82588

S/022/60/013/01/10/010
C 111/ C 333

Depolarization of the Bundle Under Motion in an Inhomogeneous Magnetic Field

The dispersion of angles resulting from the oscillations of the particles is then

(5) $\Delta\psi' = 2\pi \frac{\Delta\mu}{\mu} \frac{E}{mc^2} \frac{2m - n - n^2}{2(1-n)} \frac{\bar{r}^2 - \bar{z}^2}{\varrho^2} \frac{t}{T_o}$,

where $\frac{\Delta\mu}{\mu}$ is the relative deviation of the magnetic moment from the Dirac value.

There are 2 non-Soviet references: 1 Italian and 1 American.

ASSOCIATION: Fizicheskiy institut AN Armyanskoy SSR (Physical Institute AS Armyanskaya SSR)

SUBMITTED: June 28, 1959

Card 2/2

KHEYFETS, S. A., Cand Phys-Math Sci -- "Loss of particles in modern circular-orbit accelerators." Mos, 1961 (Inst of Theoretical and Experimentalm Phys, Acad Sci USSR). (KL, 4-61, 186)

21.2000

22783
S/057/61/031/005/014/020
B104/B205

AUTHORS: Kheyfets, S. A. and Baryshev, A. I.

TITLE: Transition processes in an accelerating system, caused by injection of particles

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 5, 1961, 606-612

TEXT: A study has been made of the changes of amplitude, phase, and frequency of the accelerating voltage, which are caused by injection of particles. In doing so, the authors confined themselves to a continuous injection of particles. In this case, the formulas for the transition processes due to a pulsed injection can be derived from the formulas presented here for the transition $\delta \longrightarrow \infty$. The variation of load in time is a characteristic feature of continuous injection. The losses suffered by accelerated and slowed down particles in a strongly focusing accelerator are equal. The time dependence of the load is given by $\alpha_n(t) = \alpha_n(1 - \exp(-\delta t))$ (1), and the phase shift caused by the rated current of the accelerator is found to be $\Delta\omega(t) = \Delta\omega(1 - \exp(-\delta t))$ (2).

Card 1/5

Transition processes in an...

If the relations $\omega_H = \omega_o + \Delta\omega$ and $\alpha_H = \alpha_o + \alpha_n$ are valid (ω_o and α_o stand for the frequency and the decrement, respectively, up to injection), the variation of the accelerating voltage can be described by

$$\ddot{u} + 2(\alpha_H - \alpha_n e^{-\delta t})\dot{u} + (\omega_H^2 - a^2 e^{-\delta t})u = \frac{I_{0\sim 0}}{C_0}\cos(\omega_0 t + \psi)\left(\dot{u} = \frac{du}{dt}\right), \quad (3)$$

Next, the authors derive the two conjugate complex roots

$$p = \frac{\alpha_H + \sqrt{\alpha_H^2 - \omega_H^2}}{\delta} \simeq \frac{\alpha_H + i\omega_H}{\delta}, \quad (10)$$

$$p^* = \frac{\alpha_H - \sqrt{\alpha_H^2 - \omega_H^2}}{\delta} \simeq \frac{\alpha_H - i\omega_H}{\delta}; \quad \alpha_H \ll \omega_H, \quad (11)$$

which offer two linearly independent solutions to (3). By variation of parameters one obtains

$$U_{\text{vacuum}} = \frac{\omega_0}{C_0} e^{-\alpha_H t}\left\{\frac{F\left(\beta^*; \gamma^*; -\frac{2\alpha_n}{\delta}e^{-\delta t}\right)e^{i\omega_H t}}{\nabla_0} \times \right.$$

$$\left. \times \int_0^t I_0 F\left(\beta; \gamma; -\frac{2\alpha_n}{\delta}e^{-\delta t}\right) e^{\alpha_H t - \frac{2\alpha_n}{\delta}(1-e^{-\delta t}) - i\omega_H t} \cos(\omega_0 t + \psi)\, dt + \text{K. c.}\right\}, \quad (12)$$

c. c.

Card 2/5

Transition processes in an...

where ∇_0 is the Wronski equation of (3) at t = 0. As a general solution, one obtains $$u = Ge^{-pt}F\left(\beta;\ \gamma;\ -\frac{2\alpha_n}{\delta}e^{-\delta t}\right) + C^*e^{-p^*t}F\left(\beta^*;\ \gamma^*;\ -\frac{2\alpha_n}{\delta}e^{-\delta t}\right) + u_{\text{particle}}(t).$$ Here, C and C* are arbitrary constants which are to be determined from the initial conditions. It is evident that, if the accelerating system is adjusted to the frequency ω_0 without a load, the initial conditions for $\omega_H/\delta \gg 1$ are given by

$$u|_{t=0} = \frac{I_0}{2C_0\alpha_0}(1 - e^{-\alpha_n\tau})\sin\psi,$$

$$\dot{u}|_{t=0} = \frac{I_0\omega_0}{2C_0\alpha_0}(1 - e^{-\alpha_n\tau})\cos\psi. \qquad (B)$$

Thus, the solution of (3) for $\omega/\delta > 1$ can be represented in the form $u = D(t)\cos[\omega_0 t + \Phi(t)]$ (13), where D is an envelope, and Φ is the phase of the accelerating voltage. If the reduced parameters $l = \alpha_n/\delta$; $m = \alpha_H/\delta$; $n = \Delta\omega/\delta$ are introduced, the two functions can be represented by

$$D(x) = \frac{I_0}{2C_0\alpha_0}e^{-(mx+l\tau-\sigma)}\sqrt{(a_1+a_2)^2+(b_1+b_2)^2}, \qquad (14)$$

$$\Phi_1(x) = \psi + n(x + e^{-\sigma}) - \operatorname{arc\,tg}\frac{b_1+b_2}{a_1+a_2}, \qquad (15)$$

Card 3/5

Transition processes in an...

for which case the notations

$$a_1 = (1 - e^{-\alpha_0 t}) e^{t} \cos n, \quad (16)$$

$$b_1 = (1 - e^{-\alpha_0 t}) e^{t} \sin n, \quad (17)$$

$$a_2 = (m - l) \int_0^x e^{mx + ie^{-x}} \cos (nx + ne^{-x}) dx, \quad (18)$$

$$b_2 = (m - l) \int_0^x e^{mx + ie^{-x}} \sin (nx + ne^{-x}) dx. \quad (19)$$

are valid. The time dependence of the phase of the voltage acting upon the particles leads to a shift of the voltage frequency by $\Delta\omega(t) = d\Phi/dt$. It can easily be shown that at $x \longrightarrow 0$ the functions D, Φ, and $\Delta\omega$ tend toward a value that corresponds to the values holding before particle injection. For $x \longrightarrow \infty$ these functions tend toward values that correspond to continuous operation with a load. Variations in amplitude, frequency, and phase of the accelerating voltage lead to deviations of the beam parameters from the rated values. These deviations are largely dependent on the current strength of the particles. The frequency

Card 4/5

deviation of the accelerating voltage leads to a variation in the radius of the equilibrium orbit of the particles. This may lead to a complete loss of the beam. The frequency shift limits the particle currents if no precautionary measures are taken. Small particle currents do not lead to any significant frequency shifts. These results have been obtained without accounting for the effects of these processes upon the beam.

Yu. F. Orlov, A. G. Sal'man, and S. K. Yesin are thanked for valuable comments and their interest in the work, as well as V. S. Pogosyan and B. M. Teryan for numerical computations. V. V. Yekimov is mentioned.
There are 5 figures and 1 Soviet-bloc reference.

SUBMITTED: May 16, 1960

Card 5/5

24.6730

25029

S/057/61/031/007/010/021
B104/B206

AUTHORS: Kheyfets, S. A., Orlov, Yu. F., and Gendzhoyan, G. V.

TITLE: Particle losses in an electron accelerator resulting from quantum fluctuations of radiation (phase oscillations)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 7, 1961, 824-829

TEXT: The magnetic field of an annular electron accelerator is usually changed according to the relation $H \sim H_0(1-\cos \omega t)$. Orlov et al. (PTE, no. 5, 17, 1958) showed that for $|\cos \omega t| < 5/6$ and $H < 1.8\ H_0$, the mean square amplitude of the phase oscillations may be described by

$$\overline{A^2} = BF_\beta(\zeta), \qquad (1)$$

$$F_\beta(\zeta) = \zeta^{-1/6}(1+\zeta)^{-1/2} e^{-(1+\beta)\zeta} \int_0^\zeta (1+u)^{-1/2} u^{1/6} e^{(1+\beta)u} du, \qquad (2).$$

Card 1/6

$\zeta = P_\gamma/\dot{\mathcal{E}} = \Delta\mathcal{E}_{rad}/U$ is the relation of the emission intensity of electrons in a magnetic field with the energy increment $\dot{\mathcal{E}}$. ζ increases quickly with increasing particle energy. The parameter β depends on the coupling of radial- and phase oscillations, and determines radiation attenuation. In strongly focusing accelerators $\beta = 0$; in weakly focusing ones, $\beta = -\{4(1-n)\}^{-1}$. If in a strongly focusing accelerator, a variation of the magnetic field along the orbits is used to attenuate the radial oscillations, the radiation attenuation can be described by the decrements

$$\gamma_\varphi \simeq 4(1+\beta)\frac{P_\gamma}{\mathcal{E}}; \quad \int_0^t \gamma_\varphi dt' \simeq (1+\beta)\zeta, \tag{3}$$

$$A^2 = A_0^2 \exp\left(-\int_0^t \gamma_\varphi dt'\right). \tag{4}$$

Card 2/6

The parameter B is then

$$B = 0.84 q \alpha \sigma_3 \sigma_2^{-\frac{1}{2}} \ldots D_s L^{-\frac{1}{2}} \left(\frac{mc^2}{U}\right)^{\frac{1}{2}} \left(\frac{R}{L}\right)^{\frac{1}{2}}, \qquad (5),$$

where L and R are length and curvature radius of the orbit in meters, $\sigma_2 = \left\langle \frac{H^2}{H_0^2} \right\rangle$, $\sigma_3 = \left\langle \frac{|H|^3}{H_0^3} \right\rangle$, q the multiplicity of the frequency of the acceleration voltage, α the logarithmic differential quotient of the orbit length with respect to the pulse, Φ_s the equilibrium phase (with $\Phi = 0$, the voltage of the acceleration field attains a maximum). If the oscillations can be assumed as linear, the kinetic equation for the distribution function of the amplitudes, which takes account of the stochastic oscillations as well as the attenuation of the oscillation, may be brought into the form of the equations

$$\frac{\partial \Phi}{\partial x} = \frac{\partial}{\partial z}\left(z \frac{\partial \Phi}{\partial z} + z\Phi\right), \qquad (6)$$

Card 3/6

Particle losses in an electron ...

where

$$z=\frac{a}{\tau+1},\quad dx=\frac{d\tau}{\tau+1}, \tag{7}$$

$$a=\frac{A^2}{A^2_{кол.}}\exp\int_0^t\gamma dt';\quad \tau=\frac{A^2}{A^2_{кол.}}\exp\int_0^t\gamma dt' \tag{8}.$$

If $A_{permissible}$ is the maximum permissible oscillation amplitude, $A^2_{permissible}=\Phi^2_{permissible}=\dot{\Phi}^2/\Omega^2$ (where Ω is the frequency of the phase) holds for linear phase oscillations. If $\ddot{\Phi}=C(\cos\Phi_s-\cos\Phi)$ holds for nonlinear phase oscillations, $A^2_{permissible}=4(1-\Phi_s\cot\Phi_s)$ may be written down approximately. For the number of particles participating in the acceleration up to the "moment" $\zeta\sim 1$, formula

$$n(\zeta)\simeq n(0)\exp\left\{-(1+\beta)\int_{\zeta_0}^{\zeta}\frac{A^2_{кол.}}{A^2}\exp\left(-\frac{A^2_{кол.}}{A^2}\right)d\zeta\right\}. \tag{14}$$

Card 4/6

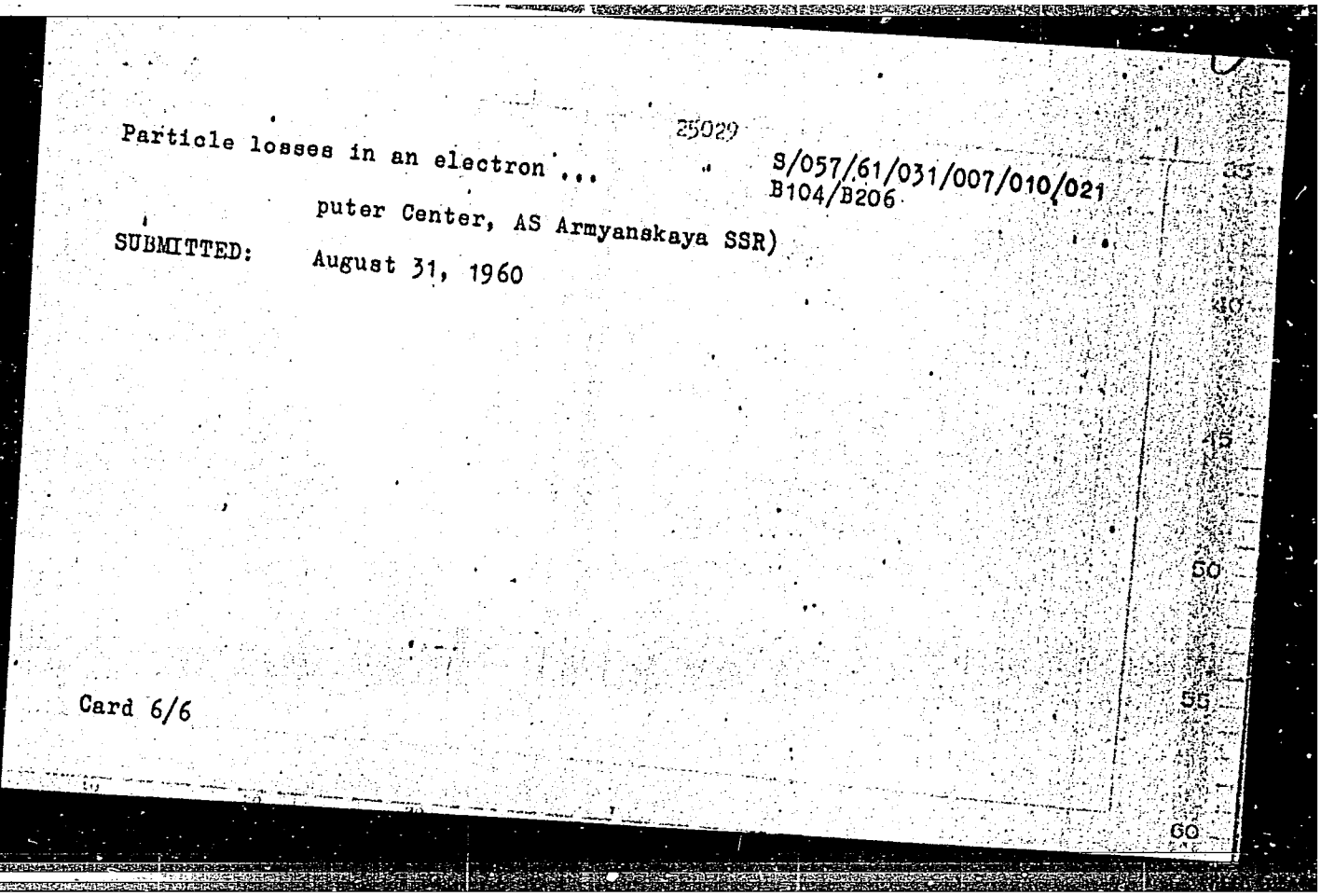
is given which agrees with that by K. B. Robinzon (Intern. Conf. on High-Energy Accel. a. Instr., CERN, p. 293, 1959). Calculation results for $n(\zeta)$, which were made at the Computer Center of the AS Armyanskaya SSR by means of (14), are shown in some diagrams. It may be seen that the quantum-oscillations due to emission begins at $\zeta > 1$ and that the approximation formula

$$n(\zeta) = n(0) \exp\left\{\int_0^{x(\zeta)} \alpha_0(x')\,dx'\right\}, \qquad (11)$$

can be used for $B_1 \ll 0.3$. The losses strongly depend on B_1 and β. The

authors thank the collaborators of the Computer Center, R. A. Aleksandryan, T. M. Ter-Mikayelyan and A. G. Piliposyan for their assistance. There are 7 figures and 11 references: 7 Soviet-bloc and 4 non-Soviet-bloc.

ASSOCIATION: Fizicheskiy institut AN Arm. SSR (Physics Institute, AS Armyanskaya SSR). Vychislitel'nyy tsentr AN Arm. SSR (Com-



25029

Particle losses in an electron ... S/057/61/031/007/010/021
B104/B206

puter Center, AS Armyanskaya SSR)

SUBMITTED: August 31, 1960

Card 6/6

S/056/61/040/002/033/047
B112/B214

AUTHORS: Bayyer, V. N., Kheyfets, S. A.

TITLE: Electron-electron scattering at large energies

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 613-615

TEXT: An approximate calculation of the electron-electron scattering cross section at high initial energies E and at an angle of scattering $\vartheta \gg m/E$ is made in the present paper following a method proposed by A. A. Abrikosov (Ref. 3: ZhETF, 30, 96, 386, 1956). In the determination of the cross section by the method of perturbation it is not possible to restrict oneself to the lowest order because the higher approximations contain the high value $e^2\ln^2(E/m)$. According to a suggestion of Abrikosov, only those terms are taken into account, in which the highest powers of $e^2\ln^2(E/m)$ appear. For selecting such terms, certain conditions are formulated. If ω is the maximum energy of the emitted photon, the differential scattering cross section is given by: $d\sigma = d\sigma_0 \exp\left[-\frac{8e^2}{\pi}\ln\frac{E}{\omega}\ln\frac{E}{\varepsilon}\right]$.

Card 1/2

BAYYER, V.N.; KHEYFETS, S.A.

Behavior of the cross section of electromagnetic particle production at the threshold. Zhur. eksp. i teor. fiz. 40 no.2:715-717 F '61. (MIRA 14:7)
(Particles (Nuclear physics))

35473
S/109/62/007/003/016/029
D256/D302

24.6730

AUTHORS: Baryshev, A.I., and Kheyrets, S.A.

TITLE: Influence of a beam in an electron accelerator upon the accelerating system

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 3, 1962, 483 - 490

TEXT: The electric field generated by the beam of electrons of modern high-energy accelerators as a rule impedes the acceleration, being shifted in phase against the accelerating voltage and changing the load conditions of the external generator. In certain circumstances the energy output of the generator is transferred to excite undesired harmonic oscillations, increasing considerably the required power output and causing excessive thermal losses in the resonators. The authors investigate the effect of excitations of a cylindrical resonator by a beam of relativistic electrons and examine its influence on the performance of the generator. Formulas expressing the amplitude and the phase of the voltage generated by

Card 1/2

the beam are derived, assuming a constant velocity of electrons and uniform density of particles along the bunch, the transverse component of the velocity being neglected. It is shown that a beam of circular cross-section travelling axially along the cylindrical resonator can generate E_{mio}-type oscillations; however, for non-circular cross-section of the beam oscillations with $n \neq 0$ will also occur, mainly with $n = 1$. For the resonant harmonic the maximum of the voltage generated by the beam coincides with the moment when the center of the particle bunch crosses the center of the resonator. Based upon an equivalent diagram the effect on the system of the oscillation generated by the electrons is considered. Formulas for modulation of the external generator are derived expressing the modulus and the phase of the voltage applied across the load necessary to obtain the required accelerating voltage in the presence of the voltage generated by the beam. It is pointed out that the phase oscillations were taken into account. There are 4 figures and 2 Soviet-bloc references.

SUBMITTED: May 15, 1961

Card 2/2

S/057/62/032/008/003/015
B104/B102

24542.

AUTHORS: Orlov, Yu. F., and Kheyfets, S. A.

TITLE: Particle losses due to multiple Coulomb scattering in a cyclic accelerator

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 8, 1962, 919 - 923

TEXT: The mean square amplitude of the betatron oscillations produced by multiple Coulomb scattering is

$$A^2 = \frac{B}{\sqrt{x^2-1}}\left(\operatorname{arch} x - \operatorname{arch} x_0 - \frac{x}{\sqrt{x^2-1}} + \frac{x_0}{\sqrt{x_0^2-1}}\right), \quad (12)$$

$$B = \frac{4|\Phi|^2_{max}\overline{|\Phi|^2}}{\kappa\omega^2 A^2_{max.}}\frac{NL^3}{M^2V}\frac{(Ze^2)^2}{mc^4}L \quad (13)$$

$$2i\omega = \Phi^*\frac{d\Phi}{d\vartheta} - \Phi\frac{d\Phi^*}{d\vartheta}, \quad (14)$$

where ξ is the total particle energy, ξ_{inj} the injection energy, L the orbit length, Φ a Floke's function describing the betatron oscillations,

Card 1/2

S/058/63/000/001/023/120
A062/A101

AUTHOR: Orlov, Yu. F., Kheyfets, S. A.

TITLE: Calculation of parameters of a strong focusing accelerator taking into account the stray fields

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 42, abstract 1A404 (In collection: "Elektron. uskoriteli". Tomsk, Tomskiy un-t, 1961, 145 - 148)

TEXT: Calculation of a strong focusing accelerator with a real magnetic field (taking into account the stray fields) is mathematically complicated. Therefore one proceeds by first determining "ideal" accelerator parameters which have then to be recalculated more precisely in conformity with the results of magnetic measurements. For such a recalculation it is suggested to use the perturbation theory by considering the deviations of the field and its gradient from the "ideal" values as small. With the thus improved accuracy the accelerator parameters satisfy the invariability condition of the betatron oscillation frequencies and of the equilibrium orbit. The equations obtained from this condition can

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S/058/63/000/001/023/120
A062/A101

be satisfied by a suitable choice of the field index n and of the lengths of the rectilinear gaps and magnetic sectors.

A. Fateyev

[Abstracter's note: Complete translation]

BARYSHEV, A.I.; KHEYFETS, S.A.

Effect of the beam of an electron accelerator on its accelerating system. Radiotekh. i elektron. 7 no.3:483-490 Mr '62. (MIRA 15:2)
(Electron beams)
(Oscillators, Electric)

ORLOV, Yu.F.; KHEYFETS, S.A.

Particle loss due to multiple Coulomb scattering in a cyclotron.
Zhur.tekh.fiz. 32 no.8:919-923 Ag '62. (MIRA 15:8)
(Cyclotron)

KHEYFETS, Semen Abramovich; KHARITONO, V.M., otv. red.; ANDREASYAN, V.B., red. izd-va; GORGYAN, G.L., tekhn.red.

[The electron synchrotron] Elektronnyi sinkhrotron. Erevan, Izd-vo AN Arm.SSR, 1963. 185 p. (Akademiia nauk Arm.SSR. Nauchno-popyliarnaia seriia, no.3) (MIRA 16:8)
(Synchrotron)

ORLOV, Yu.F.; KHEYFETS, S.A.

Radiation damping of free oscillations. Dokl. AN SSSR 151 no.2:318-319 Jl '63. (MIRA 16:7)

1. Predstavleno akademikom V.I.Vekslerom.
(Quantum electrodynamics)

S/057/63/033/003/010/021
B104/B180

AUTHORS: Baryshev, A. I., and Kheyfets, S. A.

TITLE: Effect of induced voltage on the phase oscillations of the particle bunch in an accelerator

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 33, no. 3, 1963, 320-325

TEXT: A particle beam passing through a resonator in an accelerator induces a voltage. The present paper deals with the coupling caused by this voltage between the field oscillations in the resonator and the phase oscillations of the bunch particles. It is shown that if the natural frequency is greater than that of the generator, the frequency and the decrement of the phase oscillations will fall. If the accelerated particle currents are high and the phase constant lowers low the longitudinal motion becomes unstable and attenuation changes into anti-attenuation. If $\eta = \Delta\omega/\beta > 0$ frequency and decrement of attenuation rise and the phase oscillations become stable and attenuate more rapidly.. Here, β is the attenuation decrement. It is therefore better to choose quite a high equilibrium phase and tune the resonator

Card 1/2

Effect of induced voltage on the phase ...

to a frequency slightly below that of the external generator. There are 2 figures.

SUBMITTED: March 7, 1962

ACCESSION NR: AT4014036 S/2918/63/000/000/0496/0507

AUTHOR: Kheyfets, S. A.

TITLE: Progress in the techniques of storage of clashing beams

SOURCE: AN ArmSSR. Fizicheskiy institut. Voprosy* fiziki elementarny*kh chastits, 1963, 496-507

TOPIC TAGS: clashing beams, storage ring, high energy storage ring, beam lifetime, beam size, injection, current limitation, plasmoid interaction, strong focusing

ABSTRACT: The problems arising in the study of the possibility of constructing storage rings for high energies are discussed on the basis of experiments gained with small storage rings (with energy less than 500 MeV in each beam). The reported results pertaining to small storage rings deal with the lifetime of the beam in the ring, the transverse beam dimensions, the attainment of very high

Card 1/2

ACCESSION NR: AT4014036

vacuum, injection, and experiments with clashing beams. The problems specific to large storage rings include limitation of the current due to plasmoid interaction, and strong focusing in large storage rings. The status of several storage rings under construction is discussed, with emphasis on the Italian Adone project. Orig. art. has: 3 figures and 8 formulas.

ASSOCIATION: Fizicheskiy institut AN ArmSSR (Physics Institute, AN ArmSSR)

SUBMITTED: 00	DATE ACQ: 20Feb64	ENCL: 00
SUB CODE: PH	NO REF SOV: 005	OTHER: 004

Card 2/2

KHEYFETS, S.A.; ORLOV, Yu.F.

Theory of radiative damping of radial oscillations of an electron in a magnetic field. Zhur. eksp. i teor. fiz. 45 no.4:1225-1229 O '63. (MIRA 16:11)

1. Fizicheskiy institut Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR, Yerevan.

AUTHOR: Kheyfets, S. A.; Yesin, S. K.

B

Simple method for measuring free transverse oscillation frequencies in a
[illegible]tron

[illegible] energiya, v. 18 no. 1, 1965, [illegible]

[illegible] synchrotron, particle motion, perturbation

An attempt was made to measure particle transverse oscillation frequencies in the equilibrium orbit local, time-independent perturbations. [illegible] developed with the assumption [illegible] induced local perturbations [illegible] the betatron oscillations. [illegible]

Card 1/1 50

KHEYFETS, S.B.; ILINICH, B.K., red.; TRUSOV, N.S., tekhn. red.

[Finances of regional service industry and enterprises] Finansy raionnoi promyshlennosti i predpriiatii bytovogo obsluzhivaniia. Moskva, Gosbytizdat, 1963. 129 p. (MIRA 16:12)

(Service industries--Finance)

KHEYFETS, S.B.

New laboratory equipment for comminution of materials into fine particles. Zav.lab. 27 no.5:610-612 '61. (MIRA 14:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut novykh stroitel'nykh materialov.
(Crushing machinery)

AKUNOV, V.I.; KHEYFETS, S.B., inzh., retsenzent; VASILENKO, A.N., red.; TAIROVA, A.L., red. izd-va; SMIRNOVA, G.V., tekhn. red.

[Jet mills; elements of theory and design]Struinye mel'nitsy; elementy teorii i rascheta. Moskva, Mashgiz, 1962. 263 p. (MIRA 15:10)

(Milling machinery)

KHEYFETS S. G. PA 10T71

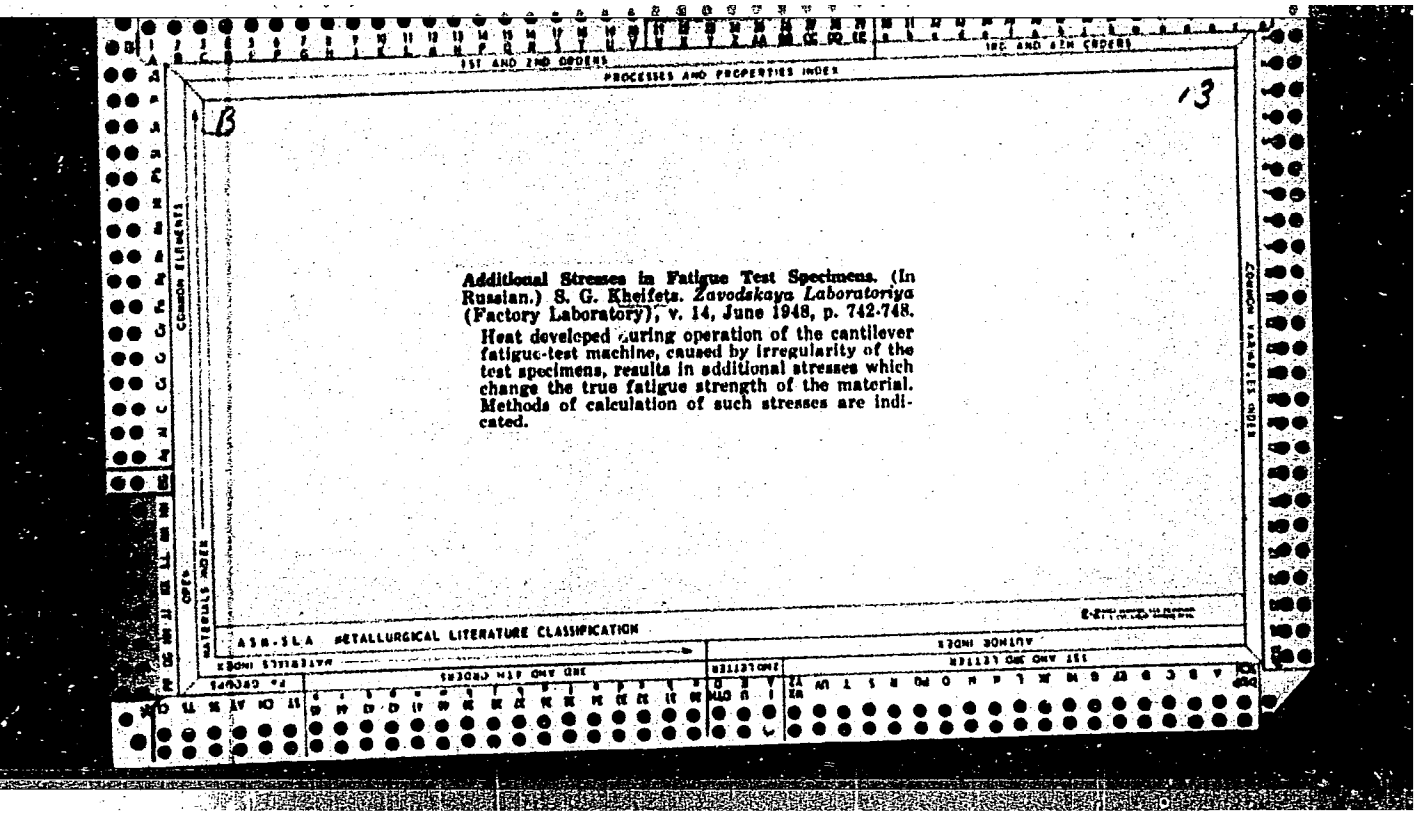
USSR/Steel Alloys Apr 1947
Metallurgy

"Surface Quality and Fatigue Resistance," S. G. Kheyfets, 8 pp

"Vestnik Mashino" Vol XXVII, No 4

Mathematical discussion of the effect of cuts and scratches on the durability of metals, chiefly steel alloys. Fully illustrated with tables, formulae and graphs.

10T71



B

13

Additional Stresses in Fatigue Test Specimens. (In Russian.) S. G. Kheifets. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 14, June 1948, p. 742-748.

Heat developed during operation of the cantilever fatigue-test machine, caused by irregularity of the test specimens, results in additional stresses which change the true fatigue strength of the material. Methods of calculation of such stresses are indicated.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KHEYFETS, S. G. PA. 37/49T82

USSR/Engineering Sep 48
Stress Analysis

"The Effect of Size on the Limits of Durability," S. G. Kheyfetz, Cand Tech Sci, TsNIITMASh, 3½ pp

"Vest Mashinostroy" Vol XXVIII, No 9

Describes experiments to ascertain influence of size of specimen on results obtained from fatigue-testing machines, with four sketches.

37/49T82

KHEYFETS, S. G.

"Effect of size of specimen on fatigue strength," Investigation of the Fatigue Strength of Structural Steels, 120 p., Published by Mashgiz, 1949.

KHEYFETS, S.G.

KHEYFETZ, S.G.

"Calculation of the Permissible Tolerances of Ring Shaped Specimens Used for Relaxation Tests"--pp. 89-94

A paper contained in the symposium "A New Method of Investigation of Relaxation and Creep of Metals," edited by I.A. Oding, Mashgiz, 1949

KHEYFETS, S. G.

"Methods for Studying the Fatigue Strength of Steel Under Bending by Asymmetrical Cycles," pp. 134-146 of the book "Studies on the Strength of Steel," Mashgiz, 1951

Translation W-23621, 21 Aug 52

"Selection of Testing Machine Parameters and Permissible Beats of Specimens in Fatigue Testing," pp 178-195 from the above book.

KUDRYAVTSEV, I.V., kandidat tekhnicheskikh nauk, redaktor; SAVERIN, M.M., kandidat tekhnicheskikh nauk; ZAVARTSEVA, V.M., inzhener; SAVKO, L.I., inzhener; KOBRIN, M.M., inzhener; VIDMAN, D.N.; PROSVIRIN, V.I., doktor tekhnicheskikh nauk; MORGUNOVA, N.N., inzhener; KHEYFETS, S.G., kandidat tekhnicheskikh nauk; BRUMBERG, R.M., inzhener.

[Studies in the strenth of steel] Issledovaniia prochnosti stali. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroitel'noi lit-ry. Vol. 40. 255 p. 1951
(MLRA 6:5)

1. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya Ministerstva tyazhelogo mashinostroyeniya SSSR.
(Steel--Testing)

1951

KUDRYATSEVA, I. V.

Selections of the characteristic parameters of the test machines and the permissible parasitic oscillations of the specimens in endurance (fatigue) tests. - pp. 178 - 195

A paper contained in the symposium "Research Work on the Strength of Steel", edited by I. V. Kudryatseva, Mashgiz, 1951.

KHEYFETS S. G.

Methods of investigation of the fatigue strength of steel in the case of bending stresses following a non-symmetrical cycle.- pp. 134 - 146.

A paper contained in the symposium "Research Work on the Strength of Steel", edited by I. V. Kudryatseva, Mashgiz, 1951.

VOLYNSKIY, S.L., inzh.; GORYUNOV, P.I., inzh.; ZELLER, Yu.G., inzh.; Kheyfets, S.I., inzh.

Redesigning the N-11 automatic oscillograph. Elek.sta. 29 no.11:85-86 N '58. (MIRA 11:12)
(Oscillograph)

LIBGOBER, M.B., insh.; KHEYFETS, S.I., insh.

Synchronizer with permanent time lead in the automatic reclosing circuit. Elek. sta. 30 no.2:83-84 F '59. (MIRA 12:3)
(Electric power distribution--Equipment and supplies)
(Electric circuit breakers)

KHEYFETS, S.I., inzh.

Registering device with magnetic memory. Elek. sta. 34 no.8: 62-64 Ag '63. (MIRA 16:11)

PAVLOV, I.Ya., master; KHEYFETS, S.Kh., inzhener.

Improved, safe lubricator. Energetik 1 no.2:17 Jl '53. (MLRA 6:8)
(Lubrication and lubricants)

KHEYFETS, S. KH. ENG.

Fuel

Mechanization of auxiliary processes in unloading fuel. Rab. energ. 3 No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

LUR'YE, Z.S., inzh.; KHEYFETS, S.Kh., inzh.; GUR'YEV, D.P., inzh.

Collapse of caked layers in fuel bunkers. Elek.sta. 32 no.8:25-28 Ag '61. (MIRA 14:10)
(Electric power plants) (Coaling-stations)

KHEYFETS, S.Kh.
ZAPOL'SKIY, M.V.

"PK-2 and PK-2m electric caterpillar crane." P.I.Il'in, S.Kh.Kheifets. Reviewed by M.V.Zapol'skii. Torf.prom. 31 no.7:30 '54.
(MLRA 7:11)
(Cranes, derricks, etc.) (Il'in, P.I.) (Kheifets, S.Kh.)

GUTMAN, A.A., polkovnik med.sluzhby., KHEYFETS, S.L., mayor med.sluzhby

Expanded consultations within the hospital. Voen.-med.zhur. no.11:72-73 N'56 (MIRA 12:1)
(DIAGNOSIS)

KHEYFETS, S.L. (Leningrad)

Treatment of acute bronchitis. Sov. med. 24 no. 10:137-138 O '60.
(MIRA 13:12)

(BRONCHITIS)

KHEYFETS, S.L. (Leningrad)

Pulmonary cancer in patients with tuberculosis; according to material from a district clinic. Klin.med. 39 no.4:87-91 '61. (MIRA 14:4)

1. Iz protivotuberkuleznogo dispansera No.12 (Oktyabr'skogo rayona Leningrada (glavnyy vrach A.I. Leporskaya).
(TUBERCULOSIS) (LUNGS—CANCER)

KHEYFETS, S.L. (Leningrad)

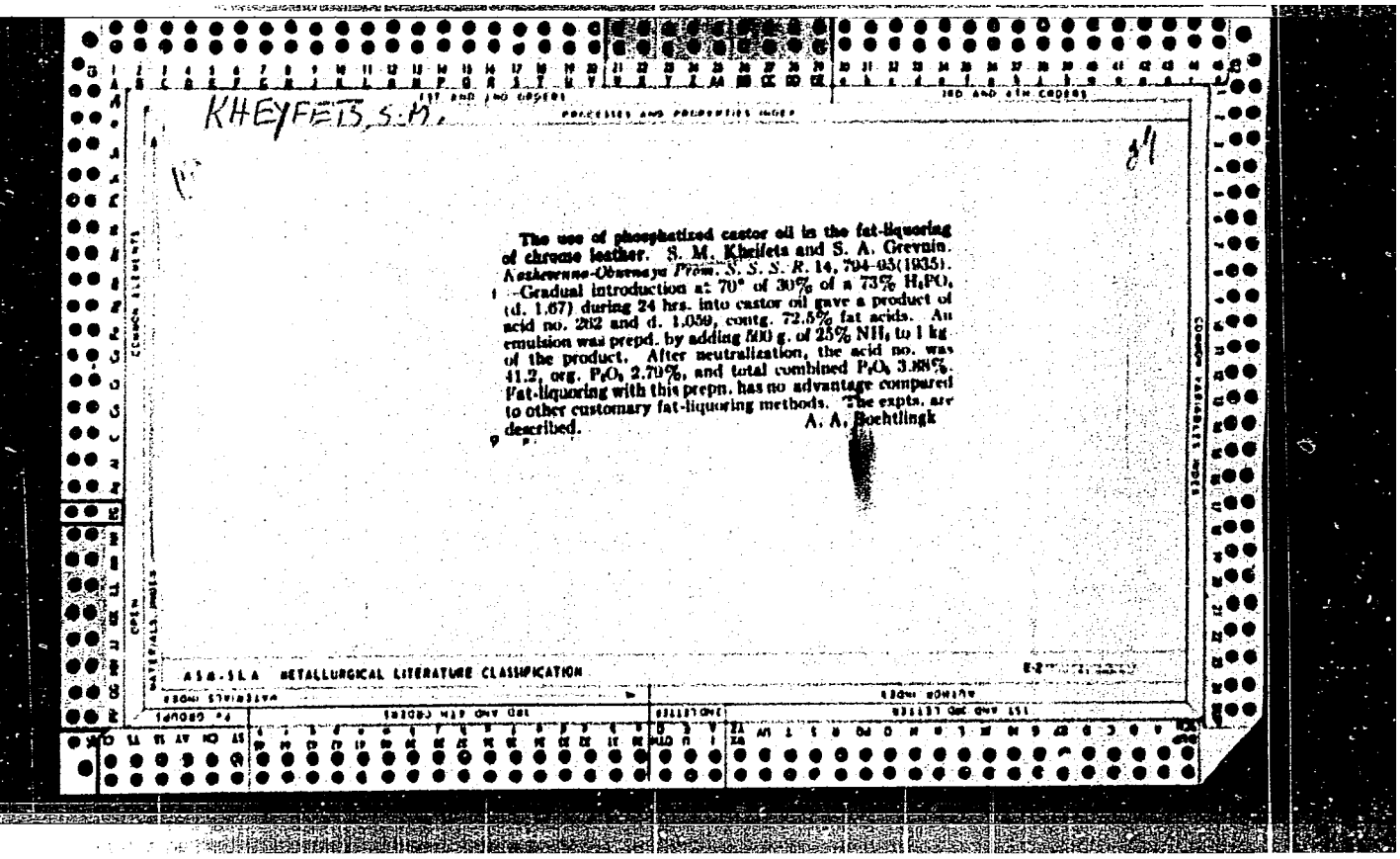
Interrelationship of cancer and tuberculosis of the lungs.
Klin.med. 40 no.6:39-42 Je '62. (MIRA 15:9)

1. Iz protivotuberkuleznogo dispansera No.12 (glavnyy vrach G.G. Yuzhina) i onkologicheskogo punkta (zav. B.S. Vitkin) Oktyabr'skogo rayona Leningrada.
(TUBERCULOSIS) (LUNGS--CANCER)

KHEYFETS, S.L. (Leningrad)

Case of poisoning in argon-arc welding. Gig. truda i prof. zab. 7 no.3:49-50 Mr'63 (MIRA 17:1)

1. Leningradskaya poliklinika No.45.



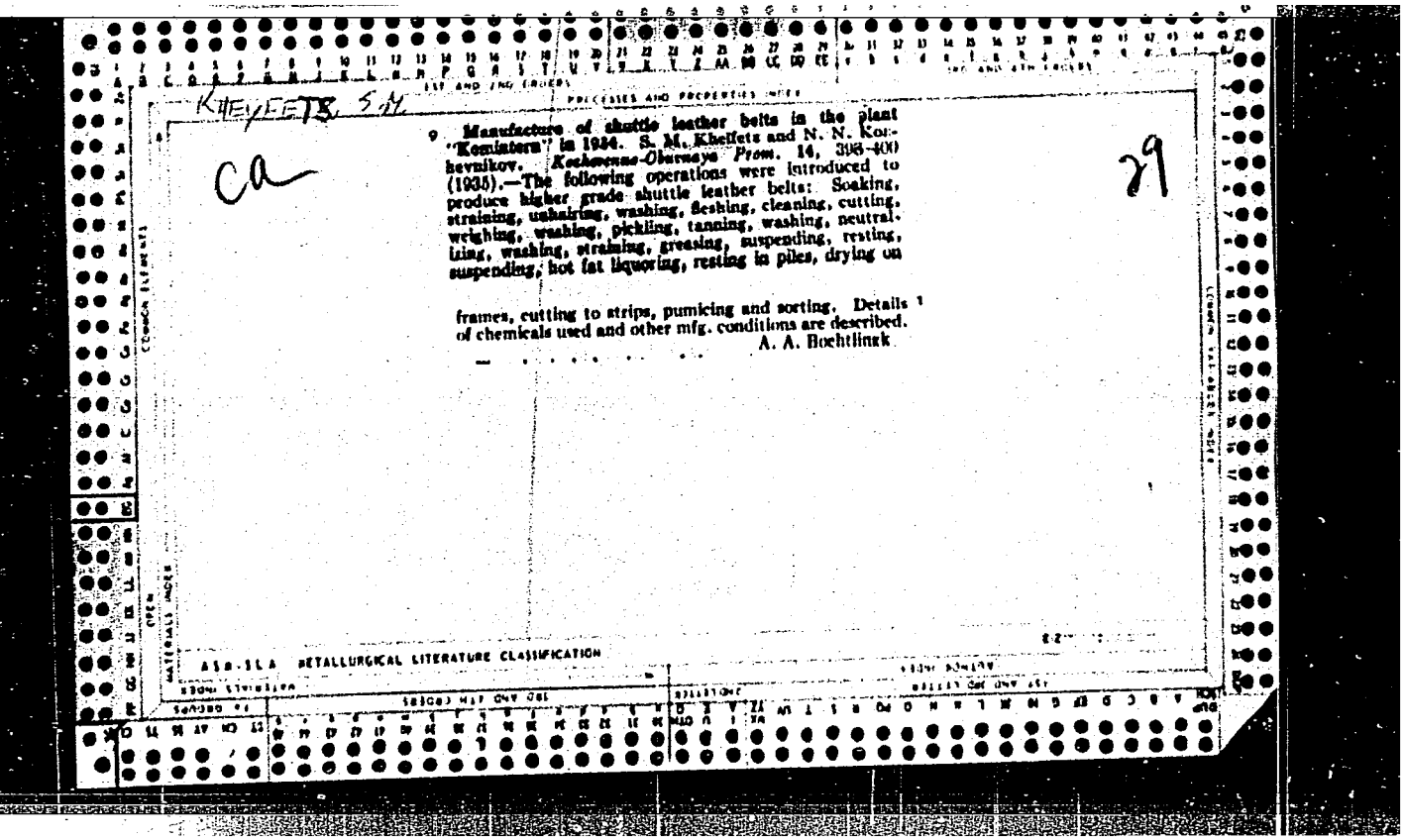
KHEYFETS, S.M.

87

The use of phosphatized castor oil in the fat-liquoring of chrome leather. S. M. Kheifets and S. A. Grevnin. *Kozhevenno-Obuvnaya Prom. S. S. S. R.* 14, 704-05(1935). —Gradual introduction at 70° of 30% of a 75% H_3PO_4 (d. 1.67) during 24 hrs. into castor oil gave a product of acid no. 202 and d. 1.050, contg. 72.5% fat acids. An emulsion was prepd. by adding 500 g. of 25% NH_4 to 1 kg. of the product. After neutralization, the acid no. was 41.2, org. P_2O_5 2.79%, and total combined P_2O_5 3.88%. Fat-liquoring with this prepn. has no advantage compared to other customary fat-liquoring methods. The expts. are described.

A. A. Boehtlingk

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION



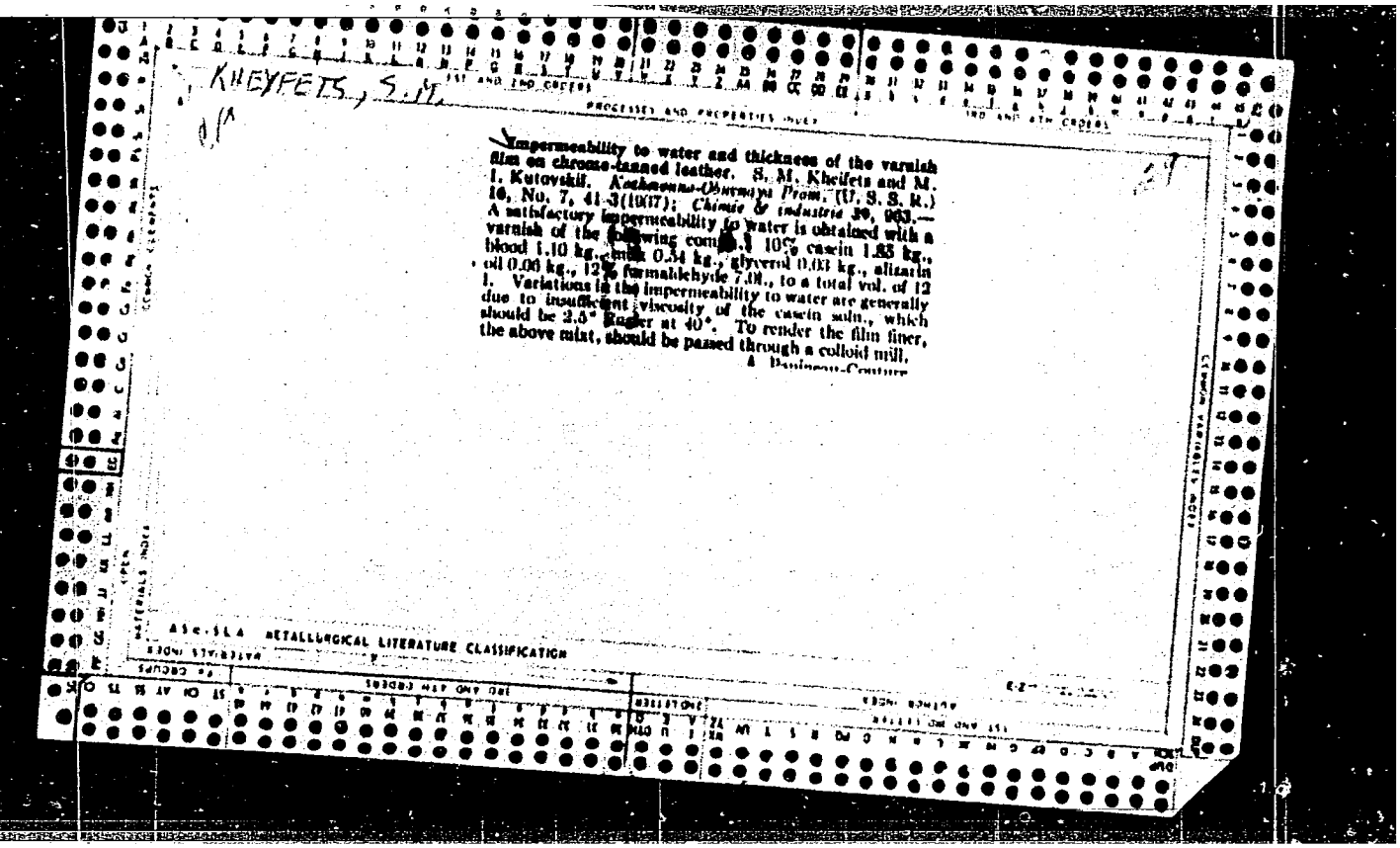
KHEYFETS, S. M.

CA

29

9 Manufacture of shuttle leather belts in the plant "Kominatern" in 1934. S. M. Kheifets and N. N. Korshevnikov. *Koshevenno-Obuvnaya Prom.* 14, 398-400 (1935).—The following operations were introduced to produce higher grade shuttle leather belts: Soaking, straining, unhairing, washing, fleshing, cleaning, cutting, weighing, washing, pickling, tanning, washing, neutralizing, washing, straining, greasing, suspending, resting, suspending, hot fat liquoring, resting in piles, drying on frames, cutting to strips, pumicing and sorting. Details of chemicals used and other mfg. conditions are described.
A. A. Boehtlingk

A58-51A METALLURGICAL LITERATURE CLASSIFICATION

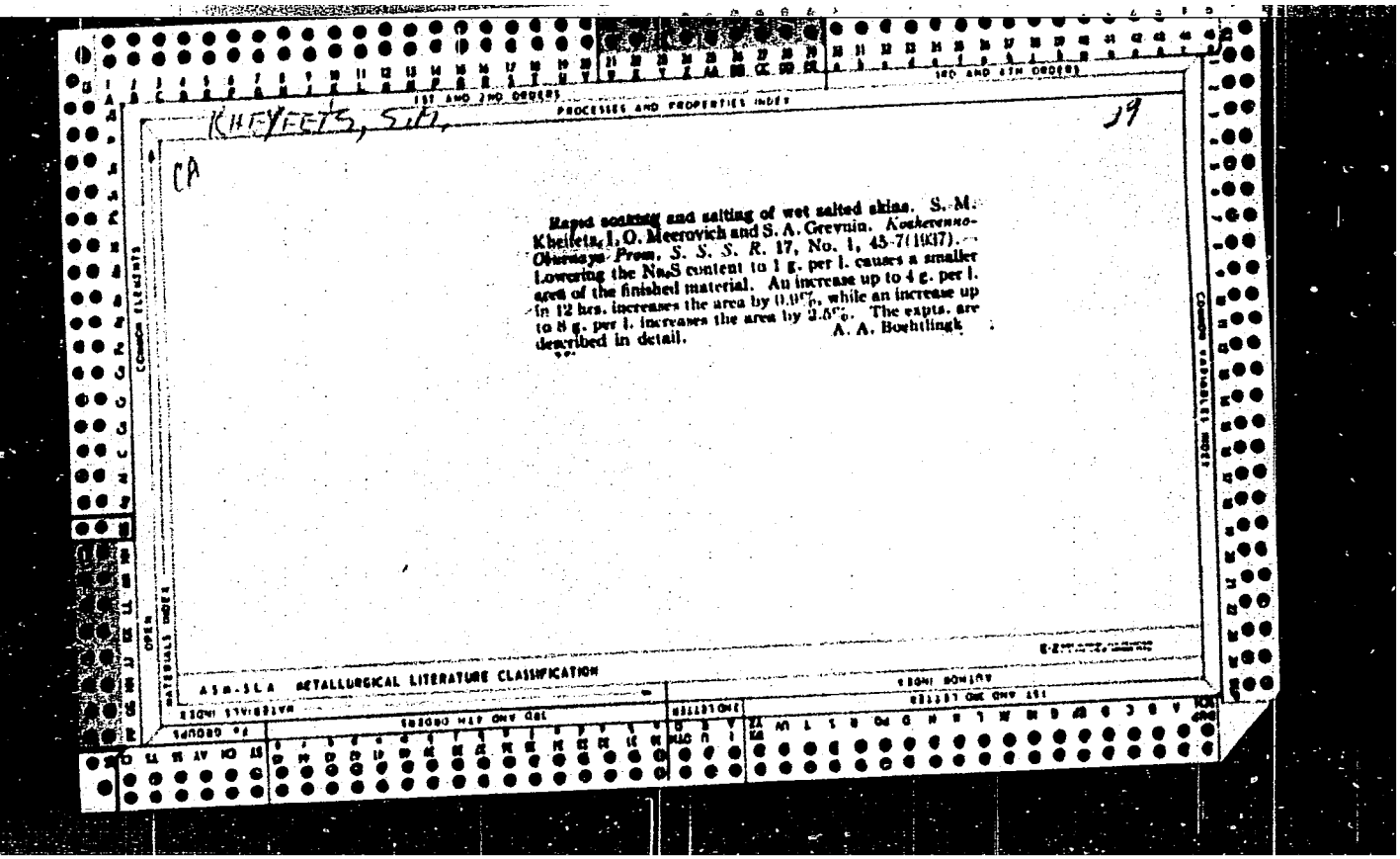


KHEYFETS, S. M.

Impermeability to water and thickness of the varnish film on chrome-tanned leather. S. M. Kheifets and M. I. Kutovskii. *Kozhevenno-Obuvnaya Prom.* (U. S. S. R.) 16, No. 7, 41-3(1937); *Chimie & industrie* 39, 963.—A satisfactory impermeability to water is obtained with a varnish of the following composition: 10% casein 1.85 kg., blood 1.10 kg., [illegible] 0.54 kg., glycerol 0.03 kg., alizarin oil 0.06 kg., 12% formaldehyde 7.0 l., to a total vol. of 12 l. Variations in the impermeability to water are generally due to insufficient viscosity of the casein soln., which should be 2.5° Engler at 40°. To render the film finer, the above mixt. should be passed through a colloid mill.

A. Basimow-Couture

A5c-5L4 METALLURGICAL LITERATURE CLASSIFICATION



KHEYFETS, S.N. (Ussuriysk)

Diagnosis and treatment of female sterility. Akush. i gin. no.1: 18-23 '63. (MIRA 17:6)

KHEYFETS, S.N., kand. med. nauk (Ussuriysk)

Cervical pregnancy. Akush. i gin. 39 no.3:129 My-Je '63
(MIRA 17:2)

KHEYFETS, S.N.

Subcutaneous emphysema in labor. Akush. i gin. 33 no.6:88-89 N-D '57 (MIRA 11:3)
(PUERPERIUM, compl.
emphysema, subcutaneous)
(EMPHYSEMA, etiol. and pathogen.
subcutaneous in puerperium)

KHEYFETS, S.N.

Paracervical anesthesia in artificial abortion. Sov.med. 24 no.3:130-132 Mr '60. (MIRA 14:3)
(ABORTION) (ANESTHESIA IN OBSTETRICS)

KHEYFETS, S. N.

Cand Med Sci - (diss) "Functional infertility of women in normally passable Fallopean tubes." Khabarovsk, 1961. 23 pp; (Khabarovsk State Med Inst); 250 copies; price not given; (KL, 7-61 sup, 263)

KHEYFETS, S.N.

Clinical diagnostic significance of mucus crystallization from the cervical canal. Akush.i gin. no.6:75-80 '60.

(MIRA 14:1)

(UTERUS)

KHEYFETS, S.N., kand.med. nauk

Sterile marriages. Sovet. med. 27 no.9:92-96 S'63 (MIRA 17:2)

KHEYFETS, S.N., kand. med. nauk (Ussuriysk)

Postpartum pituitary insufficiency (Sheehan's syndrome). Akush. i gin. 40 no.4:135-137 Jl-Ag '64. (MIRA 18:4)

KHEYFETS S. YE

USSR/Medicine - Tuberculosis, Larynx Jul/Aug 49
Vitamin D2

"Case of Tubercular Lupus Vulgaris of the Larynx Treated with Vitamin D2," S. Ye. Kheyfets, Hosp of Stupino, Moscow Oblast, 1 p

"Vest Oto-Rino-Laringol" No 4

FA 151T84

Primary tubercular Lupus vulgaris of the larynx without simultaneous affection of the skin or other regions of the respiratory passages is very rare. In 720 cases Voznesenskiy found only one primary case and 16 cases without simultaneous skin affection. Case cited is interesting not only because of its

151T84

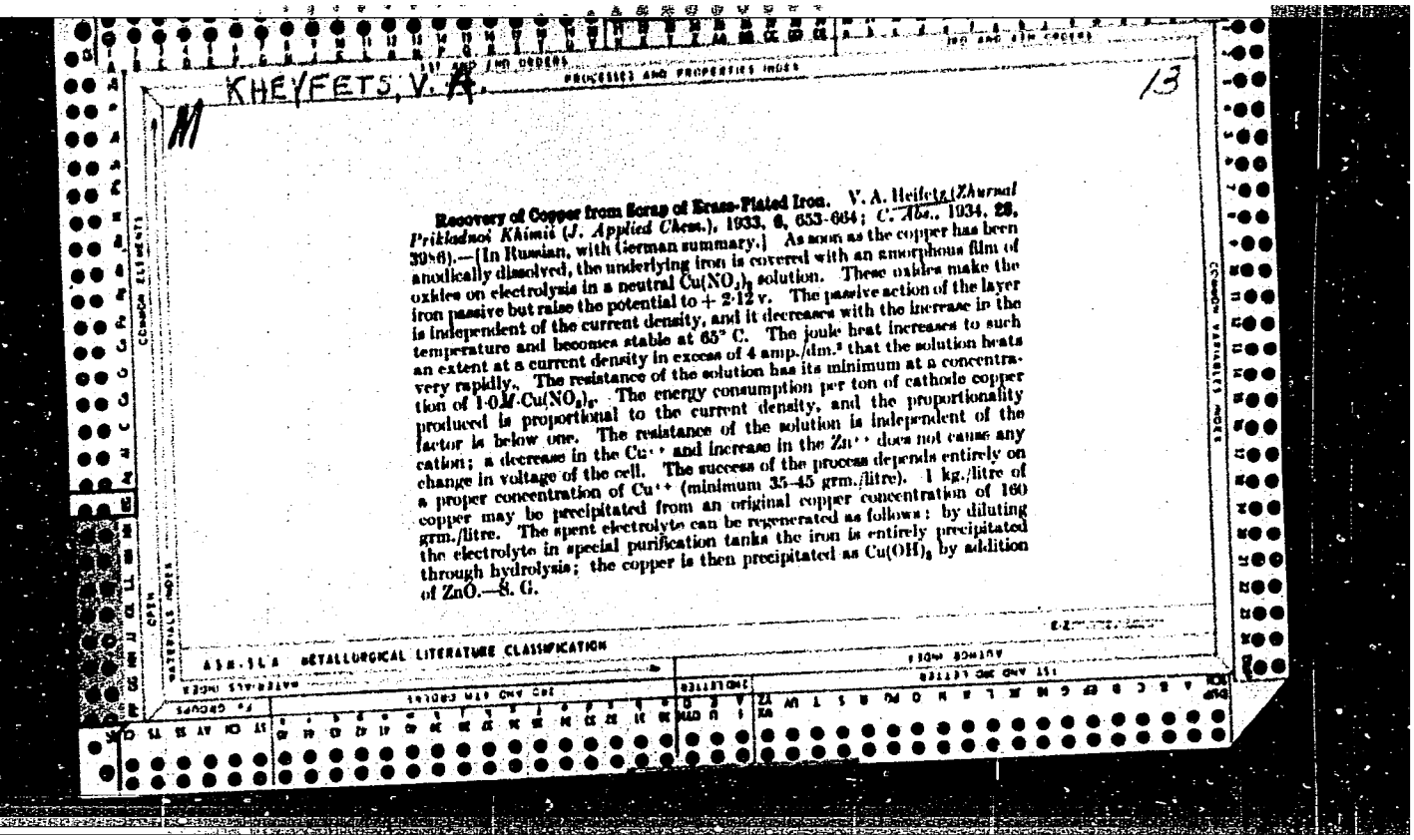
USSR/Medicine - Tuberculosis, Larynx Jul/Aug 49
(Contd)

rarity but because it was cured by Vitamin D2 alone. Chief Physician, Hosp of Stupino: I. M. Kosov.

151T84

KHEYFETS, V., inzh. (Arkhangel'sk)

Preventing oil discharge in Li-2 airplanes. Grazhd.av. 12 no.8:18 Ag '55. (MIRA 15:8)
(Airplanes--Lubrication)



KHEYFETS, V. A.

13

M

Recovery of Copper from Scrap of Brass-Plated Iron. V. A. Heifets (*Zhurnal Prikladnoi Khimii* (*J. Applied Chem.*), 1933, **6**, 653–664; *C. Abs.*, 1934, **28**, 3986).—[In Russian, with German summary.] As soon as the copper has been anodically dissolved, the underlying iron is covered with an amorphous film of oxides on electrolysis in a neutral $Cu(NO_3)_2$ solution. These oxides make the iron passive but raise the potential to + 2·12 v. The passive action of the layer is independent of the current density, and it decreases with the increase in the temperature and becomes stable at 65° C. The joule heat increases to such an extent at a current density in excess of 4 amp./dm.^{2} that the solution heats very rapidly. The resistance of the solution has its minimum at a concentration of 1·0 *M*-$Cu(NO_3)_2$. The energy consumption per ton of cathode copper produced is proportional to the current density, and the proportionality factor is below one. The resistance of the solution is independent of the cation; a decrease in the Cu^{++} and increase in the Zn^{++} does not cause any change in voltage of the cell. The success of the process depends entirely on a proper concentration of Cu^{++} (minimum 35–45 grm./litre). 1 kg./litre of copper may be precipitated from an original copper concentration of 160 grm./litre. The spent electrolyte can be regenerated as follows: by diluting the electrolyte in special purification tanks the iron is entirely precipitated through hydrolysis; the copper is then precipitated as $Cu(OH)_2$ by addition of ZnO.—S. G.

GANICHEV, I.A., inzh.; MESHCHERYAKOV, A.N., inzh.; KHEYFETS, V.B.

New methods of making antiseepage curtains. Gidr.stroi.31 no.2:14-18 F '61. (MIRA 14:3)

(Soil percolation) (Grouting)

SHARF, V.Z.; FREYDLIN, L.Kh.; OPARINA, G.K.; KHEYFETS, V.I.; BYCHKOVA, M.K.; KOPYLEVICH, G.M.; YAKUBENOK, V.V.

Production of isoprene from formaldehyde and isobutylene via 3-methyl-1,3-butanediol. Izv. AN SSSR. Ser. khim. no.9:1663-1665 '65. (MIRA 18:9)

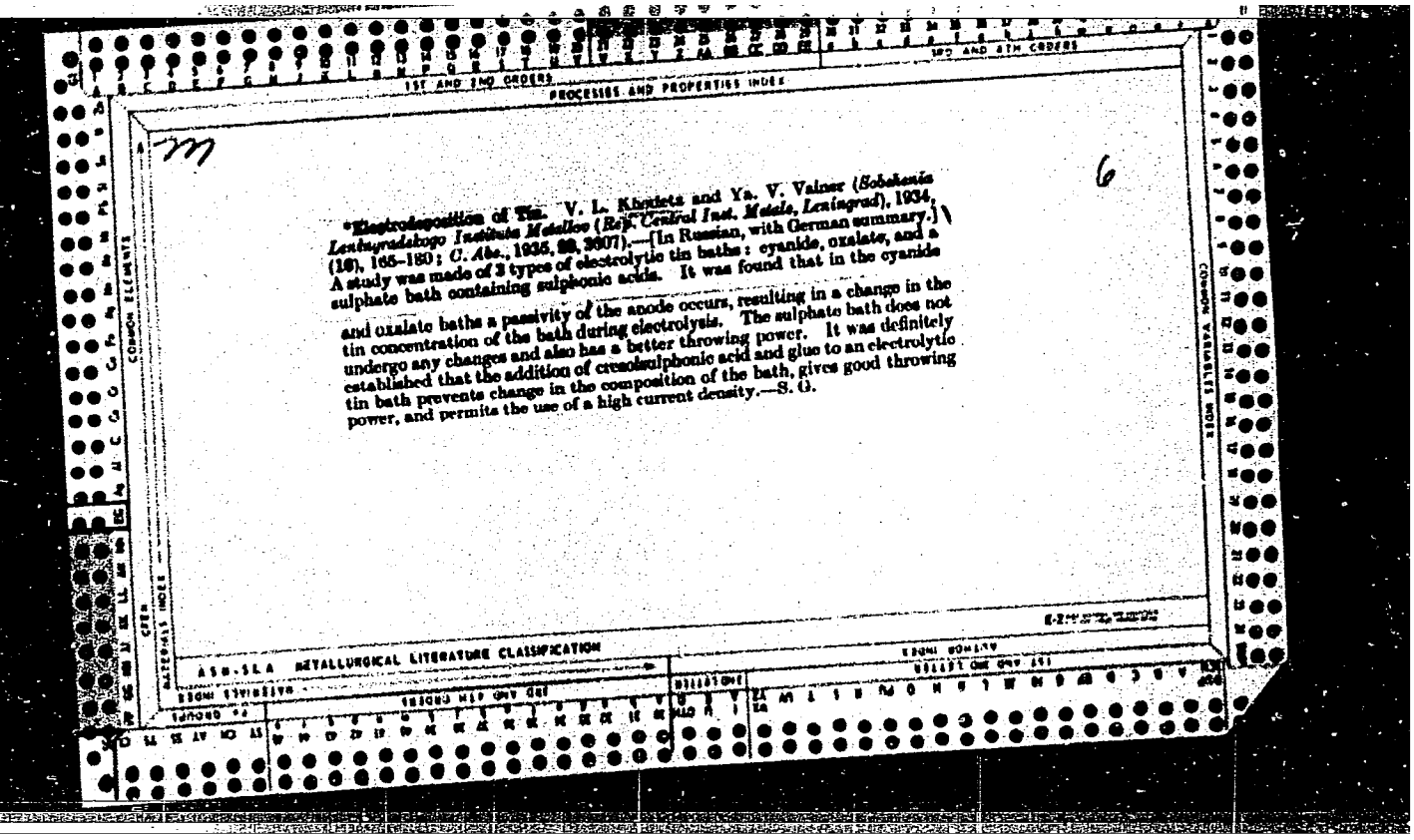
1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR i Opytno-konstruktorskoye byuro sinteticheskikh produktov Priokskogo soveta narodnogo khozyaystva, Tula.

KHEYFETS, V.L.; STRIZHEVSKIY, I.I.

Container method for the hermetically sealed transportation of calcium carbide. Khim.prom. no.1:71-72 Ja '63. (MIRA 16:3)
(Calcium carbide--Transportation)

REMEN', T.F.; KHEYFETS, V.L.; VAYSBURD, S.Ye.

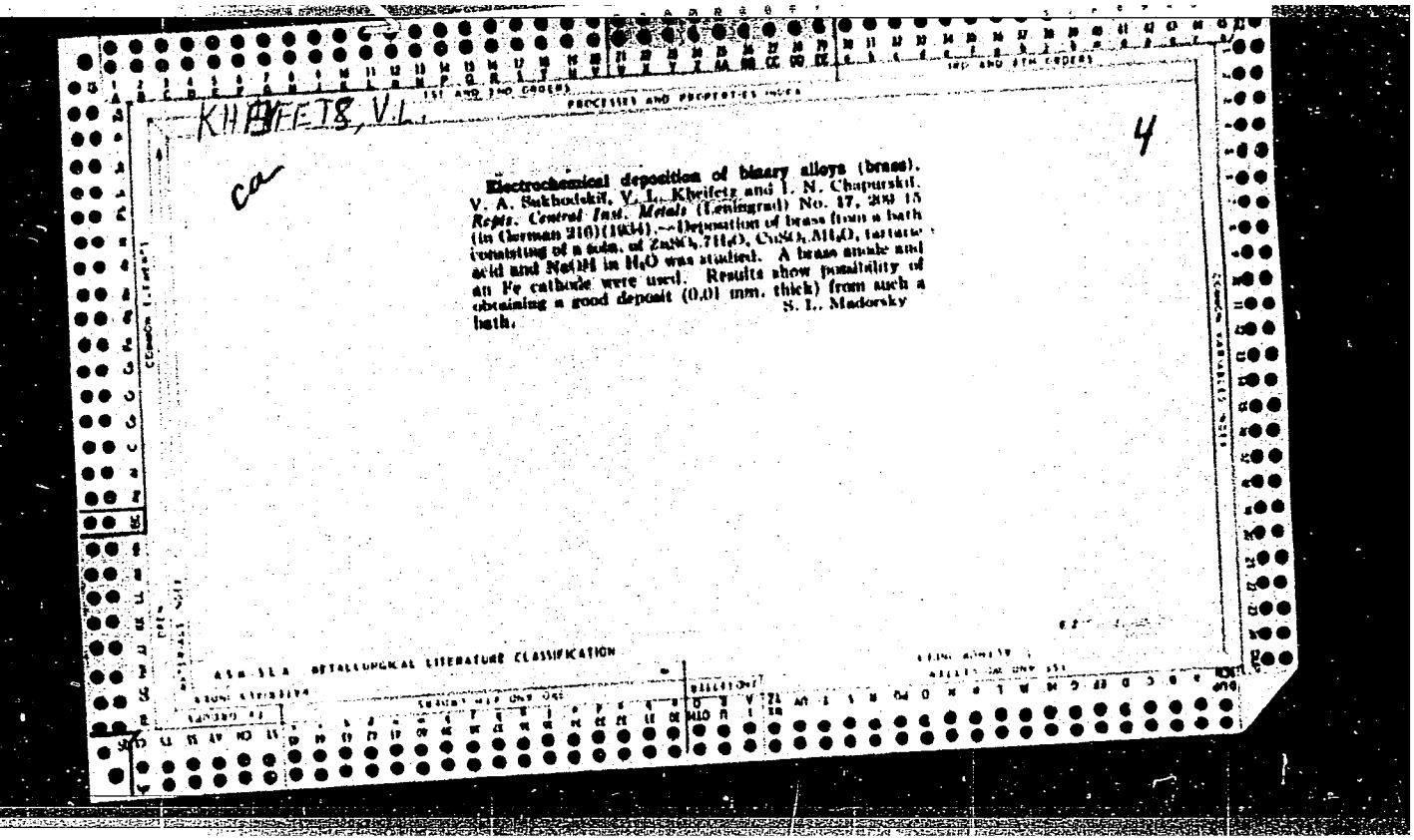
Activity of sulfur in binary systems Fe - S, Co - S, Ni - S. (MIRA 16:5)
Zhur.prikl.khim. 36 no.1:218-220 Ja '63.
(Alloys) (Sulfur) (Electromotive force)



PROCESSES AND PROPERTIES INDEX

*Electrodeposition of Tin. V. L. Khotets and Ya. V. Vainer (*Sobeksnia Leningradskogo Institute Metallov* (*Rep. Central Inst. Metals, Leningrad*), 1934, (10), 165–180; *C. Abs.*, 1935, **29**, 3607).—[In Russian, with German summary.] A study was made of 3 types of electrolytic tin baths: cyanide, oxalate, and a sulphate bath containing sulphonic acids. It was found that in the cyanide and oxalate baths a passivity of the anode occurs, resulting in a change in the tin concentration of the bath during electrolysis. The sulphate bath does not undergo any changes and also has a better throwing power. It was definitely established that the addition of cresolsulphonic acid and glue to an electrolytic tin bath prevents change in the composition of the bath, gives good throwing power, and permits the use of a high current density.—S. G.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

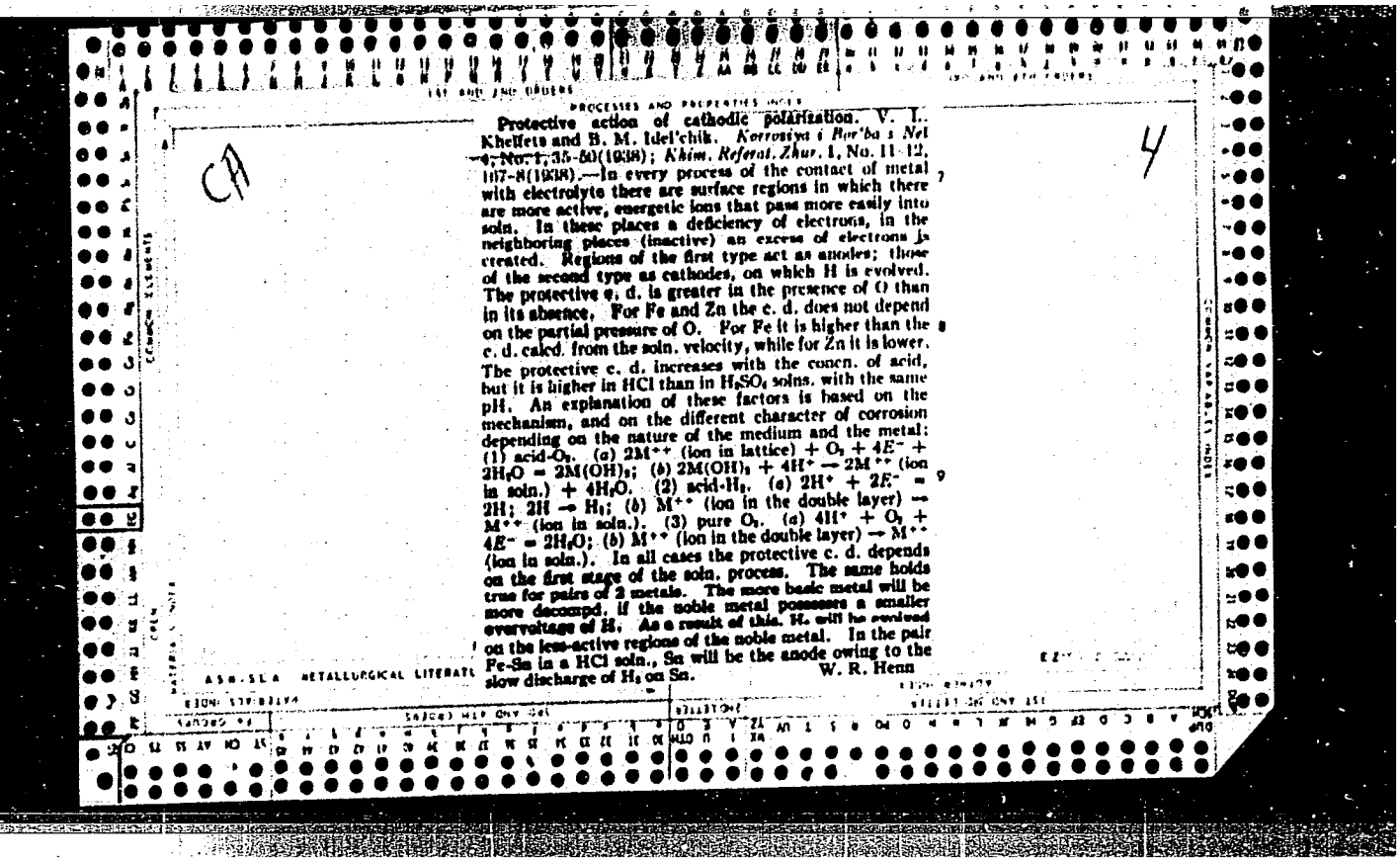


KHAFETS, V.L.

4

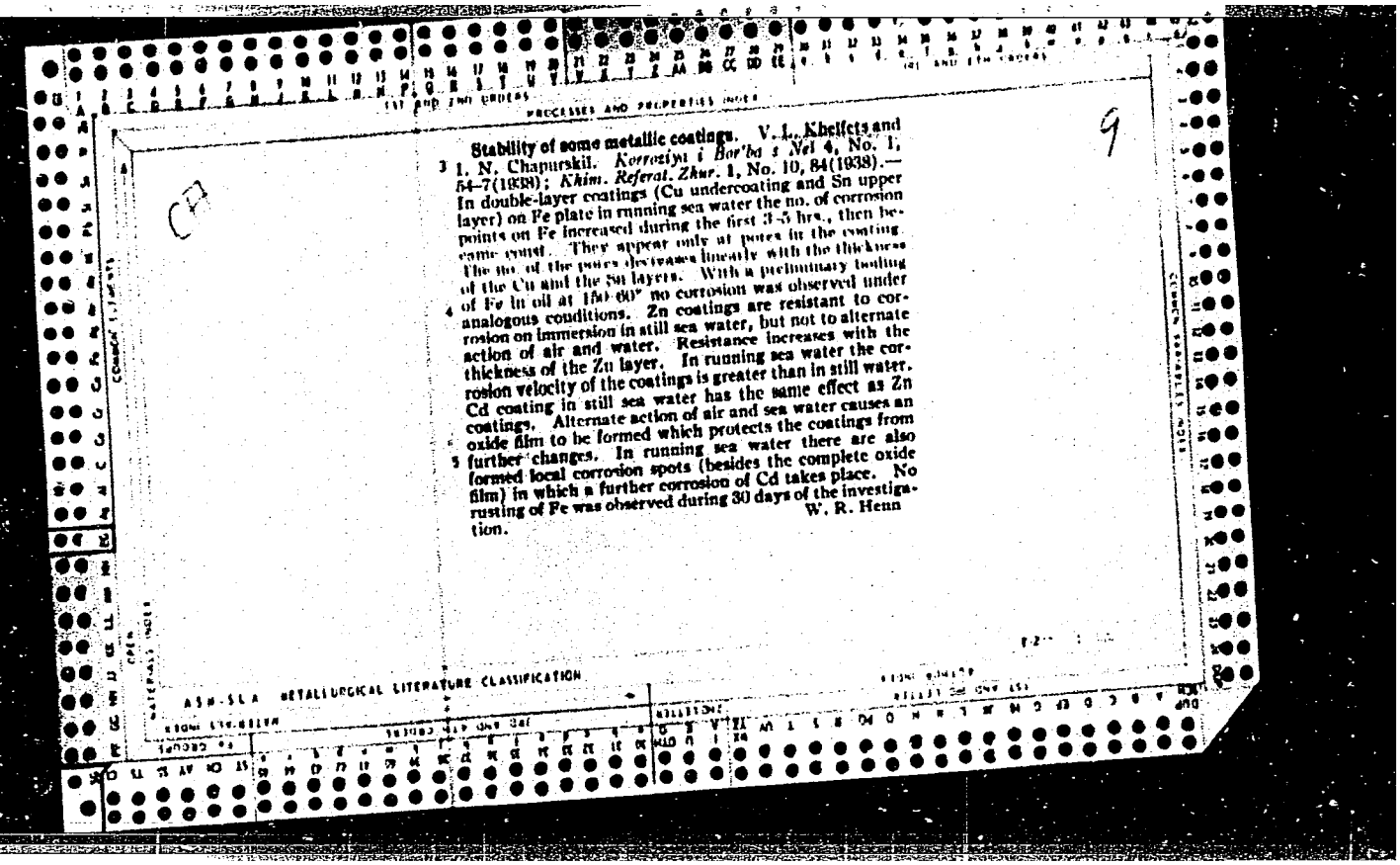
Electrochemical deposition of binary alloys (brass). V. A. Sukhodolskii, V. L. Khveifetz and I. N. Chapurskii. *Repts. Central Inst. Metals* (Leningrad) No. 17, 209-15 (in German 216)(1934).—Deposition of brass from a bath consisting of a soln. of $ZnSO_4.7H_2O$, $CuSO_4.5H_2O$, tartaric acid and NaOH in H_2O was studied. A brass anode and an Fe cathode were used. Results show possibility of obtaining a good deposit (0.01 mm. thick) from such a bath.

S. L. Madorsky



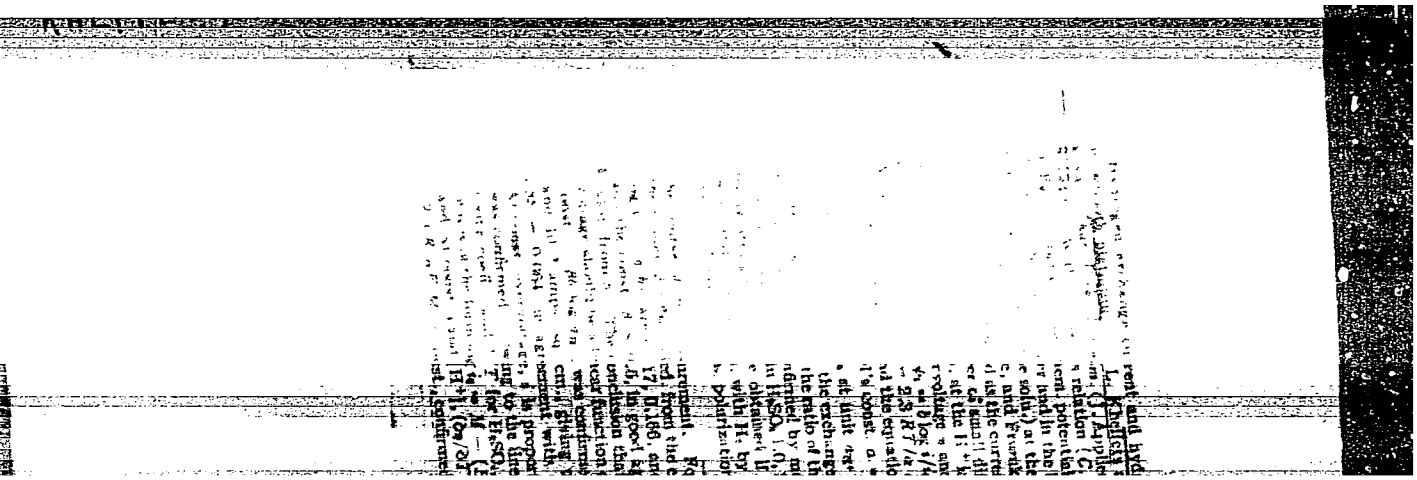
Protective action of cathodic polarization. V. I. Khelfets and B. M. Idel'chik. *Korrosiya i Bor'ba s Nei* -e; No. 1, 35-50(1938); *Khim. Referat. Zhur.* 1, No. 11-12, 117-8(1938).—In every process of the contact of metal with electrolyte there are surface regions in which there are more active, energetic ions that pass more easily into soln. In these places a deficiency of electrons, in the neighboring places (inactive) an excess of electrons is created. Regions of the first type act as anodes; those of the second type as cathodes, on which H is evolved. The protective c. d. is greater in the presence of O than in its absence. For Fe and Zn the c. d. does not depend on the partial pressure of O. For Fe it is higher than the c. d. calcd. from the soln. velocity, while for Zn it is lower. The protective c. d. increases with the concn. of acid, but it is higher in HCl than in H_2SO_4 solns. with the same pH. An explanation of these factors is based on the mechanism, and on the different character of corrosion depending on the nature of the medium and the metal: (1) acid-O_2. (*a*) $2M^{++}$ (ion in lattice) + O_2 + $4E^-$ + $2H_2O$ = $2M(OH)_2$; (*b*) $2M(OH)_2$ + $4H^+$ → $2M^{++}$ (ion in soln.) + $4H_2O$. (2) acid-H_2. (*a*) $2H^+$ + $2E^-$ = 2H; 2H → H_2; (*b*) M^{++} (ion in the double layer) → M^{++} (ion in soln.). (3) pure O_2. (*a*) $4H^+$ + O_2 + $4E^-$ = $2H_2O$; (*b*) M^{++} (ion in the double layer) → M^{++} (ion in soln.). In all cases the protective c. d. depends on the first stage of the soln. process. The same holds true for pairs of 2 metals. The more basic metal will be more decompd. if the noble metal possesses a smaller overvoltage of H. As a result of this, H will be evolved on the less-active regions of the noble metal. In the pair Fe-Sn in a HCl soln., Sn will be the anode owing to the slow discharge of H_2 on Sn.

W. R. Henn



Stability of some metallic coatings. V. L. Khelfets and I. N. Chapurskii. *Korroziya i Bor'ba s Nei* 4, No. 1, 54–7(1938); *Khim. Referat. Zhur.* 1, No. 10, 84(1938).—In double-layer coatings (Cu undercoating and Sn upper layer) on Fe plate in running sea water the no. of corrosion points on Fe increased during the first 3–5 hrs., then became const. They appear only at pores in the coating. The no. of the pores decreases linearly with the thickness of the Cu and the Sn layers. With a preliminary boiling of Fe in oil at 160–80° no corrosion was observed under analogous conditions. Zn coatings are resistant to corrosion on immersion in still sea water, but not to alternate action of air and water. Resistance increases with the thickness of the Zn layer. In running sea water the corrosion velocity of the coatings is greater than in still water. Cd coating in still sea water has the same effect as Zn coatings. Alternate action of air and sea water causes an oxide film to be formed which protects the coatings from further changes. In running sea water there are also formed local corrosion spots (besides the complete oxide film) in which a further corrosion of Cd takes place. No rusting of Fe was observed during 30 days of the investigation.

W. R. Henn



fer of the electron from the electrode ... [illegible]
[illegible]
relatively more rapid rise in overvoltage indicated a more complex reaction. These observations were consistent with previously reported expts. in the lower pH range.

C. H. Fuchsman

KHEYFETS, V. L.

5

USSR

The dependence of the overvoltage of electrode reactions on current density, with consideration of concentration polarization. V. L. Kheifets, M. I. Fainshtein, and B. L. Shtrum (A. A. Zhdanov State Univ., Leningrad). *Trudy Soveshchaniya Elektrokhim., Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1950, 202-11(1953). For the case in which concn. changes at the electrode surface, $dE_s/d \log i$, is a function of the changes in activity of oxidized (or reduced) substances taking part in the electrode reaction; E_s is the electrode potential at c.d. i. Polarization curves are given for the cathodic reduction of O on a rotating smooth Pt electrode in the following solns. (slopes in parentheses): 0.1*N* KCl (0.122), 0.1*N* KBr (0.139), 0.1*N* KI (0.142), 0.1*N* KOH (0.058), 0.1*N* KCl + 0.05*N* KOH (0.058), 0.1*N* KBr + 0.05*N* KOH (0.067), 0.1*N* KI + 0.05*N* KOH (0.075), 0.1*N* HCl (varies with c.d.), 0.1*N* H_2SO_4 (varies with c.d.). The slopes for the neutral and alk. solns. indicate that O is reduced in one step without the intermediate formation of H_2O_2. O_2 is adsorbed on the surface and dissoc. into atoms. The direct participation of H^+ in the electrode reaction is indicated by the dependence of the slope on pH. For solns. of alkali hydroxide the activity of OH^- is practically equal to the mean activity of the dissolved alkali. Detailed interpretation of data for the acid solns. is not possible in the absence of well-defined slopes. Effects of anion adsorption are noted. R. D. Misch

KHEYFETS, V. L.

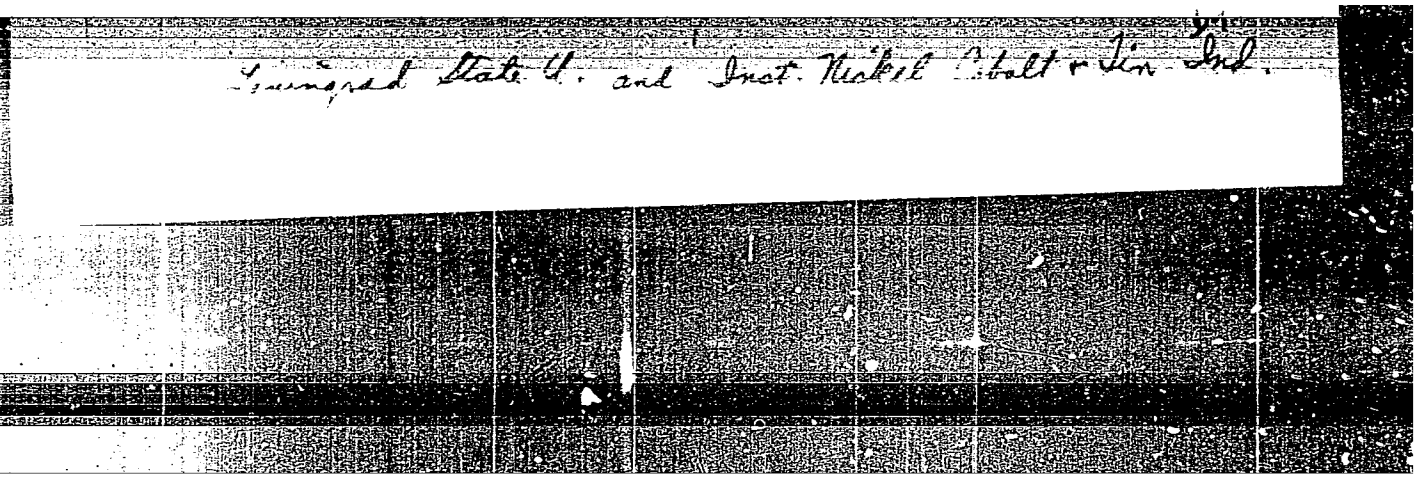
...anism of the Simultaneous Discharge of Ions and the ... the Electrolytic Refining of Metals. V. L. Kheifets ... Doklady Akad. Nauk S.S.S.R. ... 1963 88, ... process of electrolysis.

$$\ldots \exp\left[-(\alpha_i z_i F/RT)(\varphi - \varphi_i \ldots)\right] \ldots$$

...script i denotes the ith kind of ions in the ... concentrations in the soln. ... contributing ... exchange current in the ... the electrode potential, φ_i the ...

(mole/L): $NiSO_4$ 1, Na_2SO_4 0.5, NaCl 0.4, H_3BO_3 0.3, at pH ... amp./dm.² confirmed ...

the ...



APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722010010-8"

KHEYFETS, V. L.

TA 255T19

USSR/Chemistry - Metallurgy, Refining 11 Jan 53
of Metals

"The Effect of Temperature on the Regularity of Joint Separation of Ions During Electrolytic Refining of Metals," A. L. Rotinyan, V. L. Kheyfets, Ye. S. Kozin, O. I. Kalganova

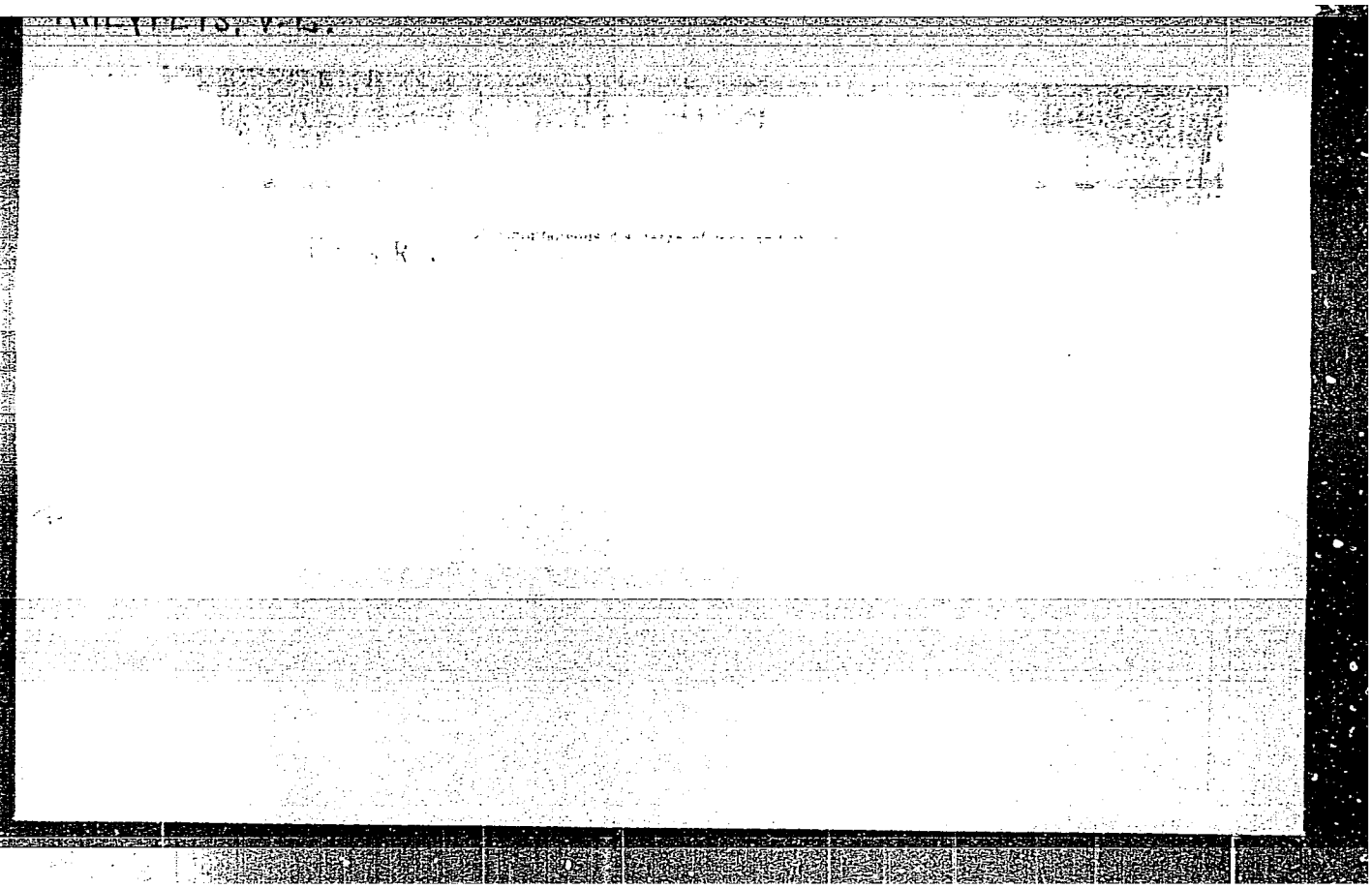
DAN SSSR, Vol 88, No 2, pp 301-304

The effect of temp on the contamination of Ni cathodes with admixts of Cu, Zn, Pb, Co, and Mn was studied under various conditions. In the first and second cases the rate of sepn of admixt on the cathode is limited by diffusion, and the rate of sepn of the base metal, by diffusion or delayed discharge. In the third case, the rate of sepn of the admixt and the base metal is detd by delayed discharge. In the fourth case, the rate of sepn of admixt is limited by delayed discharge, and that of the base metal, by diffusion

Presented by Acad A. N. Frumkin 11 Nov 52.

255T19

255T19



APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722010010-8"

KHEYFETS, V.L.; REYSHAKHRIT, L.S.

Regularities in the simultaneous discharge of nickel and hydrogen ions. Part 1. Effect of Ph on current distribution between nickel and hydrogen. Uch.zap.Len.un.169:173-188 '53. (MLRA 9:6)
(Nickel) (Hydrogen) (Electrolysis)

KHEYFETS, V.L.; AVDEYEV, D.K.; REYSHAKHRIT, L.S.; STROKAN, B.V., otvetstvennyy redaktor; MEL'NIKOVA, G.G., redaktor; GLAZUNOV, F.D., tekhnicheskiy redaktor.

[Practical work in theoretical electrochemistry] Praktikum po teoreticheskoi elektrokhimii. Leningrad, Izd-vo Leningradskogo universiteta, 1954. 235 p. (MLRA 8:2)
(Electrochemistry)

USSR/Chemistry - Isobaric Potential Calculations

Card : 1/1

Authors : Kheyfets, V. L., and Rotinyan, A. L.

Title : Isobaric Potentials of the Formation of Hardly Soluble Hydroxides and Basic Salts and pH Solutions, which Are in Equilibrium with the Solid Phase.

Periodical : Zhur. Ob. Khim, 24, Ed. 6, 930 -936, June 1954

Abstract : The possibility for the calculation of standard isobaric potentials in the formation of basic salts and pure hydrates is shown by measuring the pH of solutions, which are in equilibrium with the solid phase of basic salts or pure hydrate. Experiments showed that basic salts form in almost all cases at greater concentrations. Pure hydrates form only in the case of zinc at small basic concentrations of its ions. Standard isobaric potentials were computed for reaction of formation of basic salts of many metals. Eighteen references. Tables, graphs.

Institution : The Lensoviet Technological Institute, Leningrad

Submitted : December 24, 1953

USSR/ Chemistry Analysis methods

Card : 1/1 Pub. 151 - 5/33

Authors : Rotinyan, A. L., Kheyfets, V. L., Kozich, E. S., and Kalnina, E. N.

Title : Composition of almost insoluble Ni-compounds deposited by alkali in a sulfate solution and standard isobaric potentials of their formation

Periodical : Zhur. ob. khim. 24/8, 1294 - 1302, August 1954

Abstract : The compositions of almost insoluble Ni-salts formed during the reaction of $NiSO_4$ solutions with alkali solutions, were determined by analyzing the pH - lg a $\pm$ curves. The results obtained were re-checked by analyzing the electro-conductivity curves of mother liquors during the deposition of the basic Ni-salts with alkali. The standard isobaric formation potentials of these compounds and the standard isobaric addition potential of Ni-sulfate to nickelous hydroxide, resulting in the formation of $3NiSO_4 \cdot 4Ni(OH)_2$, were calculated. Twelve references: 9 USSR; 2 USA and 1 Czech (1936 - 1954). Table; graphs.

Institution : ....

Submitted : March 19, 1954

KHEYFETS, V. L.

USSR/Chemistry

Card 1/1 : Pub. 151 - 2/42

Authors : Kheyfets, V. L.; Rotinyan, A. L.; Kozich, E. S.; and Kalnina, E. N.

Title : Composition of hardly-soluble compounds separated out by alkali from Ni-salt solutions in the presence of boric acid

Periodical : Zhur. ob. khim. 24/9, 1486-1490, Sep 1954

Abstract : During the separation of Ni from mixed nickel sulfate and boric acid solutions, by means of alkali, the composition of the solid phase at the beginning of its formation was investigated by the potentiometric titration method. The composition of the solid phase, which was found to be in equilibrium with the solution, is described. Standard isobaric potentials of the formation of nickel diborate from ions and from nickelous hydroxide and boric acid, were computed. The effect of 50° temperature on the change in composition of the forming solid phase, is explained. Six USSR references (1950-1954). Tables; graphs.

Institution : ...

Submitted : March 19, 1954

KHEYFETS, V.L.

ROTINYAN, A.L.; KHEYFETS, V.L.

Simultaneous discharge of simple cations. TSvet.met. 27 no.2:24-33 Mr-Ap '54. (MIRA 10:10)
(Electrometallurgy)

KHEYFETS, V.L.

Influence of Surface-[illegible] on the [illegible] of Hydrogen on Platinum [illegible]

[illegible] Russian) The [illegible] layer were measured [illegible] NaOH soln. with addn. [illegible] [illegible] agree with the values of [illegible] surface-active agents determined [illegible] electrolytes. Diphenylamine [illegible] soln., increasing the H overpotential [illegible] anion in Na_2SO_4 soln. [illegible] displacement of the electrode potential [illegible] negative direction was not complete on Pt, [illegible] the phenomena observed on Hg (cf. Frumkin [illegible] *Trans. Faraday Soc.* 1935, 31, 11[illegible] [illegible] to the heterogeneity of the Pt [illegible] of liq. Hg. —S. K. L.

*Adsorption of Surface-Active Agents and the Hydrogen Overvoltage on the Surface of Solid Mercury

and B. S. Krasikov [illegible]

layer in soln. of 2N-H_2SO_4 in 80% ethanol, with and without addn. of nonanol, was measured as a function of the electrode potential with a Hg electrode at —39° and —41° C. The cathode branches of the capacity/p.d. curves obtained at —38° C., with and without addn. of nonanol, coincided owing to the total desorption of nonanol from the homogeneous surface of liq. Hg. At —41° C., the curves did not coincide, confirming the view that total desorption does not take place in the case of a solid (heterogeneous) metal electrode (cf. ibid., (1), 101; abstract below). The H overvoltage changed at —41° C. in the presence of nonanol by ~400 mV., a value close to the adsorption potential measured by the displacement of the min. of capacity in dilute soln. of H_2SO_4.—S. K. L.

KHEYFETS, V. L.

4

CH Cathode-film acidity during the electrolysis of aqueous solutions. V. L. Kheifets, A. L. Rotinyan, and T. M. Ovchinnikova. *J. Appl. Chem. U.S.S.R.* 28, 457-60 (1955) (Engl. translation).—See *C.A.* 49, 15561h.

B. M. B

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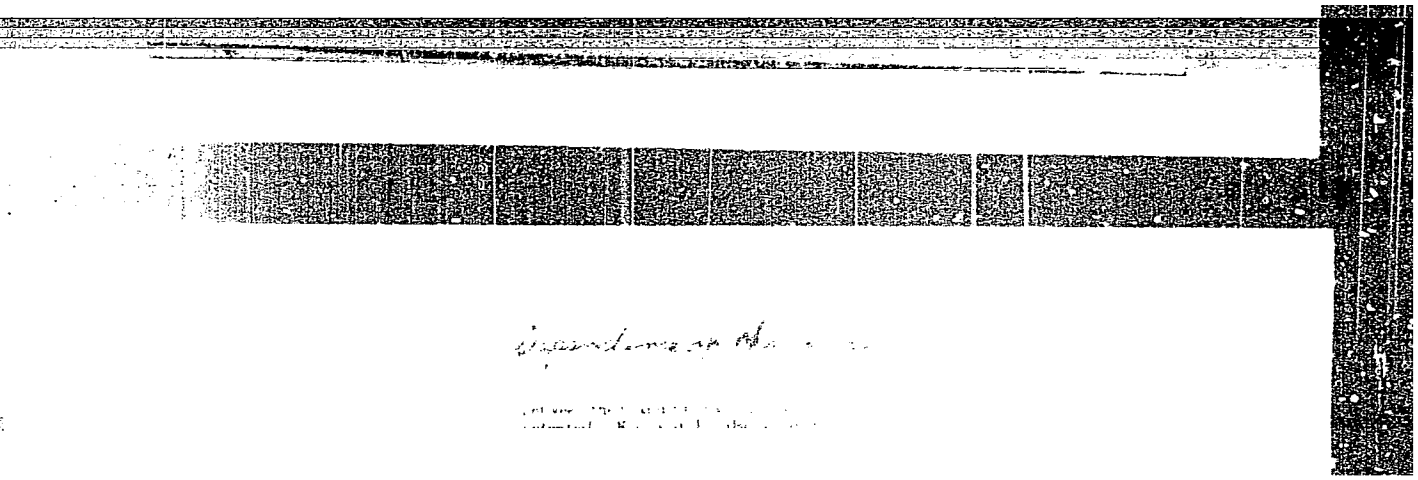


18(5) SOV/112-59-3-5731

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 3, p 212 (USSR)

AUTHOR: Rotinyan, A. L., and Kheyfets, V. L.

TITLE: Producing a Very Pure Cathode Nickel
(Polucheniye osobo chistogo katodnogo nikelya)

PERIODICAL: Materialy Soveshchaniya po vopr. intensifik. i usoversh. dobychi i tekhnol. pererabotki medno-nikelevykh i nikelevykh rud. 1956, M., Profizdat, 1957, pp 195-203

ABSTRACT: A method developed in the Gipronikel' Institute is suggested for collective deep purification of nickel electrolyte from a number of impurities. The method is based on the fact that during electrolysis, as a result of a joint discharge, the impurities are included in the cathode deposit, and their content in the electrolyte (both absolute and relative concentrations as compared to Ni concentration) is considerably reduced. (Translator's note: the meaning of the Russian original is not clear.) Processing conditions can be selected for

Card 1/2

Producing a Very Pure Cathode Nickel

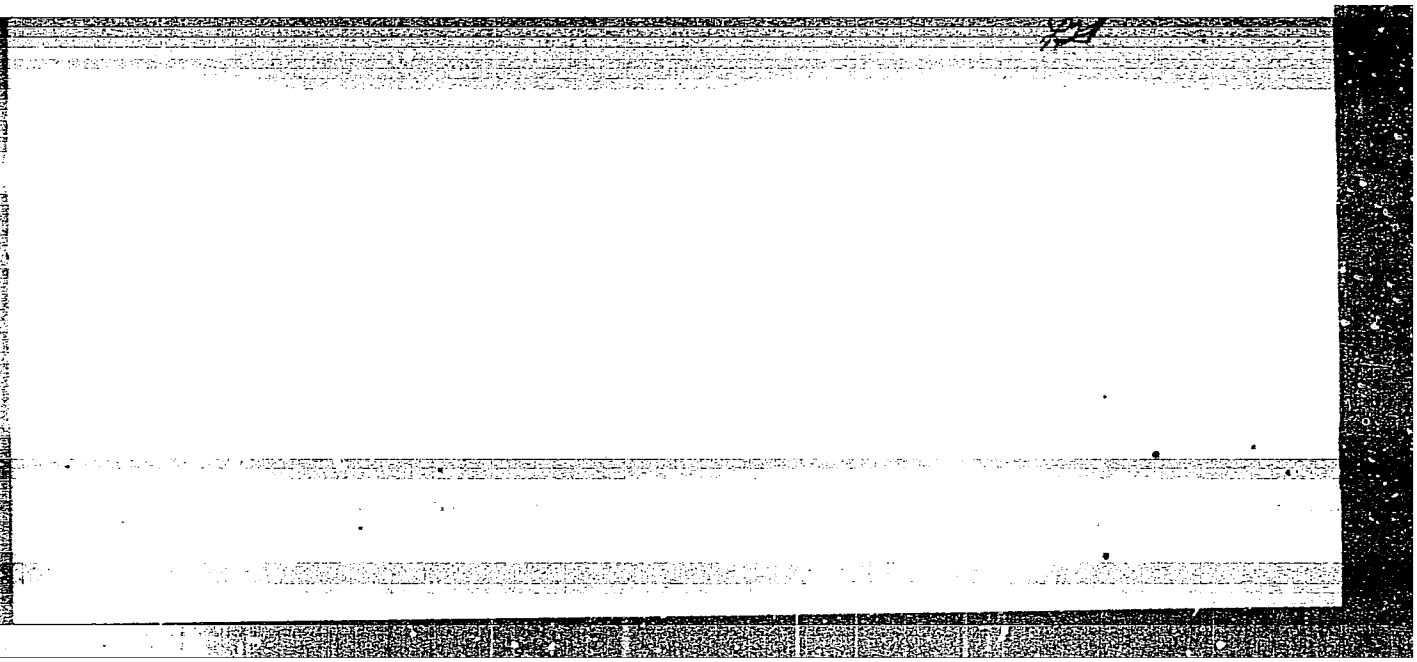
maximum productivity. Practical realization of the method is considered, as well as tests at the Yuzhuralnikel' and Severonikel' Combines. It is mentioned that the electrochemical purification can be used successfully for electro-winning of other high-purity metals.

I.L.G.

KHEYFETS, V.L.

KHEYFETS, V. L.

The effect of surface-active additives on the overvoltage of oxygen evolution on smooth platinum. V. L. Kheifets and I. Ya. Rivlin. *Zhur. Prikład. Khim.* 29, 69–73(1956); cf. *C.A.* 50, 7025d.—The effect of additives on the overvoltage of O evolution on smooth Pt anodes was studied in 0.5 molal H_2SO_4 to which were added satd. solns. of nonylic, caprylic, and heptylic acids (0.0014, 0.0046, and 0.02 *M*, resp.) and 0.005 *N* thiourea. The values of φ and d log $I_0/d\varphi$ (c.d. 10 ma./sq. cm.) of solns. without additives and with the additives in the order given were: —, 0.37; 0.058, 0.067; 0.089, 0.082; 0.118, 0.138; and 0.403, 0.171. In solns. with additives the log I_0 vs. φ curves exhibited a bend at φ_1 below which there was an appreciable deviation of I obtained galvanometrically and by the vol. of O evolved. The presence of $H_2S_2O_8$ in all solns. with additives was detected analytically. Thus, even in dil. H_2SO_4 (0.5 molal), the reaction $2HSO_4^- - 2e = H_2S_2O_8$ took place (at φ = 2.05–2.35 v., H scale). However, at higher values of I depolarization occurred and the current efficiency of O evolution increased from 61.2 to 83.3% as I increased from 5.30 to 42.10 ma./sq. cm. The displacement of the rising part of the capacitance *C* of the double elec. layer vs. φ indicated that complete desorption did not occur (cf. *C.A.* 49, 11409a) and that the additives were adsorbed with their pos. ends toward the metal. The absence of peaks on the *C* vs. φ curves was attributed to the masking effect of H evolution. Both series of curves, log I_0 vs. φ and *C* vs. φ proved the postulate that O evolution was detd. by the rates of the reactions $H_2O - 2e = O_{ads.} + 2H^+$ or $O_{ads.} + H_2O$ [illegible]. Bencowitz



APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722010010-8"

KHEYFETS, V.L.;ANTONOVSKAYA, Ye.I.

Ferrocyanide electrolytes for gold plating. Zhur. prikl. khim. 29 no.4:595-600 Ap '56. (MLRA 9:11)
(Gold plating)(Ferrocyanides)