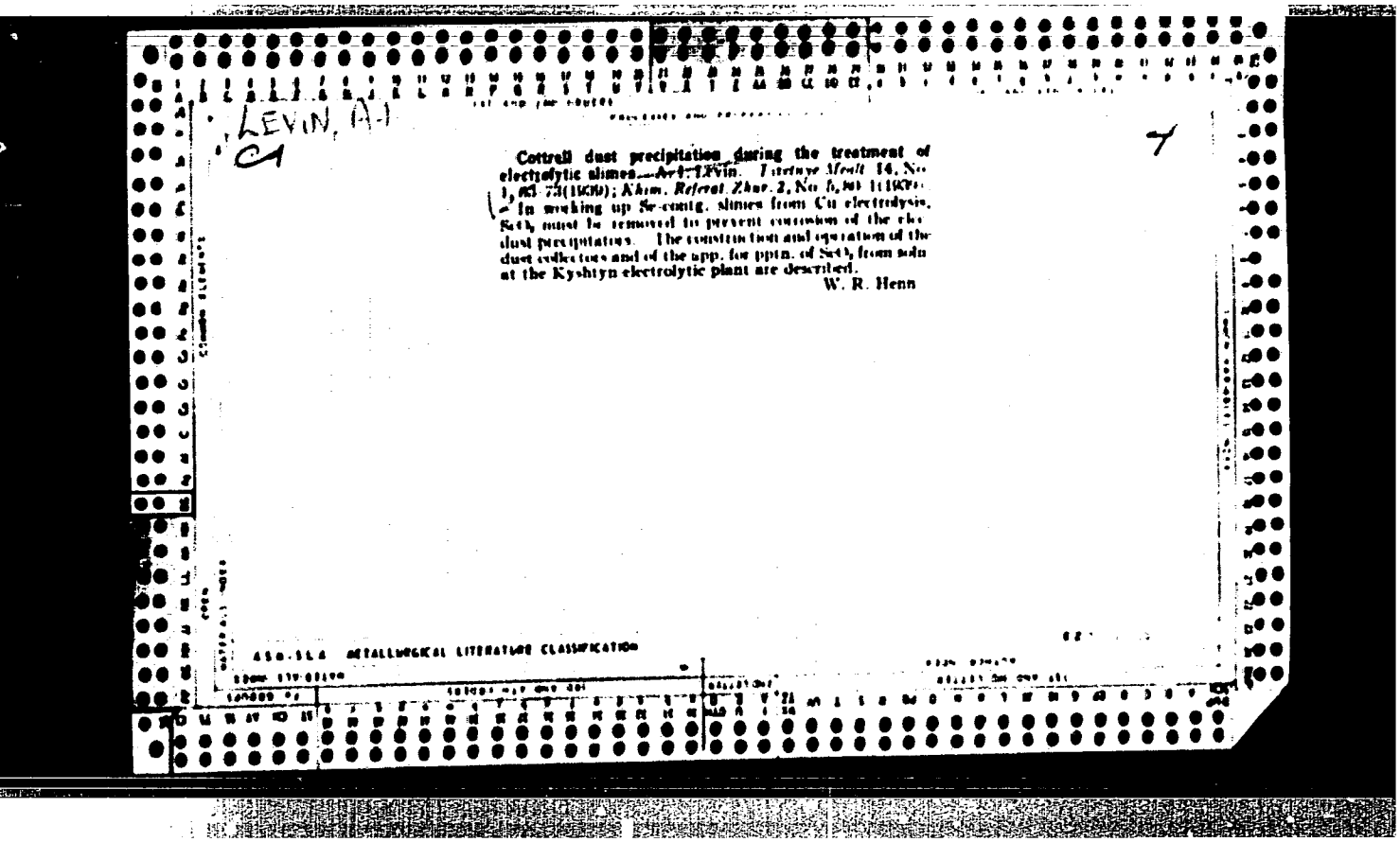
4

The use of copper refinery slags for neutralization of electrolytes at Kyshtym (Russia) Electrolytic Copper Works. A. I. Levin. *Tsvetnye Metal.* 1930, No. 9, 85-94.—Lab. expts. were made to study the possibility of utilizing anode furnace and wire-bar-furnace slags for neutralizing acid Cu electrolytes in refineries. With pulverized slag and the use of special "aerolift" app. designed by L. 98% of the free H_2SO_4 of the electrolyte can be converted into copper sulfate. For best results: the electrolyte should be dild. to sp. gr. 1.14 to 1.16; the temp of the initial electrolyte should be maintained at about 80°; the ratio wt. of slag to wt. of free H_2SO_4 should be 5 for slags crushed to 8-12 mm. size, 4.8-5.2 for 5.8 mm. size, 4.5-4.8 for 3 mm. size, and 4 for more finely ground slags. Certain impurities in the slag, such as clay, interfere and should first be removed from the slag. Agitation is essential. The method is now used successfully for the manuf. of $CuSO_4$ at the Kyshtym Copper Works.

B. N. Danilov



The potential balance of the bath for electrolytic co[illegible] function of cadmium. A. Levin. *Цветные Металлы* 1939, No. 6, 101-6; *Азот. Химия* 1939, No. 10, 5-9; cf. C. A. 34, 6799. Direct data were made of the cathodic and anodic potentials and voltage losses in the circuit of a cell for the electrodeposition of Cd. The results agree well with the over-all potential of the cell.
W. R. Henn



LEVIN, A-I
C1

Cottrell dust precipitation during the treatment of electrolytic slimes.—Ar-I. Levin. *Tsvetnye Metall* 14, No. 1, 65–73 (1939); *Khim. Referat. Zhur.* 2, No. 5, 80 (1939). In working up Se-contg. slimes from Cu electrolysis, Sb_2O_3 must be removed to prevent corrosion of the elec. dust precipitators. The construction and operation of the dust collectors and of the app. for pptn. of Sb_2O_3 from soln at the Kyshtym electrolytic plant are described.
W. R. Henn

4

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

LEVIN, A. I.

Engineer. Dust Separators in the Processing of Tailings", Tsvet. Met. 14, No 6, 1939.

Report U-1506, 4 Oct. 1951.

LEVIN, A.

"The Balance of Voltage in Vats Used for the Electrical Extraction of Cadmium" Tsvet. Met. 14 No 6, 1939.

Report U-1506, 4 Oct. 1951

LEVIN4A818 600

1. LEVIN, A. I.

2. USSR (600)

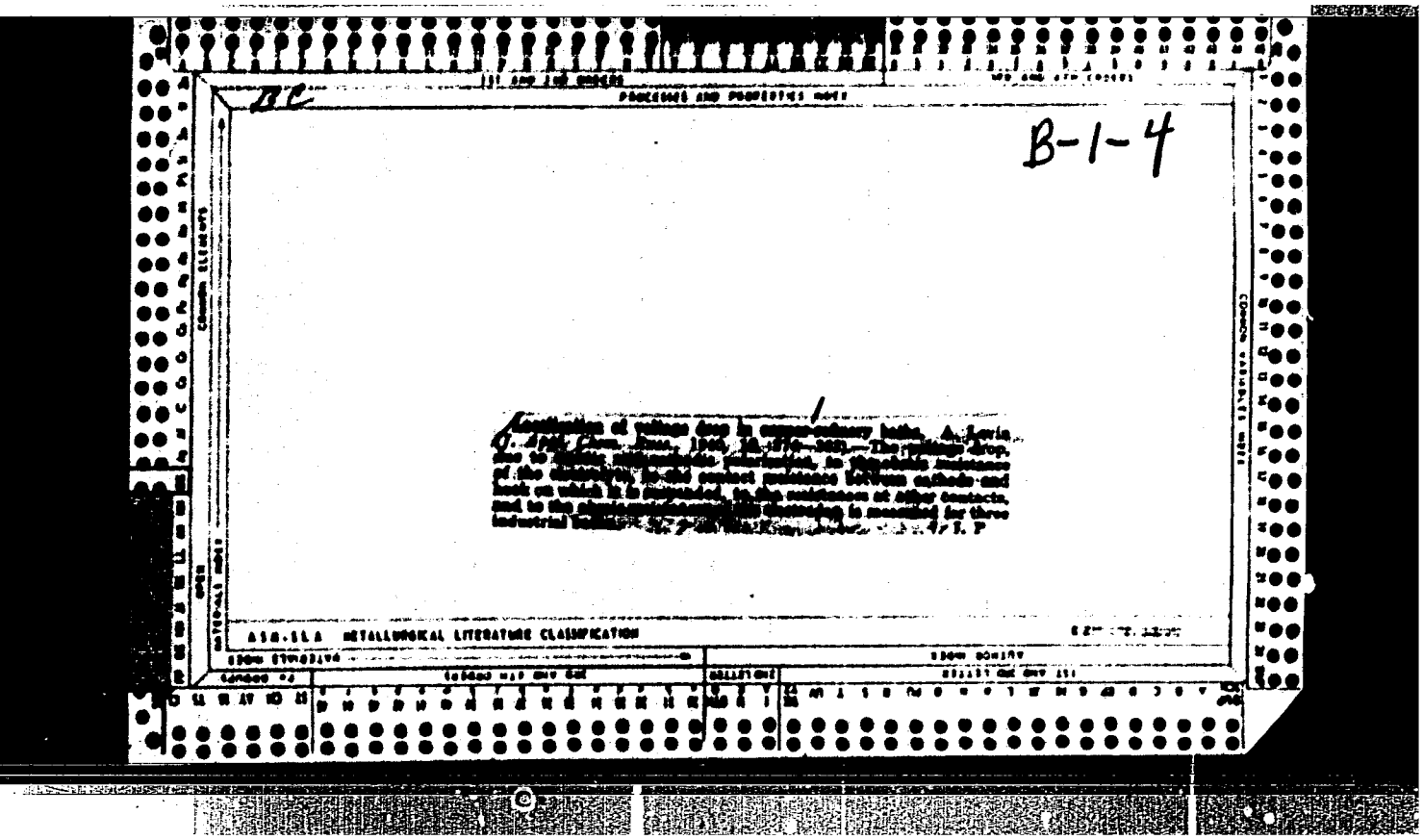
Engineer. "The Use of Refining Slags for the Neutralization of Electrolytes at the Kyshtyn Electrolytic Copper Plant" Tsvet. Met. 14, No 9, September 1939.

9. [redacted] Report U-1506, 4 Oct. 1951.

Electrometallurgy & Electrochemistry.

Met. Abs. 11.9

"The Potential Balance of the Electrolytic Zinc Cell. A. Levin and O. Ec
(Zhur. Prikhl. Khimii) *J. Applied Chem.*, 1940, 13, (1), 34–41.—In Russian.
Measurements made on a 3000-amp. electrolytic zinc production cell ar
reported. The cathodic c.d. was 350 amp. m.$^{-2}$, the average temperatur
was 33·1° C., the distance between centres of 9-mm.-thick anodes was abou
40 mm., and the distance between the cathodes was 8·5 mm. The electrolyt
flowed through the cell at the rate of about 2·1 litres minute. The zi
content of the fresh electrolyte was 110 grm. litre, and that of the spen
electrolyte 36·2 grm. litre; the latter also contained 90·8 grm. litre of H_2SO_4.
Temperature measurements at different points in the cell differed by n
more than 2° C. The cathode and anode potentials were measured against a
silver chloride electrode (potential in electrolyte 611 mv.). The mean
cathode potential was found to be 963 mv. (hydrogen scale). The mean anod
potential was 2141 mv., giving 1·796 v. as the oxygen overpotential on th
lead anodes. The potential drop in the electrolyte over the whole bath w
436 mv. The potential drop in the bus-bars and Whitehead contacts on th
anode and cathode sides amounted to 71·6 mv. Summing up, the tota
[illegible]
theoretical drop across the cell is 3·412 v., which checks [illegible]
measured drop of 3·4 v.—A. B.



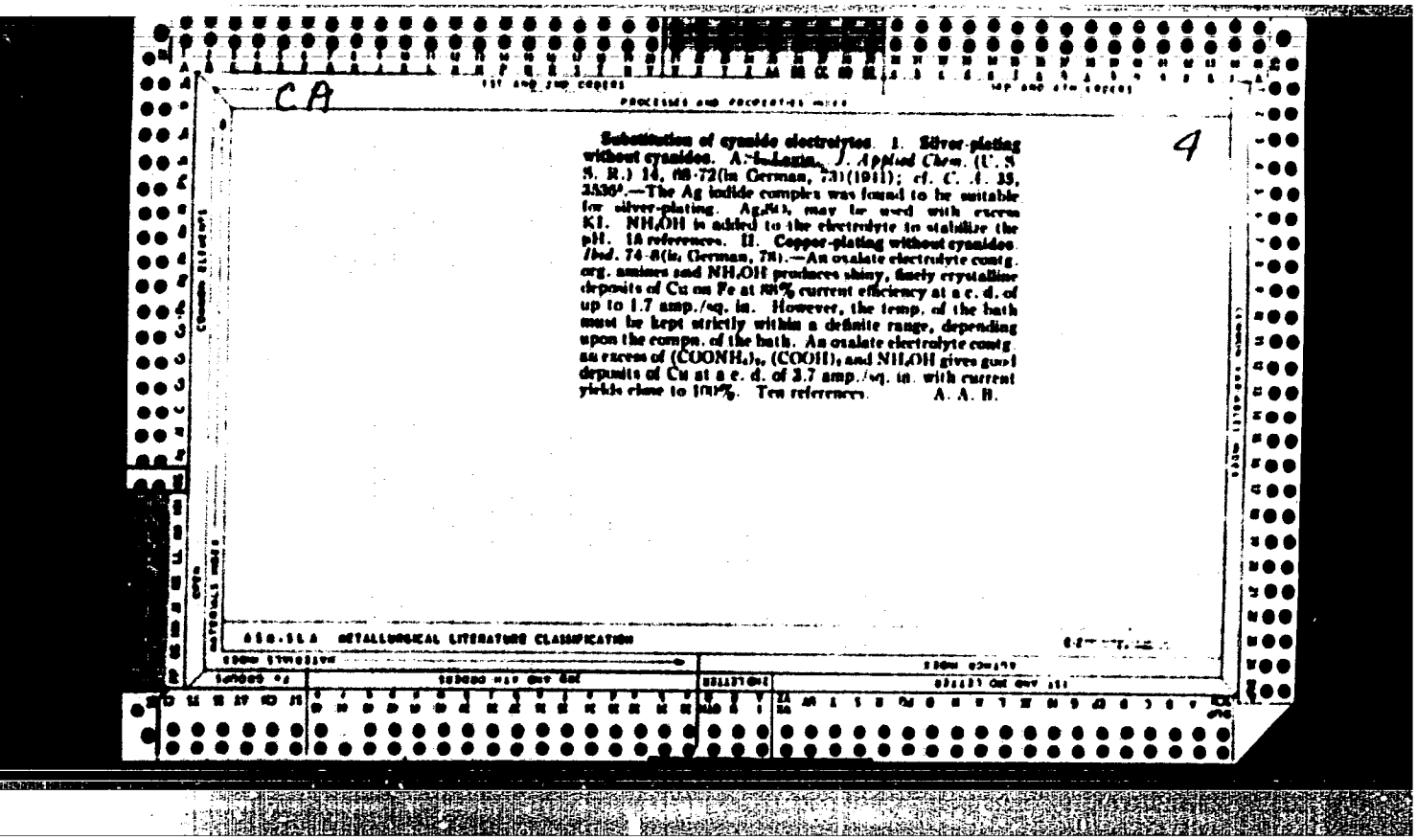
PROCESSES AND PROPERTIES INDEX

Ca

1 **Eliminating cyanide plating baths.** A. I. Levin, S. M. Shcherbakov, F. A. Zorin, V. M. Svitskii and N. A. Gokhman. *J. Applied Chem.* (U. S. S. R.) 13, 690-92(in French, 692)(1940).—Cyanide-free baths for plating Fe and steel were studied. An electrolyte contg. $CuSO_4 \cdot 5H_2O$ 68, $(NH_4)_2SO_4$ 80, free NH_3 9 and alc. 8 g./l., was used for flash plating of Cu on Fe at c. d. 1-2 amp./sq. in. at room temp. A shiny, fine-cryst., brittle Cu deposit was obtained. An electrolyte contg. $CuSO_4 \cdot 5H_2O$ 20, $NaHCO_3$ 80, K_2CO_3 20, $K_4Fe(CN)_6$ 148.6 g./l. and 25% NH_4OH 120 cc./l., also produced similar deposits at a c. d. of 0.15-0.42 amp./sq. in. but the current efficiency was only 12%. An electrolyte contg. $CuSO_4 \cdot 5H_2O$ 12, $Na_2(COO)_2$ 25 g./l. and 25% NH_4OH 27 cc./l., cleaned the Fe surface and deposited Cu at the same time; at 25-30° and a c. d. of 0.7-1.0 a dense, shiny, malleable Cu deposit at a current efficiency of 120% and higher. When fresh, the electrolyte produced more or less brittle deposits but an old electrolyte produced malleable deposits.

A. A. Podgorny

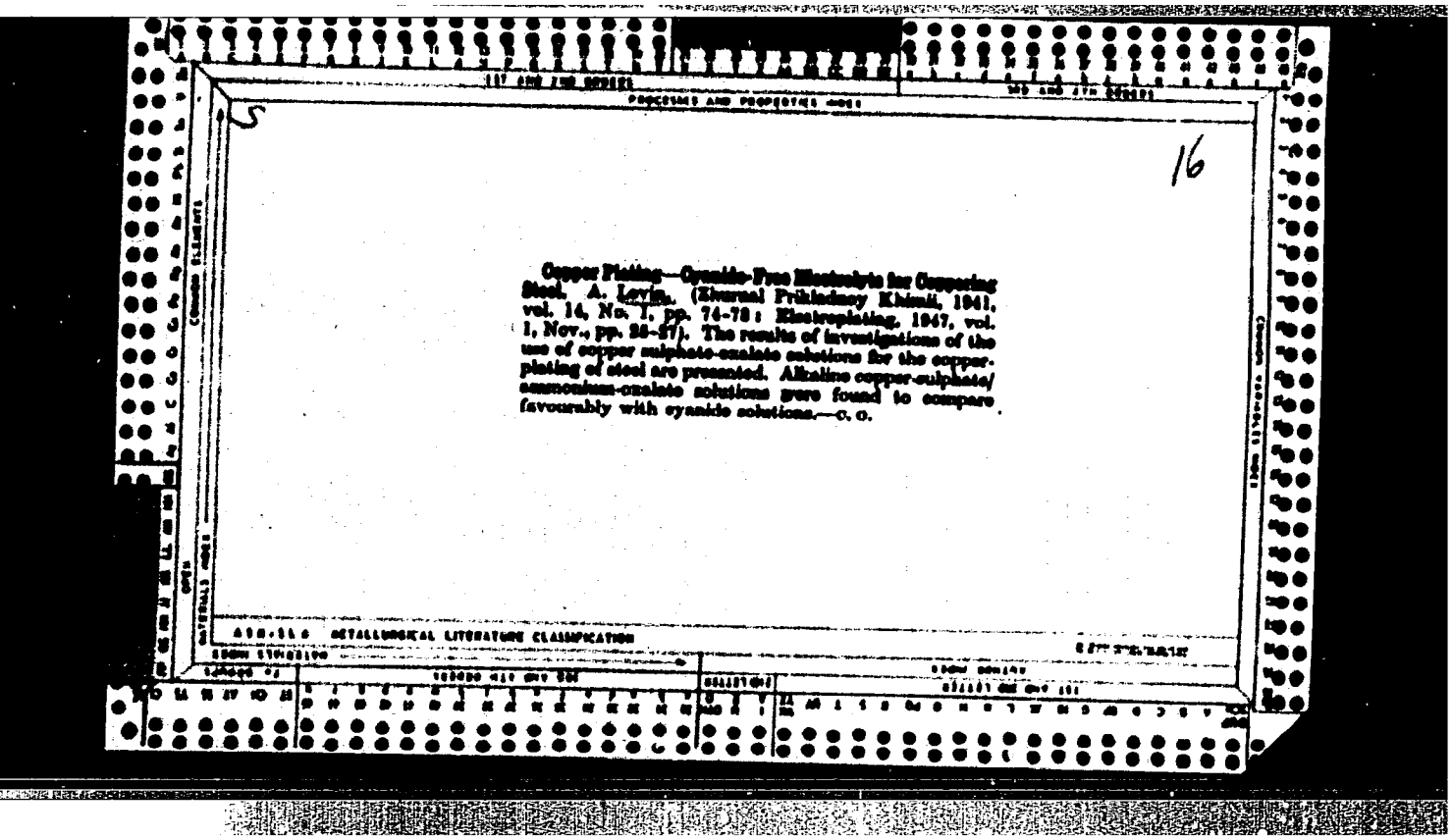
ASO-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

4

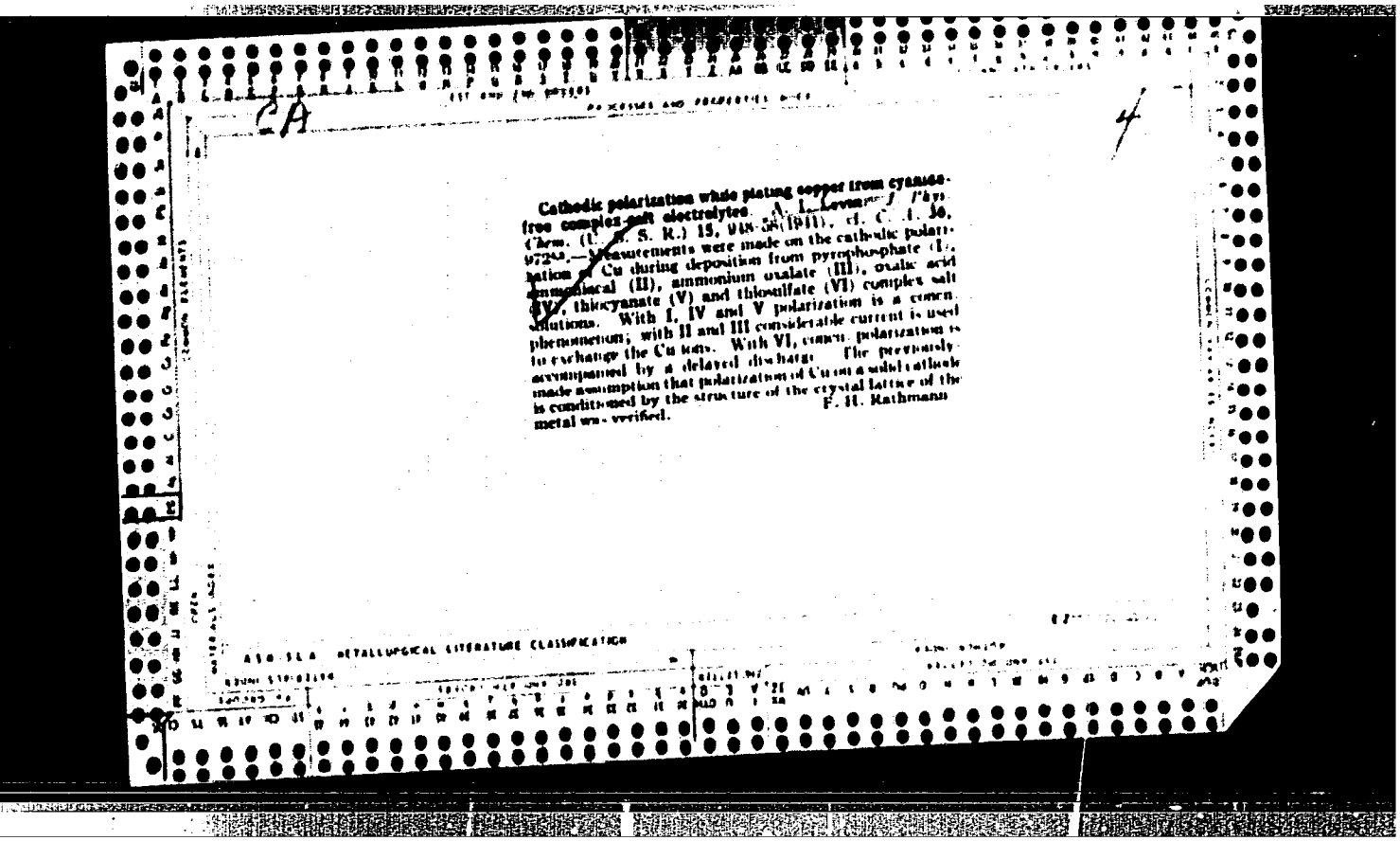
Substitution of cyanide electrolytes. I. Silver-plating without cyanides. A. Lenia. *J. Applied Chem.* (U. S. S. R.) 14, 68-72(in German, 73)(1941); *cf. C. A.* 35, 2536⁹.—The Ag iodide complex was found to be suitable for silver-plating. Ag_2I_4, may be used with excess KI. NH_4OH is added to the electrolyte to stabilize the pH. 18 references. II. **Copper-plating without cyanides.** *Ibid.* 74-8(in German, 78).—An oxalate electrolyte contg. org. amines and NH_4OH produces shiny, finely crystalline deposits of Cu on Fe at 80% current efficiency at a c. d. of up to 1.7 amp./sq. in. However, the temp. of the bath must be kept strictly within a definite range, depending upon the compn. of the bath. An oxalate electrolyte contg. an excess of $(COONH_4)_2$, $(COOH)_2$, and NH_4OH gives good deposits of Cu at a c. d. of 3.7 amp./sq. in. with current yields close to 100%. Ten references. A. A. B.



16

Copper Plating—Cyanide-Free Electrolyte for Coppering Steel. A. Levin. (Zhurnal Prikladnoy Khimii, 1941, vol. 14, No. 1, pp. 74-78; Electroplating, 1947, vol. 1, Nov., pp. 36-37). The results of investigations of the use of copper sulphate-oxalate solutions for the copper-plating of steel are presented. Alkaline copper-sulphate/ammonium-oxalate solutions were found to compare favourably with cyanide solutions.—C. C.

METALLURGICAL LITERATURE CLASSIFICATION

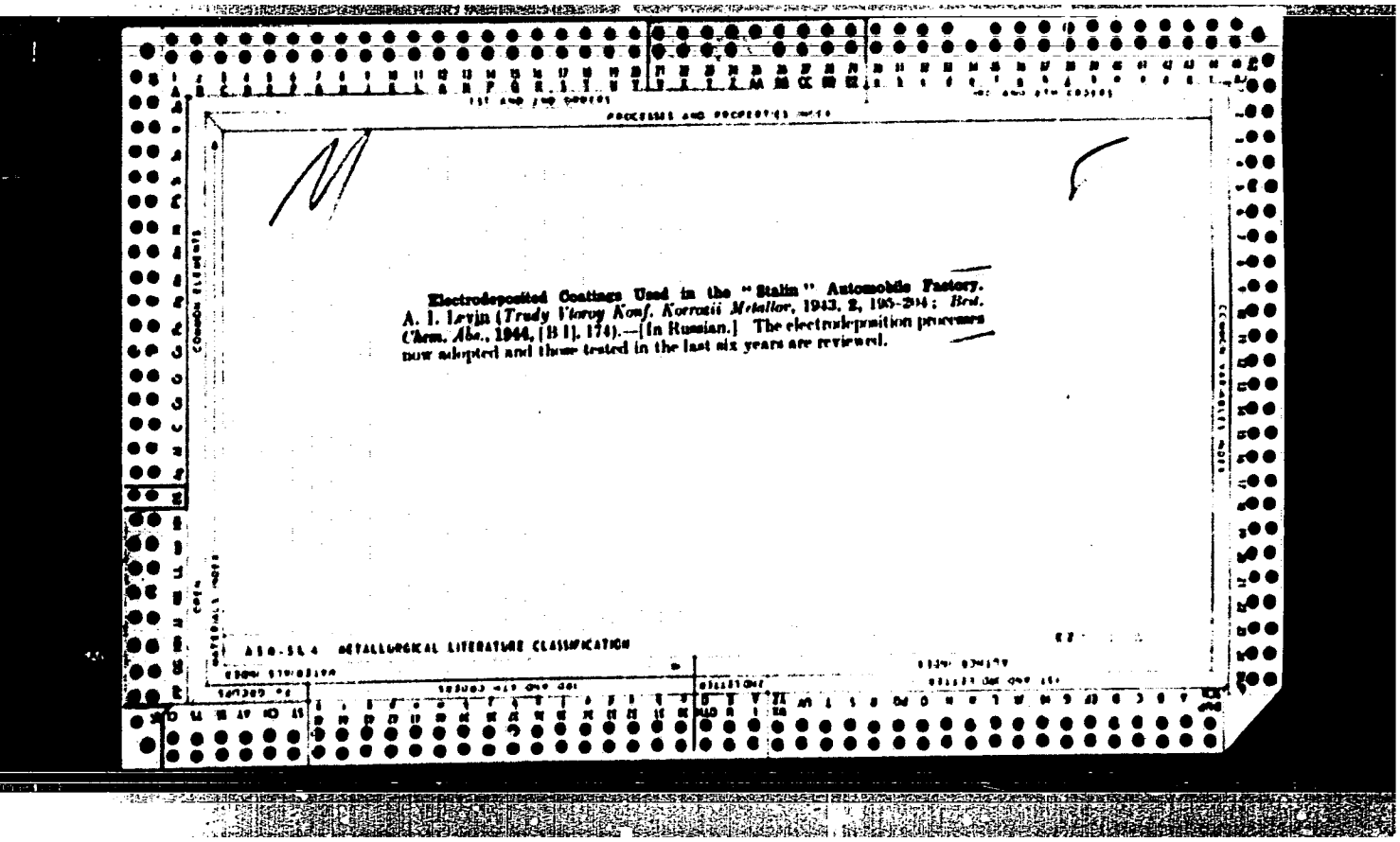


CA

4

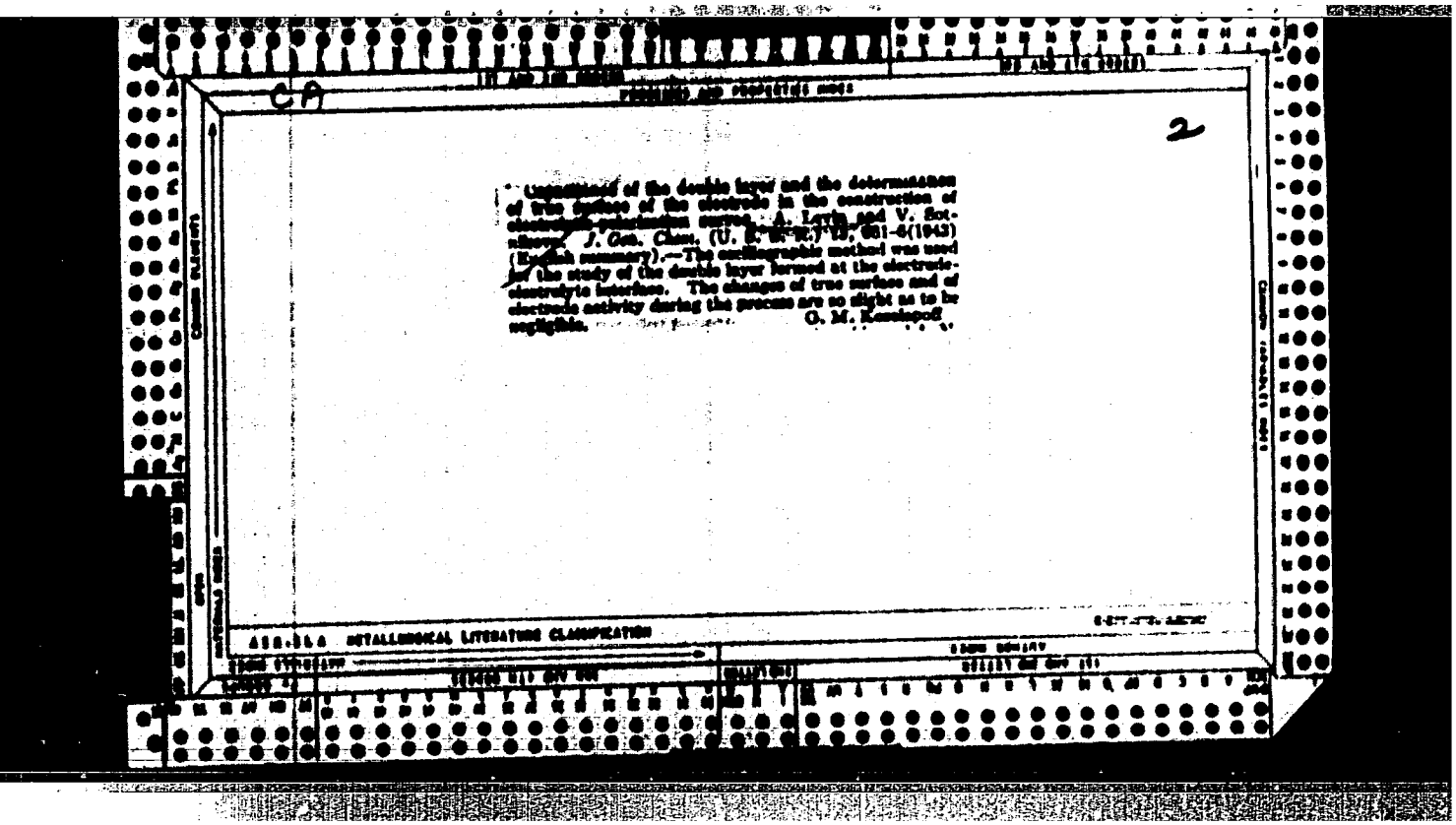
Cathodic polarization while plating copper from cyanide-free complex salt electrolytes. A. I. Levenzon. *J. Phys. Chem.* (U. S. S. R.) 15, 948-58 (1941). cf. *C. A.* 36, 9724⁸.—Measurements were made on the cathodic polarization of Cu during deposition from pyrophosphate (I), ammoniacal (II), ammonium oxalate (III), oxalic acid (IV), thiocyanate (V) and thiosulfate (VI) complex salt solutions. With I, IV and V polarization is a concentration phenomenon; with II and III considerable current is used in exchange the Cu ions. With VI, concn. polarization is accompanied by a delayed discharge. The previously made assumption that polarization of Cu on a solid cathode is conditioned by the structure of the crystal lattice of the metal was verified. F. H. Rathmann

METALLURGICAL LITERATURE CLASSIFICATION



Electrodeposited Coatings Used in the "Stalin" Automobile Factory. A. I. Levin (*Trudy Vtoroy Konf. Korrozii Metallov*, 1943, 2, 195–214; *Brit. Chem. Abs.*, 1944, [B I], 176).—[In Russian.] The electrodeposition processes now adopted and those tested in the last six years are reviewed.

A 10-5 METALLURGICAL LITERATURE CLASSIFICATION

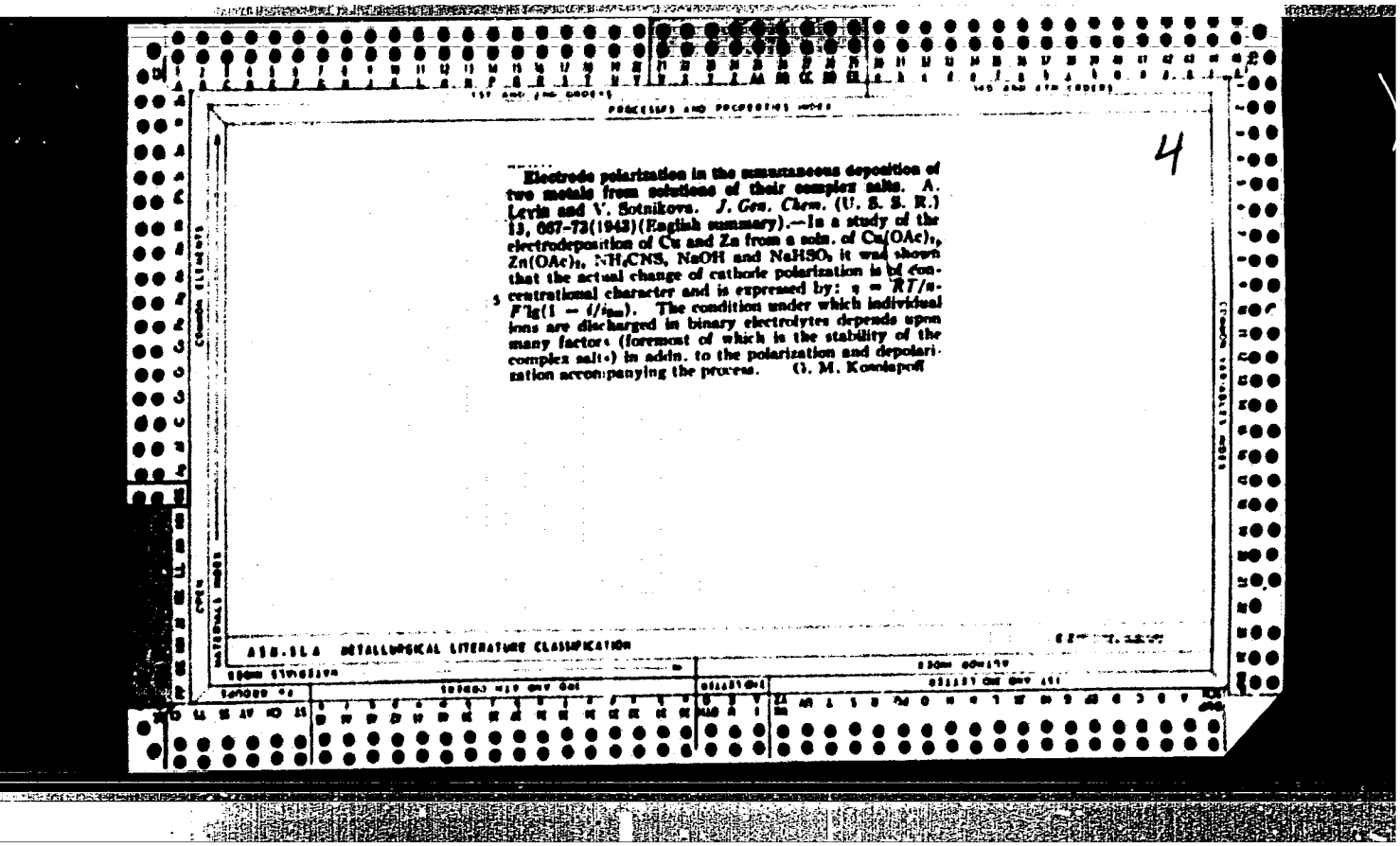


CA

2

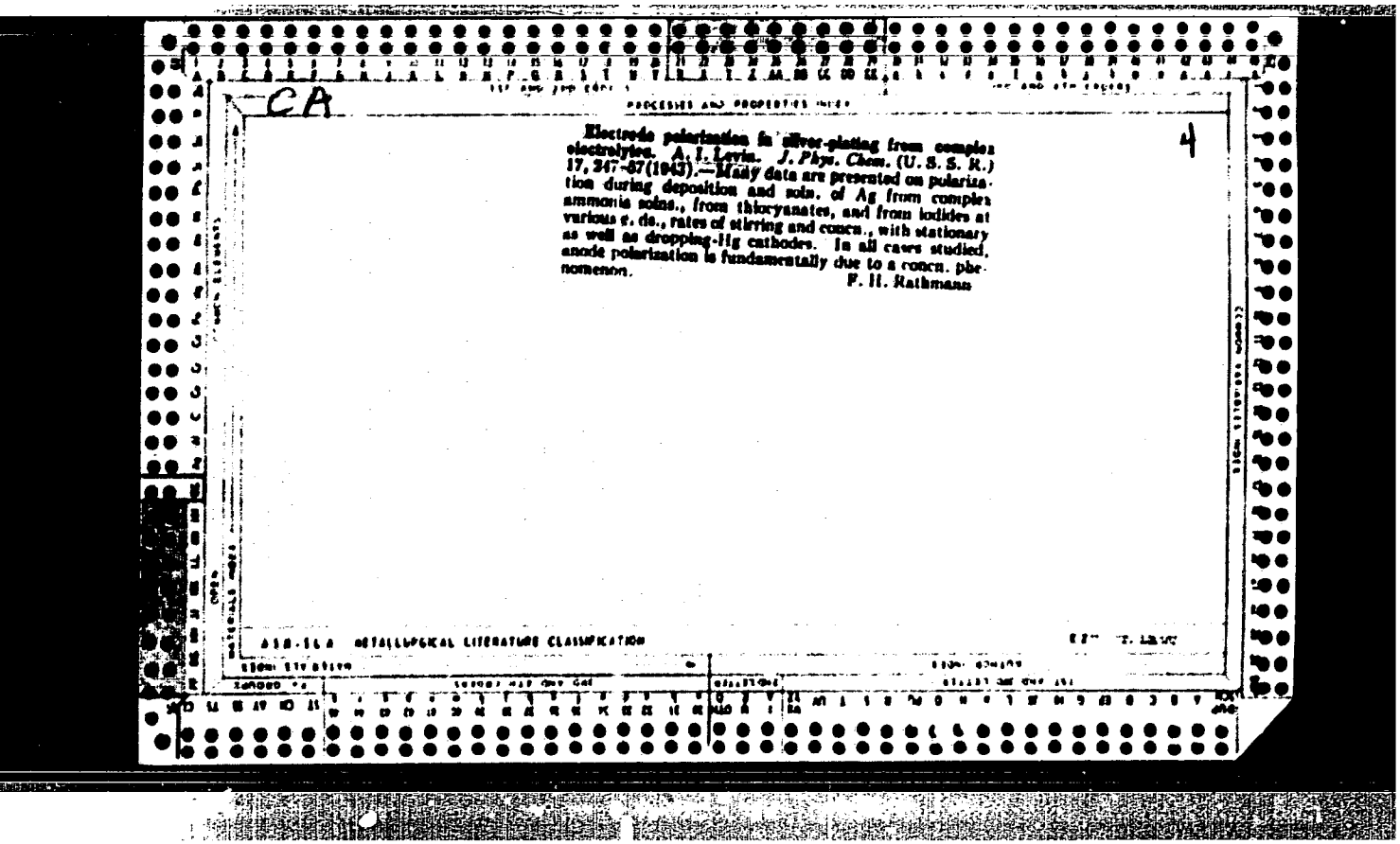
Unpolarized of the double layer and the determination of the surface of the electrode in the construction of electrocapillary-polarization curves. A. Levin and V. Kotrikova. *J. Gen. Chem.* (U.S.S.R.) 13, 681-6(1943) (English summary).—The oscillographic method was used for the study of the double layer formed at the electrode-electrolyte interface. The changes of true surface and of electrode activity during the process are so slight as to be negligible. O. M. Kosanoff

METALLURGICAL LITERATURE CLASSIFICATION



4

Electrode polarization in the simultaneous deposition of two metals from solutions of their complex salts. A. Levin and V. Sotnikova. *J. Gen. Chem.* (U. S. S. R.) 13, 667-73(1943)(English summary).—In a study of the electrodeposition of Cu and Zn from a soln. of $Cu(OAc)_2$, $Zn(OAc)_2$, NH_4CNS, NaOH and $NaHSO_3$ it was shown that the actual change of cathode polarization is of concentrational character and is expressed by: $\eta = RT/nF \lg(1 - i/i_{lim})$. The condition under which individual ions are discharged in binary electrolytes depends upon many factors (foremost of which is the stability of the complex salts) in addn. to the polarization and depolarization accompanying the process. (J. M. Kondepoff

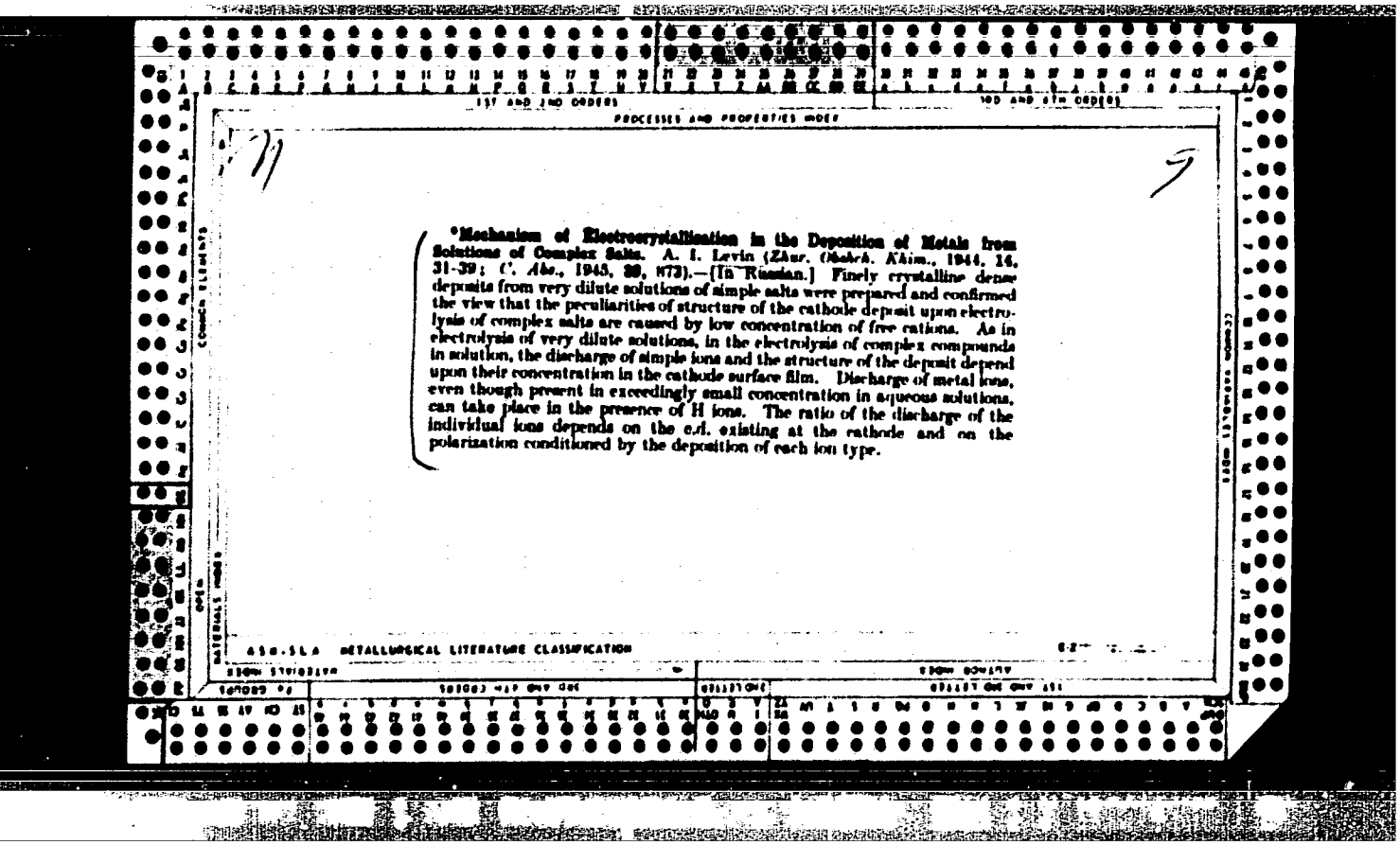


CA

4

Electrode polarization in silver-plating from complex electrolytes. A. I. Levin. *J. Phys. Chem.* (U. S. S. R.) 17, 247-57(1943).—Many data are presented on polarization during deposition and soln. of Ag from complex ammonia solns., from thiocyanates, and from iodides at various c. de., rates of stirring and concn., with stationary as well as dropping-Hg cathodes. In all cases studied, anode polarization is fundamentally due to a concn. phenomenon.

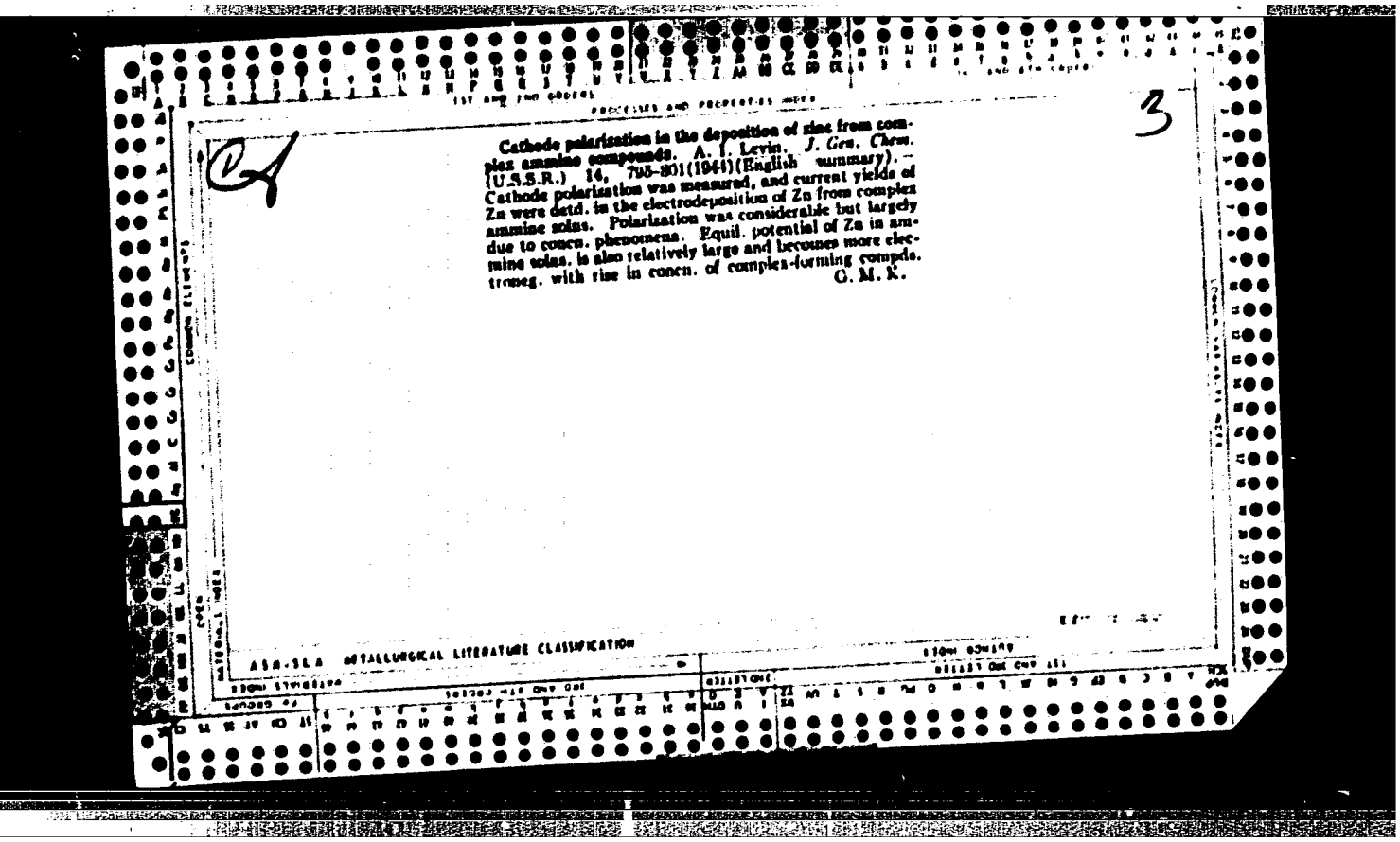
P. H. Rathmann



PROCESSES AND PROPERTIES INDEX

*Mechanism of Electrocrystallization in the Deposition of Metals from Solutions of Complex Salts. A. I. Levin (*Zhur. Obshch. Khim.*, 1944, 14, 31-39; *C. Abs.*, 1945, 39, 873).—[In Russian.] Finely crystalline dense deposits from very dilute solutions of simple salts were prepared and confirmed the view that the peculiarities of structure of the cathode deposit upon electrolysis of complex salts are caused by low concentration of free cations. As in electrolysis of very dilute solutions, in the electrolysis of complex compounds in solution, the discharge of simple ions and the structure of the deposit depend upon their concentration in the cathode surface film. Discharge of metal ions, even though present in exceedingly small concentration in aqueous solutions, can take place in the presence of H ions. The ratio of the discharge of the individual ions depends on the e.d. existing at the cathode and on the polarization conditioned by the deposition of each ion type.

A56.5L4 METALLURGICAL LITERATURE CLASSIFICATION



Cathode polarization in the deposition of zinc from complex ammine compounds. A. I. Levin. *J. Gen. Chem.* (U.S.S.R.) 14, 795-801 (1944) (English summary). — Cathode polarization was measured, and current yields of Zn were detd. in the electrodeposition of Zn from complex ammine solns. Polarization was considerable but largely due to concn. phenomena. Equil. potential of Zn in ammine solns. is also relatively large and becomes more electroneg. with rise in concn. of complex-forming compds.
G. M. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

LEVIN, A. I., Professor

Electrochemical Laboratory of the Ural Industrial Institute imeni S. M. Kirov (-1944-)

"Electrolytic Polishing of Metals." Stanki I Inst. Vol. 15, No. 3, 1944

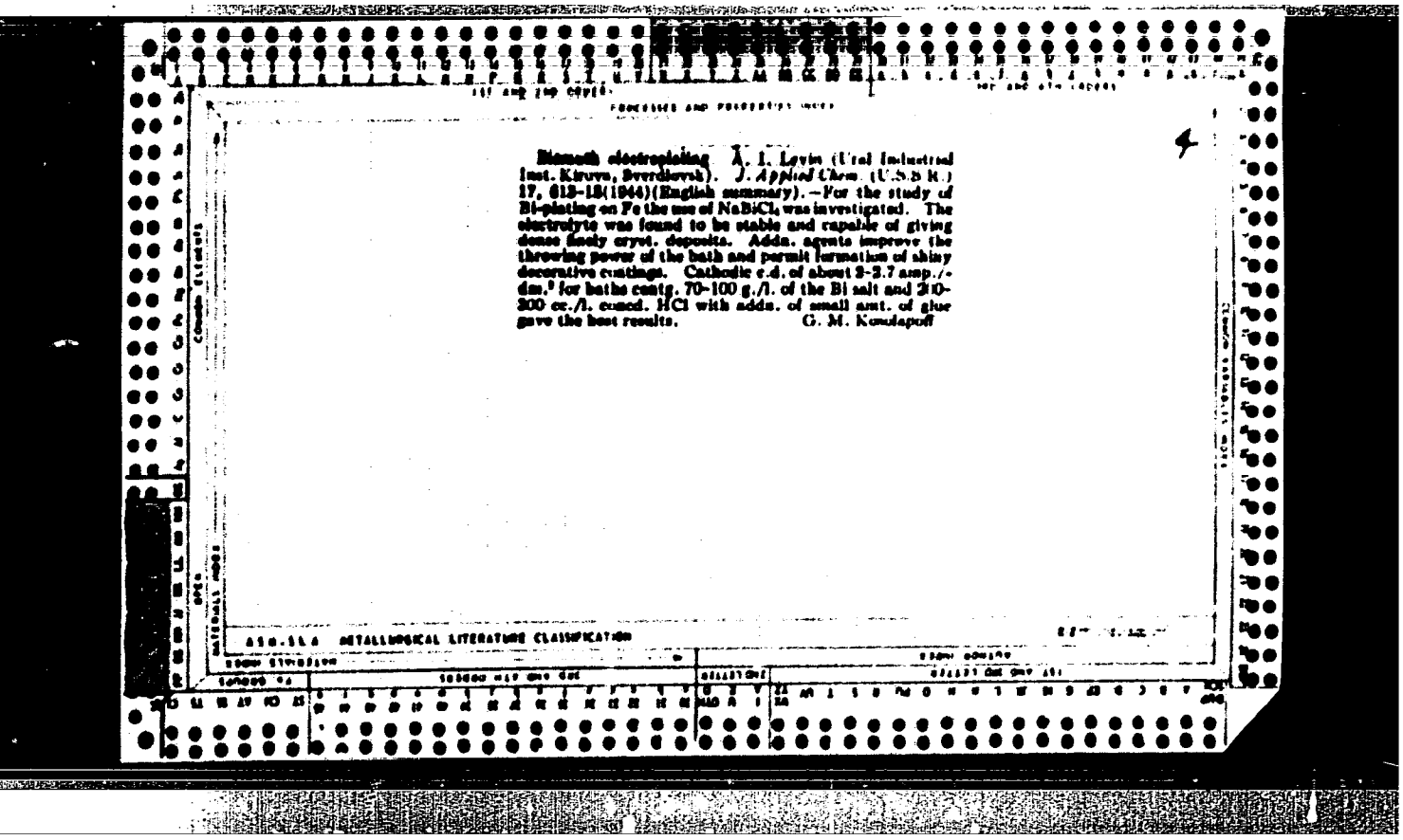
BR 52059019

LEVIN, A. I., Professor

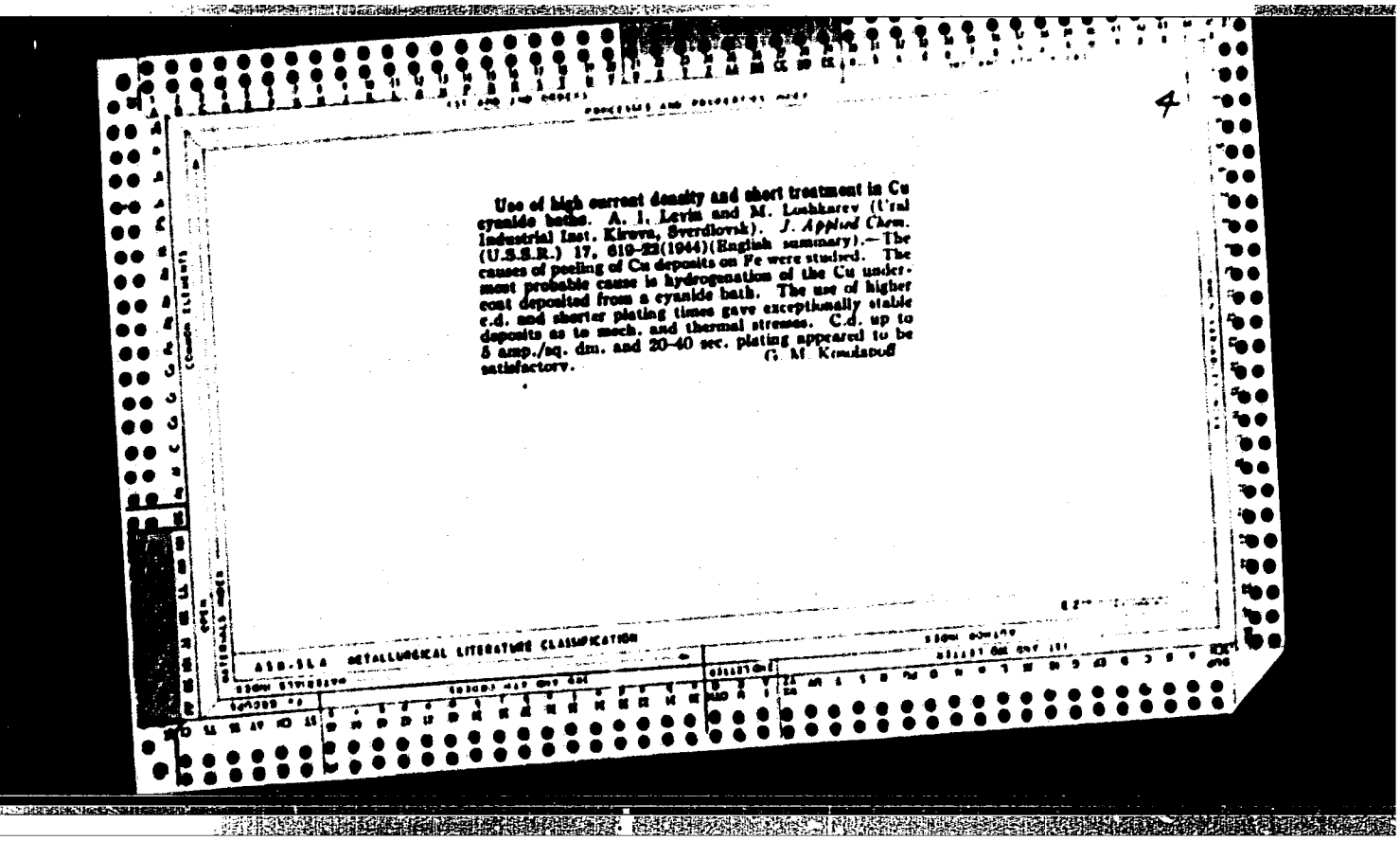
Sverdlovsk, Ural Industrial Institute imeni S. M. Kirov (-1944-)

"A Nickel Sub-Layer for Protecting Parts from Hardening by Carbon."
Stanki I Instrument Vol. 15, No. 6, 1944

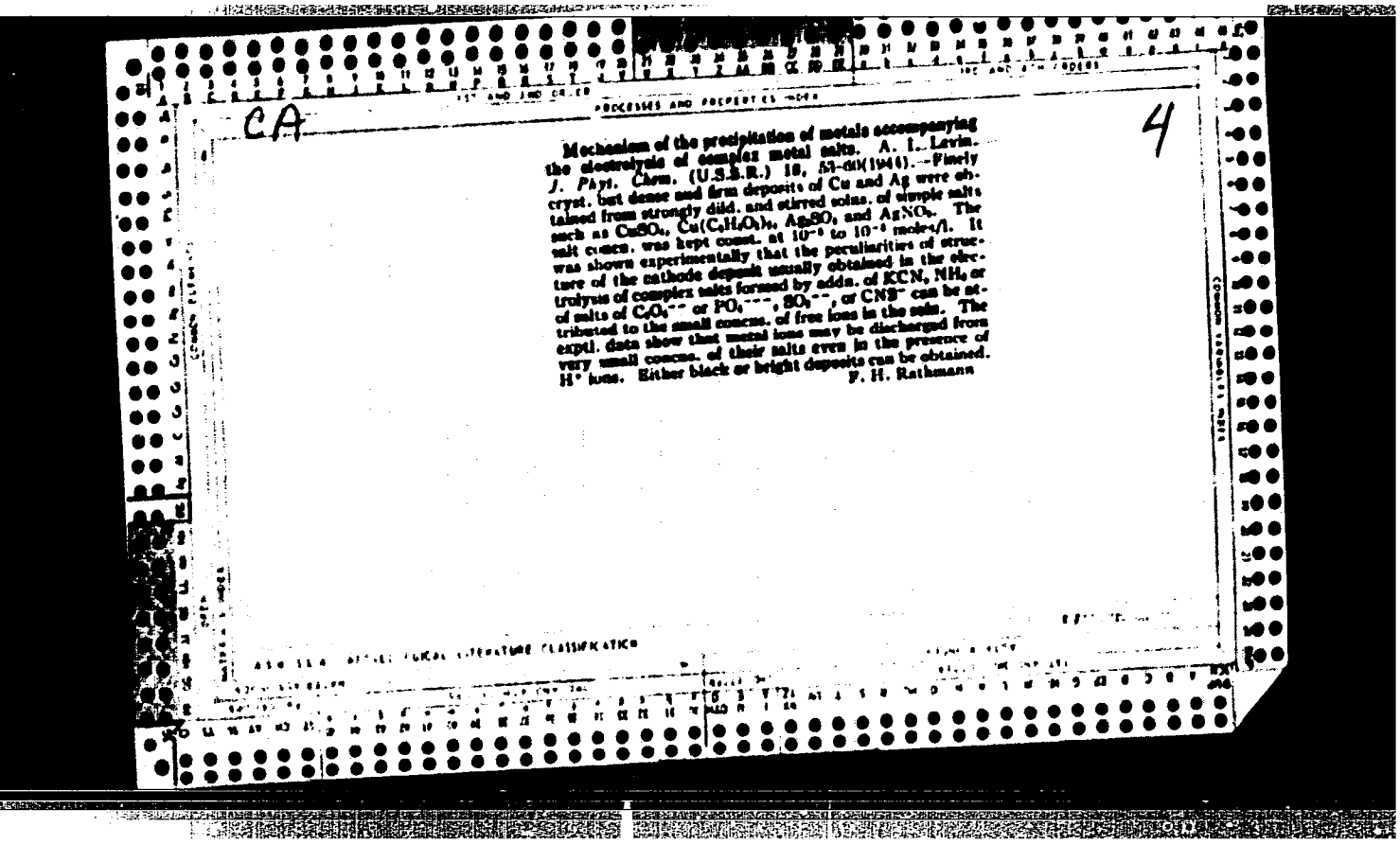
BR 52059019



Bismuth electroplating. A. I. Levin (Ural Industrial Inst. Kirova, Sverdlovsk). *J. Applied Chem.* (U.S.S.R.) 17, 613-18(1944)(English summary).—For the study of Bi-plating on Fe the use of $NaBiCl_4$ was investigated. The electrolyte was found to be stable and capable of giving dense finely cryst. deposits. Addn. agents improve the throwing power of the bath and permit formation of shiny decorative coatings. Cathodic c.d. of about 2-2.7 amp./dm.^{2} for baths contg. 70-100 g./l. of the Bi salt and 200-300 cc./l. concd. HCl with addn. of small amt. of glue gave the best results. G. M. Kondakoff



Use of high current density and short treatment in Cu cyanide baths. A. I. Levin and M. Lushkarev (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.
G. M. Kondakoff



CA

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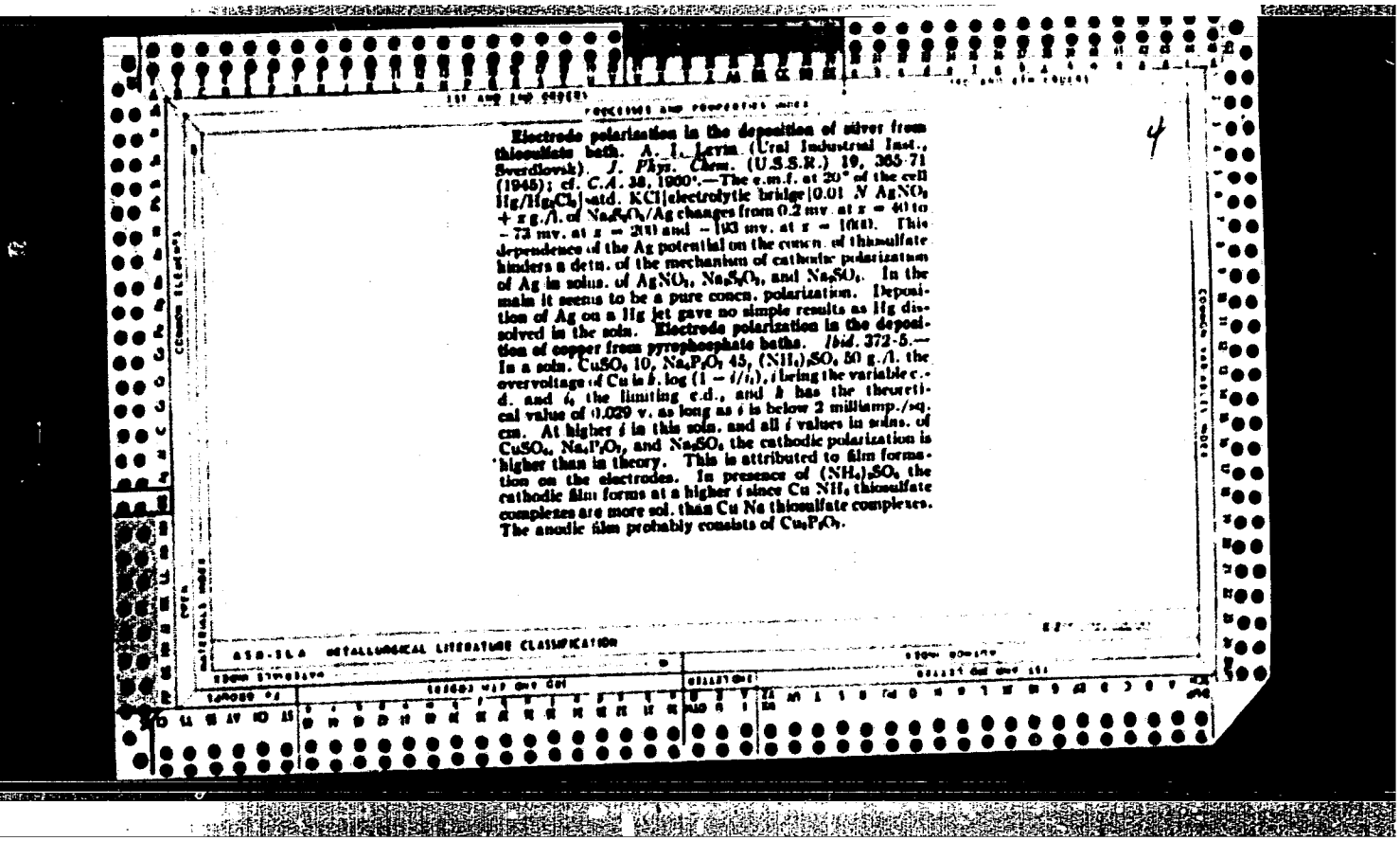
Mechanism of the precipitation of metals accompanying the electrolysis of complex metal salts. A. I. Levin. *J. Phys. Chem.* (U.S.S.R.) 18, 53-61(1944).—Finely cryst. but dense and firm deposits of Cu and Ag were obtained from strongly dild. and stirred solns. of simple salts such as $CuSO_4$, $Cu(C_2H_3O_2)_2$, Ag_2SO_4 and $AgNO_3$. The salt concn. was kept const. at 10^{-2} to 10^{-4} mole/l. It was shown experimentally that the peculiarities of structure of the cathode deposit usually obtained in the electrolysis of complex salts formed by adds. of KCN, NH_4 or of salts of $C_2O_4^{--}$ or PO_4^{---}, SO_3^{--}, or CNS^- can be attributed to the small concns. of free ions in the solns. The expti. data show that metal ions may be discharged from very small concns. of their salts even in the presence of H^+ ions. Either black or bright deposits can be obtained.

F. H. Rathmann

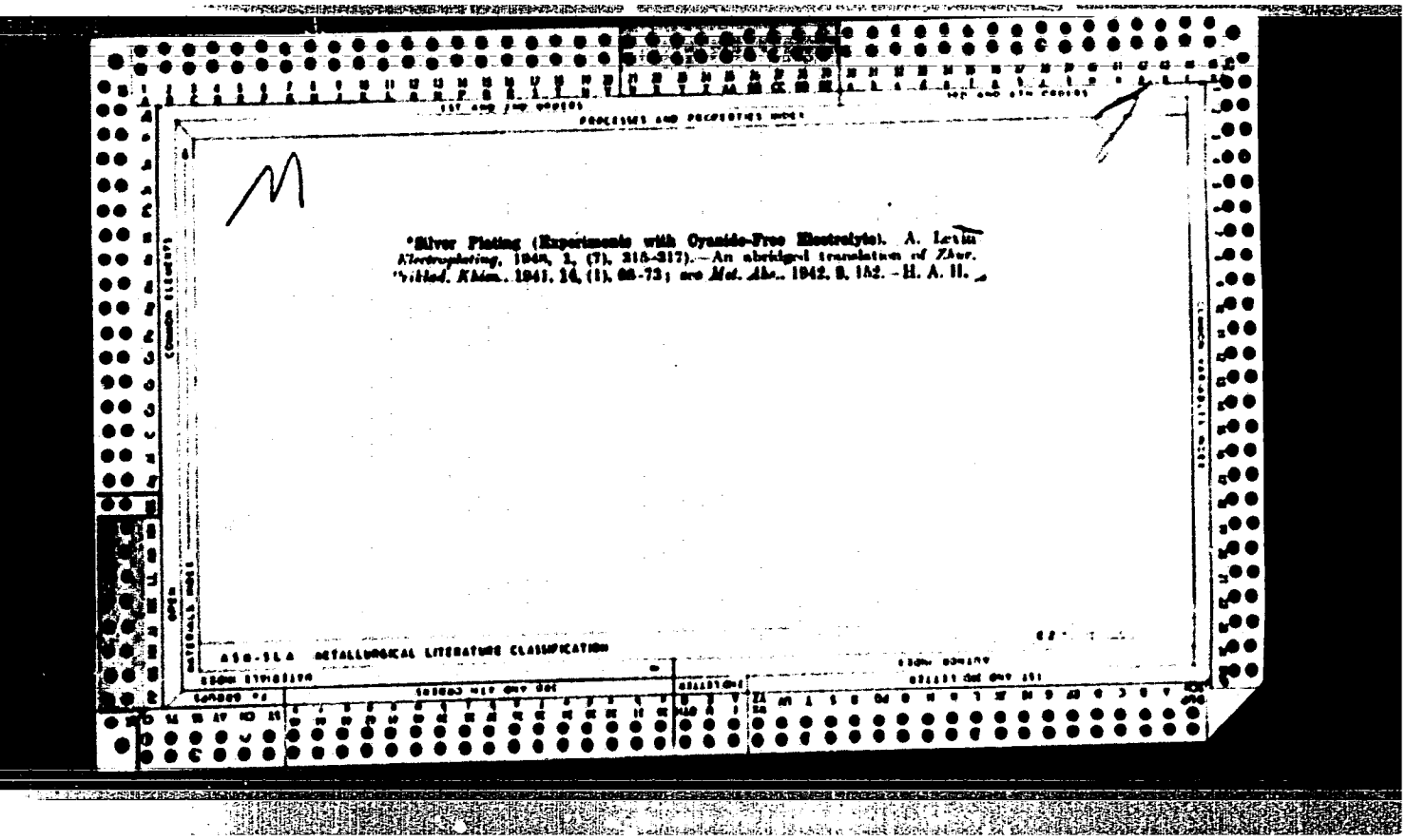


Electrode polarization in the deposition of silver from thiosulfate bath. A. I. Levin (Ural Industrial Inst., Sverdlovsk). *J. Phys. Chem.* (U.S.S.R.) 19, 365-71 (1945); cf. *C.A.* 38, 1900⁵.—The e.m.f. at 20° of the cell Hg/Hg_2Cl_2|satd. KCl|electrolytic bridge|0.01 *N* $AgNO_3$ + *x* g./l. of $Na_2S_2O_3$/Ag changes from 0.2 mv. at *x* = 40 to −73 mv. at *x* = 200 and −103 mv. at *x* = 1000. This dependence of the Ag potential on the concn. of thiosulfate hinders a detn. of the mechanism of cathodic polarization of Ag in solns. of $AgNO_3$, $Na_2S_2O_3$, and Na_2SO_4. In the main it seems to be a pure concn. polarization. Deposition of Ag on a Hg jet gave no simple results as Hg dissolved in the soln. **Electrode polarization in the deposition of copper from pyrophosphate baths.** *Ibid.* 372-5.—In a soln. $CuSO_4$ 10, $Na_4P_2O_7$ 45, $(NH_4)_2SO_4$ 50 g./l. the overvoltage ϕ of Cu is $b \log (1 - i/i_l)$, i being the variable c.d. and i_l the limiting c.d., and b has the theoretical value of 0.029 v. as long as i is below 2 millamp./sq. cm. At higher i in this soln. and all i values in solns. of $CuSO_4$, $Na_4P_2O_7$, and Na_2SO_4 the cathodic polarization is higher than in theory. This is attributed to film formation on the electrodes. In presence of $(NH_4)_2SO_4$ the cathodic film forms at a higher i since Cu NH_3 thiosulfate complexes are more sol. than Cu Na thiosulfate complexes. The anodic film probably consists of $Cu_2P_2O_7$.

LEVIN, A. I.

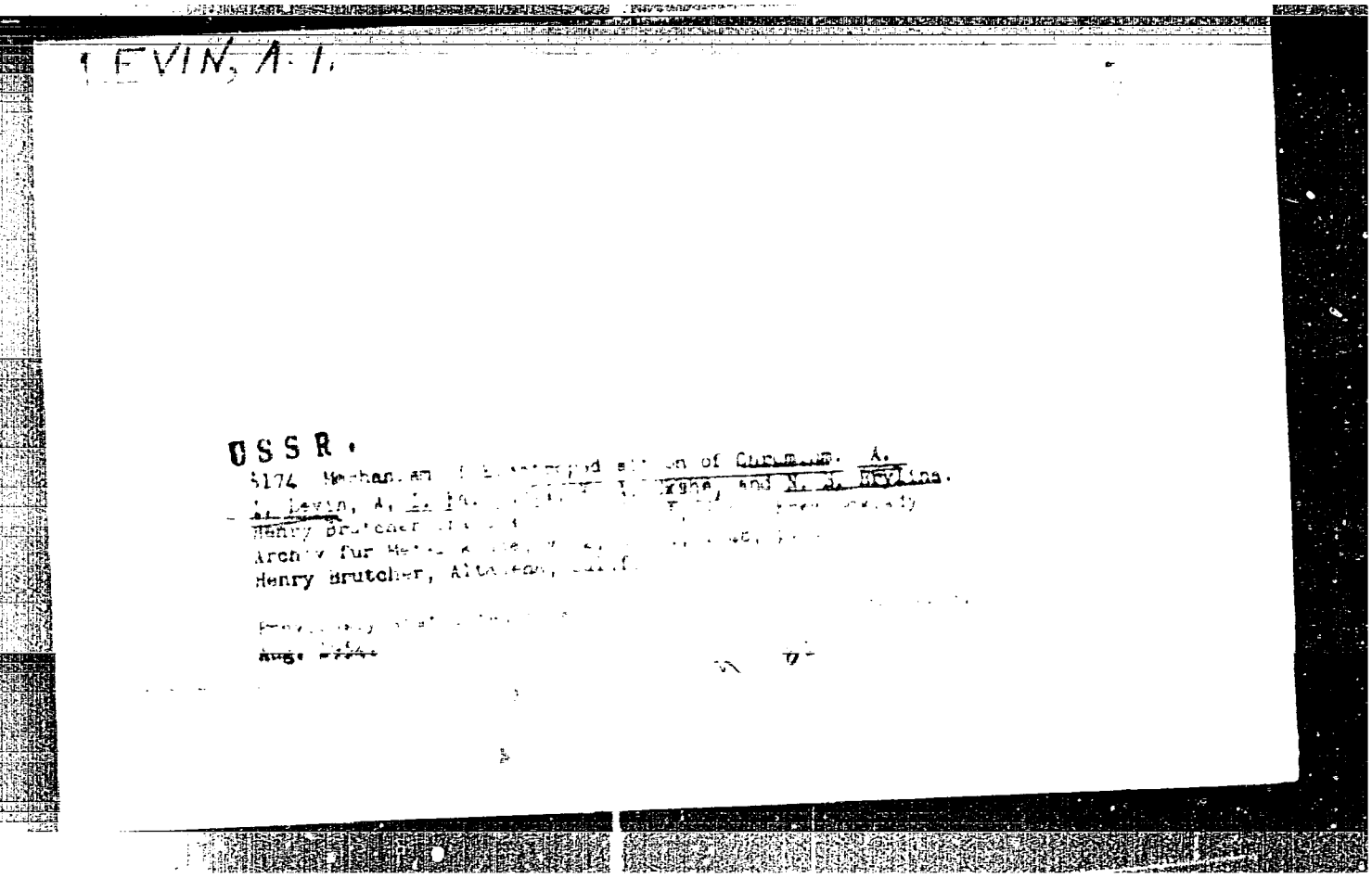
Electrolytic method of production of nickel powder. A. I. Levin. *J. Applied Chem.* (U.S.S.R.) 19, 779–92 (1946)(in Russian); cf. Loshkarev, *C.A.* 41, 4386c.—Brittle, easily comminuted, dendritic Ni deposits can be produced by electrolyzing concd. ($NiSO_4.7H_2O$ 300, H_3BO_3 20, Na_2SO_4 25, NaCl 3 g./l.) solns. contg. NH_4OH, with c.d. 60–85 amp./sq. dm., at 50°, on stainless steel cathodes, with current efficiencies η 51–44%. The same effect was obtained in acid baths, pH 2.6–3.4, with addns. of 20–80 g./l. of urea, at 60°, c.d. 37–100 amp./sq. dm., 6–20 hrs., and with glycerol 35 g./l., c.d. 60, 7 hrs., glycerol 35 + urea 15 at c.d. 20, 5½ hrs.; saponin had no effect; Solidol is effective at 60°. Brittle deposits were obtained in dil. solns. of $NiSO_4.(NH_4)_2SO_4.6H_2O$ 20 g./l., 60°, 30–40 amp./sq. dm., η 90%; in 6 hrs. the pH rose from 2–3 to 7; this necessitated adjustment with H_2SO_4. More dil. solns. (5–10 g./l.), at 20–57 amp./sq. dm., gave powdery Ni; this is promoted by addns. of urea, NH_4CNS, and especially Seignette salt. With 14 g./l. of the latter, highly dispersed black Ni powder can be obtained at room temp., without stirring, at c.d. 20–40, η about 55%. Because the anodic η is considerably higher, electrolysis in this case must be conducted without NaCl. In electrolytes contg. .5 g./l. of Ni, at 45°, without stirring, the percent of fine-grain powder in the deposit increases with c.d. (mesh 200 and 270, 2.80 and 9.14, 30.23 and 19.32%, at 12.5 and 75.0 amp./sq. dm., resp.); η is max. at 25.0 amp./sq. dm. The activity *a*, detd. by displacement of Cu from $CuSO_4$ and defined as $a = 100c/5.4$, where c = g. of Cu displaced by 5 g. Ni powder, in 400 ml. at 75°, of the electrolytically produced Ni powder (200 mesh fraction) was very low, usually 4.6–26.8%; variation of the drying procedure was of no avail; in ammoniacal bath, *a* rose occasionally to 50%. Heating in H_2, 20 l./hr. per 1 kg. powder (270 mesh), at 700°, for 2–6 hrs., raised *a* to 91.5–93.0%; at a const. length of reduction, 2 hrs., at 500, 600, 700, 800°, *a* rose from 15.82 to 42.03, 81.36, 91.02, 91.12%. Powder of 75, 175, 250 mesh, reduced at 700° for 3 hrs., had *a* 68.41, 88.14, 90.85, resp.

N. Thon



*Silver Plating (Experiments with Cyanide-Free Electrolyte). A. Levin. *Elektroplating*, 1940, 2, (7), 215-217).—An abridged translation of *Zhur. Prikład. Khim.*, 1941, 14, (1), 68-73; see *Met. Abs.*, 1942, 9, 182.—H. A. H.

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION



LEVIN, A. I.

USSR.

5174 Mechanism [illegible] action of Curium. A. I. Levin, A. [illegible] Henry Brutcher [illegible] Archiv fur Hygiene [illegible] Henry Brutcher, Altenau, [illegible]

Aug. 1954

6

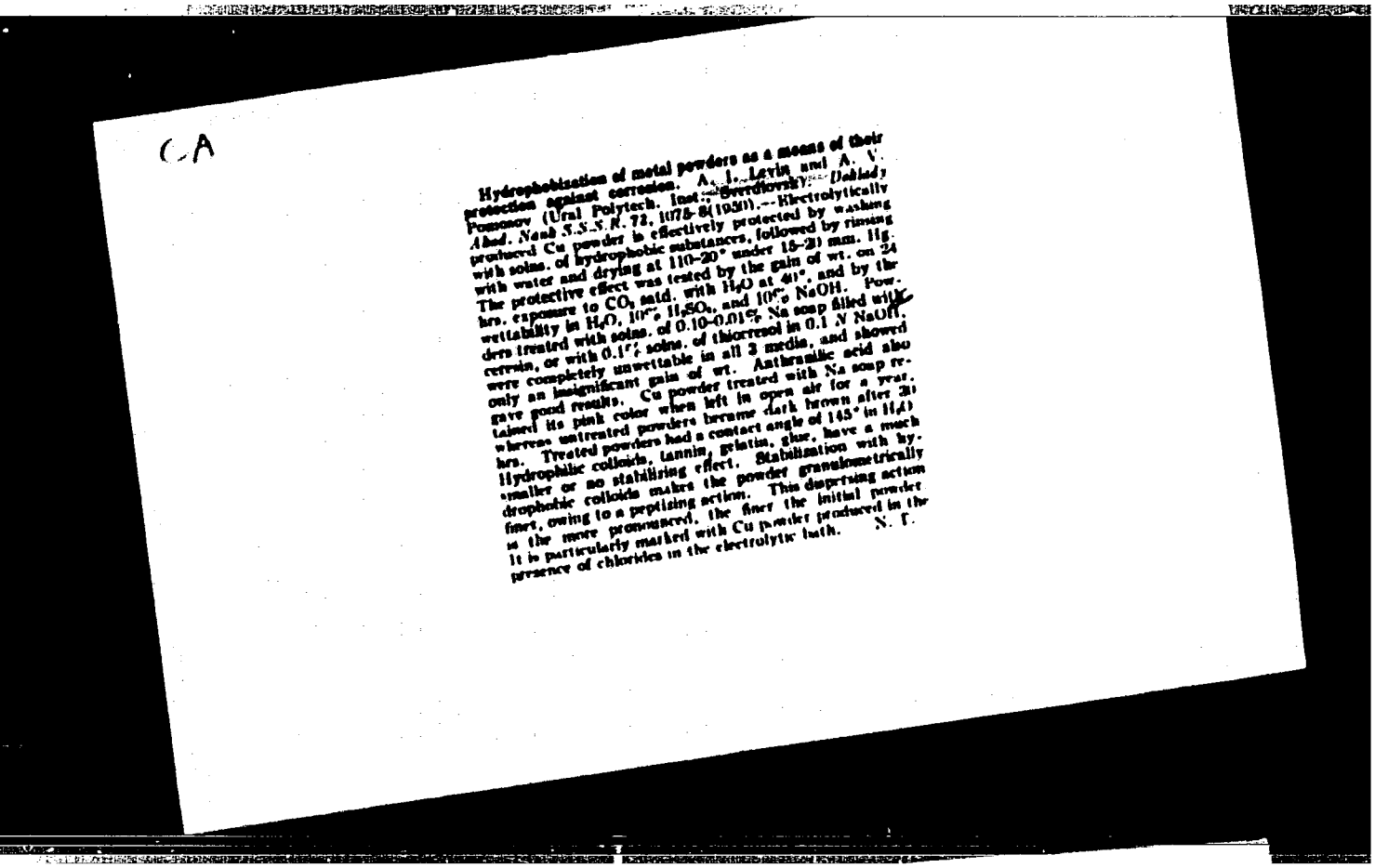
Corrosion of Powdered Copper. A. I. Levin and A. V. Pomosov (*Zhur. Priklad. Khim.*, 1949, **22**, (6), 596–600).—[In Russian]. Gain-in-weight tests in various atmospheres were made using commercial Cu powder (99·60% Cu, d 1·[illegible] g./c.c.). During 30 days in the laboratory atmosphere at 16° ± 2° C. the powder increased in weight by 0·14%/month; in 24-hr. tests in a Cu bomb at 20°, 40°, 60°, and 75° C., gains of 0·02, 0·036, 0·083, and 0·087%, resp. (0·03, 0·11, 0·[illegible], and 0·44% in air saturated with water vapour) were observed. Corrosion was negligible when the powder was kept in a desiccator over H_2SO_4. The weight increases after 24, 48, and 240 hr. at 16° ± 2° C. in dry gases were: CO_2, 0·008, 0·1, 0·20; SO_2, 0·24, 0·40, 0·73; NH_3, 0·57, 0·67, 0·8; HCl, 6·0, 20·22, 11·03%; in gases saturated with water vapour the increases were: CO_2, 0·72, 3·04, 10·6; SO_2, 5·65, 10·06, 21·0; NH_3, 3·06, 5·06, 8·84; HCl, 3·46, 5·63, 9·33%. In HCl alone is corrosion greater in the dry gas, and in dry HCl the gain-in-weight/time curve passes through a max. The severity of attack depends on the degree of initial oxidation of the Cu; thus, after 48 hours' exposure at 16° ± 2° C. in dry HCl, gains of 20·2, 30·6, and 51·1 wt.-% were obtained with laboratory-prepared (99·79% Cu), commercial (99·6% Cu), and oxidized (95·1% Cu) powders, resp. Powders sealed for 264 hr. at 16° ± 2° C. in 2-l. glass vessels in the presence of NH_4Cl + H_2O, $(NH_4)_2CO_3$, $(NH_4)_2CO_3$ + H_2O (Cu and salt being in separate receptacles) gained 0·04, 0·20, 11·65, and 22·6%, resp. L. and P. consider that corrosion of Cu powder depends on 3 factors: (i) (most important) the presence of

over

LEVIN, A. I.

4

*Stabilization of Powdered Copper as Regards Corrosion. A. I. Levin and [illegible] Prikl. Khim., [illegible] Powders electro-deposited from acid $CuSO_4$ [illegible] to which a stabilizer had been added [illegible] Corrosion tests were made (15–20 mm. Hg) at 110°–120° C. [illegible] 1 hr. at 40 [illegible] °C. in CO_2 saturated with water vapour for [illegible] The gains in weight with stabilizers of [illegible] hydrophobic type were [illegible] 0·27 [illegible] 0·01; hydroxybenzoic acid, [illegible] oleic acid, 0·06 [illegible] 0·10; Na oleate [illegible] soap, 0·09 [illegible] soln. of Vaseline in benzene alone, 2·75 [illegible] 0·31 (powder [illegible] cresol in 0·1*M*-NaOH, 0·07. With 0·5, 0·1, 0·01, 0·001, and 0·0001% soln. soap in the [illegible] the % gains in weight were [illegible] 0·01, 0·02, 0·01 [illegible] and 0·51; with 0·5 and 0·1% oleic acid, 0·53 and 0·[illegible], with 0·1, 0·01, and 0·001% Na oleate, 0·08, 0·10, and 0·[illegible], and with 0·5 and 0·1% thiocresol [illegible] 0·01, 0·[illegible] and [illegible]. Using various proportions of flotation agents, the % gains in weight were as follows: 0·01 and 0·001% [illegible] 0·10 and 0·01; 0·1, 0·01, and 0·001% [illegible] xanthogenate, 0·98, 1·12, and 0·07; 0·5, 0·1, 0·01, and 0·001% [illegible] soln. of toluene sulphochloride in alcohol, 0·7[illegible], 0·[illegible], 0·2[illegible], and 0·33. Finally the stabilizing action of hydrophilic substances was investigated, the % gains in weight being: 0·5% glucose, 0·1[illegible]; 0·5% pyrogallol, 1·10; 0·5% gallic acid, 1·10; 0·5 and 0·1% tannin, 0·14, and 0·2[illegible]; 0·5 and 0·01% hide glue, 0·25, and 0·22; 0·5, 0·1, 0·01, 0·001, 0·0001, and 0·00001% gelatin, 0·50, 0·40, 0·24, 0·60, 0·34, and 0·46; 0·5, 0·1, and 0·01% alkali sulphate, 0·21, 0·30, and 0·61. It was also found that stabilized powders have good corrosion resistance [illegible] 10% H_2SO_4, or 10% NaOH [illegible] washed by water [illegible] that the best stabilizers [illegible] substances [illegible]



C.A

Hydrophobization of metal powders as a means of their protection against corrosion. A. I. Levin and A. V. Ponomov (Ural Polytech. Inst., Sverdlovsk). *Doklady Akad. Nauk S.S.S.R.* 72, 1075-8(1950).—Electrolytically produced Cu powder is effectively protected by washing with solns. of hydrophobic substances, followed by rinsing with water and drying at 110–20° under 15–20 mm. Hg. The protective effect was tested by the gain of wt. on 24 hrs. exposure to CO_2 satd. with H_2O at 40°, and by the wettability in H_2O, 10% H_2SO_4, and 10% NaOH. Powders treated with solns. of 0.10–0.01% Na soap filled with cerrain, or with 0.1% solns. of thiorresol in 0.1 *N* NaOH, were completely unwettable in all 3 media, and showed only an insignificant gain of wt. Anthranilic acid also gave good results. Cu powder treated with Na soap retained its pink color when left in open air for a year, whereas untreated powders became dark brown after 24 hrs. Treated powders had a contact angle of 145° in H_2O. Hydrophilic colloids, tannin, gelatin, glue, have a much smaller or no stabilizing effect. Stabilization with hydrophobic colloids makes the powder granulometrically finer, owing to a peptizing action. This dispersing action is the more pronounced, the finer the initial powder. It is particularly marked with Cu powder produced in the presence of chlorides in the electrolytic bath. N. T.

... N, A. I.

*Influence of Ammonium Salts on the Corrosion of Powdered Copper. A. V. Pomosov, T. N. Ponomareva, and A. I. Levin. (Zhur. Priklad. Khim., 1951, 24, (7), 720–722). (In Russian). (Cf. L. and P., ibid., 1949, 22, 592: M.A. 19, 452). 2·5 g of 99·93% Cu powder were placed in a beaker inside a jar which also held—in separate beakers—an NH_4 salt and water. The weight of salt taken was that contg. 1 g. NH_4. The corrosion of the Cu was determined by measuring the change in weight after 12 hr. at 40° ± 0·5° C. The rates of corrosion (in mg./g./day) of the Cu with various NH_4 salts were

chloride 42·56, bromide 34·03, iodide 34·72, fluoride 17·12, acetate 72·0, nitrate 8·88, carbonate 239·12, sulphate 7·44, and secondary phosphate 11·63. The corrosion rate will be dependent on the thickness of the liq. adsorption layer on the surface of the metal and the amount of vapours and gases dissolved in it; it should therefore be greater for salts of lower thermal stability. The volatility of the acid forming the anion of the salt is therefore the main factor determining its corrosiveness (this is confirmed by comparing corrosivity of the NH_4 salt and b.p. of the acid for a series of acids). The ease of hydrolysis of the salts is among the other factors involved.—G. V. E. T.

PA 187T13

LEVIN, A. I.

Jul 51

USSR/Chemistry - Corrosion

"Atmospheric Corrosion of Powdered Copper," A. V. Pomosov, A. I. Levin

"Zhur Prik Khim," Vol XXIV, No 7 pp 723-726

Water-repellent Cu (treated with dry H_2S) without film of moisture is subject to atm corrosion. Therefore, atm corrosion cannot be unconditionally considered as special case of electrochem corrosion. In temp range corr to liquid state of H_2O, gas corrosion which is purely chem, plays important role in addn to electrochem corrosion.

187T13

LF'TN, A. I.

USSR/Chemistry - Electrochemistry of Copper and Nickel Jun 52

"The Characteristics of Electrolytic Refining of Copper Which Contains Nickel," A. I. Levin, Lab of Electrochem, Ural Polytech Inst imeni S. M. Kirpov

"Zhur Prik Khim" Vol XXV, No 6, pp 616-625

Sep components of the anodic alloy do not go into soln proportionally to their electrochem equivs. The nonequil dissolving of metal causes very quick accumulation of nickel in the electrolyte. As the concn of Ni salts increases, the soly of $CuSO_4$ in

218T33

USSR/Chemistry - Electrochemistry of Copper and Nickel (Cont'd) Jun 52

the electrolyte decreases, its viscosity increases, and elec cond decreases. The quantity of anode sludge goes up and causes partial passivation of the anode due to formation of dense sludge crusts on its surface. Cathodic deposition of Cu from solns rich in Ni salts also is accompanied by serious difficulties and is particularly sensitive to many factors influencing electrode polarization and the character of electrolytic deposition. Electrolyte circulation becomes poor due to sludge formation.

218T33

LEVIN, A. I.

7*A Method for Improving Bi-Metallic Copper Plating. A. I. Levin and V. M. Novakovsky (*Zhur. Prikład. Khim.*, 1952, 25, (9), 974–979 (in Russian); *J. Appl. Chem. U.S.S.R.*, 1952, 25, (9), 1039–1043 (in English)).—L. and N. have studied the prepn. of Cu/Fe bimetal by electrodeposition of Cu from cyanide baths at high c.d. Using a bath contg. (g./l.): CuCN 26, NaCN 34·5, $KNaC_4H_4O_6$ 60, Na_2CO_3 30, it was found that the best corrosion-resistant deposits on a Pt cathode were obtained at a cathodic c.d. (D_k) of 20 amp./dm.^{2} on electrolysis for 8–10 sec.; further deposition at this D_k gave deposits which corroded more readily. In tests at various values of D_k, the rate of deposition increased with increase in D_k, but so did the cell voltage, reaching 13–15 V. at D_k = 60–80 amp./dm.^{2}. Optimum conditions for the required deposits are considered to be D_k = 5–10 amp./dm.^{2} with a deposition time of 25–40 sec. To develop a method for obtaining deposits of any desired thickness, deposition at high c.d. with periodic reversal was investigated. At const. D_k, the current efficiency was practically independent of the duration of a complete cycle. Data showing the effect of changes in the ratio of (reverse current duration/direct duration) on the current efficiency are tabulated; the appearance and structure of the deposits was inferior only at ratios of 0·05 and less. The current efficiency decreased with increasing D_k. It was also found to be negligible at the start of electrolysis, then to increase rapidly and finally approach a limiting value; this is because of the low H overvoltage on the original Pt surface. Satisfactory deposits are obtained in prolonged electrolysis (1·5 hr.); on repeated bending to 180° of a Cu-plated steel strip, until fracture, the deposit did not peel. As D_k was increased, the structure of the deposit improved, then deteriorated; the value of D_k at which the structure was best increased as the relative duration of the reverse current increased. Brightness improved as the cycle duration was increased, the optimum cycle time being greater as D_k was reduced. Optimum conditions recommended are: D_k 8 amp./dm.^{2}, cycle period 4–5 sec., duration of reverse = 10% of direct period. Cu/Fe bimetal prepared in this manner did not exhibit H blistering on heat-treatment at 900° C.; this is presumably because the H produced in the cathodo compartment is oxidized at the switch-over to anode.

—G. V. E. T.

LEVIN, A.I.

USSR

✓ **The effect of surface-active materials on the electrode potential.** A. I. Levin, R. A. Ukshe, and V. S. Kolevatova (S. M. Kirov Ural Polytech. Inst., Sverdlovsk). *Doklady Akad. Nauk S.S.S.R.* 87, 97–100 (1952). — The effect of adding small amts. (50–100 mg./l.) of surface-active materials on the electrode potential was studied for Cu and Zn electrodes. Triton B, sulfoalkylic acid, and anthranilic acid produced a significant shift of the electrode potentials of Cu to higher pos. values. Surface-active cations, neutral mols., and anions such as I^-, PO_4^{3-}, and $C_6O_7^{-}$ had no effect. The potential of the Zn electrode was shifted toward higher pos. values by surface-active cations (tetrabutylammonium) and neutral mols. (octanol and camphor). Surface-active anions had no effect on the potential. The change in potential owing to the presence of surface-active substances diminished with time and after a period of time disappeared completely. J. Rovtar Leach

Peculiarities in the Electrorefining of Nickel-Bearing Copper. A I Levin (*Trudy Konferentsiyi po Elektrokhimii 1950*, 1953, 473-477). (In Russian.) L studied the electrolytic refining of Cu contg Ni 0·1, 0·3, 0·5 and 3·0, Sb 0·015, As 0·03, S 0·012, Al 0·003, Fe 0·033, and Pb 0·015% in acid $CuSO_4$ baths at 50°-55° C. The data obtained are tabulated. Certain constituents of the alloys did not go into soln in proportion to their electrochem equivalents, either because intercryst corrosion led to removal of Ni, or because insoluble films formed on the anode surface. The uneven dissolution of the metal led to rapid accumulation of Ni in the bath which reduced the solubility of $CuSO_4$; addn of 40 g/l Ni to soln contg H_2SO_4 170 g/l at 50° C reduced the $CuSO_4$ solubility by 30·5%, increased the viscosity and reduced the elect conductivity of the bath. The amount of anode mud increased, and caused partial passivation of the anode. **The presence of Ni in the bath led to troubles at the cathode; circulation of the electrolyte disturbed the anode slime and produced nodular deposits.**—G V. E. T.

Levin, B. I.

Cathode polarization on precipitating copper from complex electrolytes. A. I. Levin and E. A. Ukshe (S. M. Kirov Ural Polytech. Inst., Sverdlovsk). *Zhurnal Obshchei Khim., Akad. Nauk S.S.S.R.* 2, 799–808(1953).—Cathode polarization is measured for ppts. of Cu from its complexes with pyrophosphate (I), oxalate (II), thiosulfate (III), Na ethylenediaminetetraacetate (IV), salicylate (V), and NH_3 (VI), alone or in pairs. In I, II, III, and IV, cathode polarization depends chiefly on chem. reactions; in V and VI, on concn., complicated in the case of V by formation of a passive film on the cathode. The most probable cathode process is direct reduction of the complex ions. A small increase in concn. of the complex-forming group lowers the electrode potential.

H. M. Leicester

LEVIN, A.I.; KOLEVATOVA, V.S.; MIKRUSHIN, S.G.

Effect of surface-active substances on the wetting of cathodic zinc by the electrolyte. Koll.zhur. 15 no.4:252-258 '53. (MLRA 6:8)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova. Laboratoriya elektrokhimii i kolloidnoy khimii (Sverdlovsk).
(Surface-active agents) (Zinc plating)

LEVIN, A. I.

"Nature of the Phenomenon of "Difficult Stripping" of Cathode Zinc. A. I. Levin, A. V. Pomosov, and T. A. Tkachenko (*Zhur. Prikl. Khim.*, 1953, 26, (12), 1238-1244).—[In Russian]. In the electrodeposition of Zn from $ZnSO_4$ soln. there are periods when the deposit is difficult to remove from the Al starting sheets. To investigate this, soln. contg. Zn 60, H_2SO_4 100 g./l., with various fluoride contents, were electrolysed at 32° C. and cathodic c.d. (D_k) = 400 amp./m.^{2}, using anodes and cathodes of sheet Pb and Al, resp. Stripping trouble occurred only when the F^- content reached 300 mg./l., for cathodes used repeatedly, or >4000 mg./l. for new cathodes. Since the max. F^- content of ordinary baths is 50 mg./l., the troubles experienced in practice are not solely due to the presence of F^-, as was suggested by Zosimovich and Il'enko (*Tsvet. Met.*, 1949, (2), 51); in addn., experiments showed that the presence of a natural oxide film on the Al assists removal of the Zn. Increasing the F^- concentration from 0 to 4000 mg./l. changed the electrode potentials of Al in H_2SO_4 (100 g./l.) and in the acid $ZnSO_4$ electrolyte from −0·299 to −0·939 and from −0·38 to −0·862 V., resp., but this was so only for the initial potential; the potential of Al in H_2SO_4 after 2 hr. was ~−0·58 V. for any F^- content within the range 0–4000 mg./l. The increased adhesion of the Zn is attributed to porosity in the oxide film or scratches, dents, cracks, and other defects in the metal surface. Microcells are set up, leading to the formation of intermetallic Zn–Al compounds in pits in the Al. This was confirmed by artificially producing adhesion by etching the Al surface or by amalgamating it. The reduction in current efficiency observed with amalgamated plates is explained by the intensive corrosion that occurs.

—G. V. E. T.

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