"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; ENENSHTEYN, B.S.

A method for determining the depth of the crystalline base from the phase curves of electromagnetic frequency soundings. Dokl. AN SSSR 145 no.1:89-92 Jl '62. (MIRA 15:7)

1. Magnitnaya laboratoriya AN SSSR. 2. Chlen-korrespondent AN SSSR (for Tikhonov).
(Sounding and soundings) (Geology, Structural)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

S/208/63/003/001/004/013
B112/B102

16.3700

AUTHORS: Tikhonov, A. N., Samarskiy, A. A. (Moscow)

TITLE: Homogeneous difference schemes with a high degree of accuracy over non-uniform nets

PERIODICAL: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 3, no. 1, 1963, 99-108

TEXT: This paper is a continuation of previous papers (Zh. vychisl. matem. i matem. fiz., 1961, 1, No 1, 5-64; and No. 3, 425-440), the fundamental estimates of which are shown to be valid without the additional conditions

$$0 < M_1 \leqslant h_{i+1}/h_i \leqslant M_2, \qquad \|h\|_0 \leqslant h_0. \tag{2}$$

The accuracy of zero-rank schemes is characterized by the mean square step

$$\|h\|_2 = (1, h^2)^{1/2} = \left(\sum_{i=1}^{N} h_i^2 h_i\right)^{1/2}.$$

It amounts to $O(\|h\|_2^2)$. The results of another paper by the same authors

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

S/208/63/003/001/004/013
Homogeneous difference schemes with ... B112/B102

(Zh. vychisl. matem. i matem. fiz., 1962, 2, No. 5, 812-832) concerning the accuracy of standard schemes over non-uniform nets are improved.

SUBMITTED: September 29, 1962

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

S/208/63/003/001/011/013
B112/B102

AUTHORS: Tikhonov, A. N., Gorbunov, A. D. (Moscow)

TITLE: Asymptotic estimates of error for a method of the Runge-Kutta type

PERIODICAL: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 3, no. 1, 1963, 195-197

TEXT: Approximate solutions of the Cauchy problem

$$dy/dx = f(x,y),\ y(x_0) = y_0 \qquad (1)$$

by means of a formula of the Runge-Kutta type are considered. It is shown that the error satisfies the inequality

$$\|\delta_k\| \leq O(h^s)\left[\int_0^{x_k-x_0} \exp\left\{NLd\right\} + O(h)\right],$$

if the function f is continuous and has continuous derivatives of the s-th order. Asymptotic expansions of the error are derived.

SUBMITTED: April 9, 1962
Card 1/1

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

GOROKHOVSKIY, Yu.N.; TIKHONOV, A.N.

F.L. Burmistrov; on the occasion of his 75th birthday.
Zhur. nauch. i prikl. fot. i kin. 8 no.6:475 N-D '63.
(MIRA 17:1)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; SAMARSKIY, A.A.

Stability of difference schemes. Dokl.AN SSSR 149 no.3:529-531 Mr '63. (MIRA 16:4)

1. Chlen-korrespondent AN SSSR (for Tikhonov).
(Difference equations)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 14363-63 EWT(d)/FCC(w)/EDS AFFTC IJP(C)

ACCESSION NR: AP3003840 S/0020/63/151/003/0501/0504

AUTHOR: Tikhonov, A. N. (Corr. mem. AS, SSSR)

52

TITLE: Solution of incorrectly stated problems and method of regularity

SOURCE: AN SSSR. Doklady*, v. 151, no. 3, 1963, 501-504

TOPIC TAGS: Fredholm equation, incorrectly stated problem

ABSTRACT: An example of an incorrectly stated problem is Fredholm's equation of the first kind, where a solution is required for the unknown function z(s) given the absolute term u(x). The paper gives an algorithm for the construction of a uniform approximation to the function z(s). This algorithm is based on the following principle of regularity: for any α, the family $z^{\alpha}(s)$ belongs to a compact class containing z(s); $u_{\alpha}(x)$ tends to u(x) as α tends to zero. The functional

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L 14363-63
ACCESSION NR: AP3003840

0

$$M^{\alpha}[z(s), u(x)] = N[z(s), u(x)] + \alpha\Omega[z(s)]$$

yields the principal result: given $\varepsilon>0$, there exists a $\delta>0$ such that, corresponding to $u^*(x)$, with $\|u^*(x) - u(x)\|<\delta$, there exists $z^{\alpha}(s)$ with $|z^{\alpha}(s) - z(s)|<\varepsilon$. Orig. art. has: 4 formulas.

ASSOCIATION: none.

SUBMITTED: 17Apr63 DATE ACQ: 15Aug63 ENCL: 00

SUB CODE: MM NO REF SOV: 003 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.

Regularization of incorrectly formulated problems. Dokl. AN SSSR 153 no.1:49-52 N '63. (MIRA 17:1)

1. Chlen-korrespondent AN SSSR.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

[redacted]. Ya.; VLADIMIROV, L. A.; DOROSHENKO, G. G.; DUMOVA, A. A.; TIKHONOV, A. N.

"Concerning the Question about Working up the Spectra of Gamma Rays and Fast Neutrons Measured with the Help of Single Crystal Scintillation Spectrometers."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

MIFI (Moscow Engineering Physics Inst)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

(BR)

ACCESSION NR: AP4024557 S/0208/64/004/002/0232/0241

AUTHORS: Tikhonov, A. N. (Moscow); Gorbunov, A. D. (Moscow)

TITLE: Error estimate in Runga-Kutta method and optimum mesh selection

SOURCE: Zhurnal vy*chislitel'noy matematiki i matematicheskoy fiziki, v. 4, no. 2, 1964, 232-241

TOPIC TAGS: optimum mesh size, Runga-Kutta method, Cauchy problem, vector-function, asymptotic expansion

ABSTRACT: A method for selecting optimum mesh size in the Runga-Kutta method of solving the Cauchy problem has been discussed. The system of ordinary differential equations considered is represented by

$$\frac{dy}{dx} = f(x, y), \qquad y(x_0) = y_0,$$

where f- is a given vector-function of N + 1 variables, smooth and continuously differentiable in a closed domain G. The functional distribution and various parameters of mesh size are introduced, forming an ensemble and representing an

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ACCESSION NR: AP4024557

irregular array. An asymptotic expansion is obtained for the modulus of error, using the elements of irregular mesh representation. This is given by

$$v(x) = \lambda^{r} C \int_{x_0}^{x} \Xi(\xi, x)\bar{\psi}(\xi, y(\xi))\varphi^{r}(\xi)\, d\xi + O(\lambda^{r+1}),$$

where Ξ - matrizant of matrices A(x); λ - positive number; φ - normal mesh size distribution function; ψ - a well-defined operator on f. Finally, the solution is given for selecting optimum mesh size. For N = 1, this is accomplished by minimizing the modulus of the principal term in the above equation for the error estimate. The mesh distribution function is then calculated, using an integration process. A similar method is used for N>1 by selecting some "preferable" coordinate or a "norm" of the principal term in the asymptotic expansion of the error modulus. Orig. art. has: 53 equations.

ASSOCIATION: none

SUBMITTED: 12Jul63	DATE ACQ: 16Apr64	ENCL: 00
SUB CODE: MM	NO REF SOV: 004	OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; GLASKO, V.B. (Moskva)

Approximate solution of Fredholm integral equations of first order. Zhur. vych. mat. i mat. fiz. 4 no.3:564-571 My-Je '64.
(MIRA 17:6)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 15996-66 EWP(k)/EWT(d)/EWP(h)/T/EWP(l)/EWP(v) IJP(c)

ACC NR: AP6005009 SOURCE CODE: UR/0208/66/006/001/0081/0089

AUTHOR: Tikhonov, A. N. (Moscow)

ORG: none

TITLE: Incorrect problems in optimum planning

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 6, no. 1, 1966, 81-89

TOPIC TAGS: linear programming, optimal control

ABSTRACT: The author considers a problem in linear programming: to find an element $z = (z_j)$, $j = 1, \ldots, n$, in an n-dimensional space R_n which satisfies the m conditions

$$Az = \bar{u}, \quad A = (a_{ij}), \quad \bar{u} = (\bar{u}_i) \quad (i = 1, \ldots, m, j = 1, \ldots, n) \quad (1)$$

with the limitations $z_j \geq 0$ and minimizes the linear form

$$C(z) = \sum_{j=1}^{n} c_j z_j, \quad c_j \geq 0. \quad (2)$$

UDC: 518

Card 1/2

CIA-RDP86-00513R001755620001-4"

L 15996-66

ACC NR: AP6005009

This problem is termed correctly stated if there is a solution which corresponds to input data with a small error, and which differs little from the solution of the initial problem. The problem is incorrectly formulated if a solution which differs greatly from that of the initial problem can be found to correspond to errors in the input data no matter how slight. Assumptions are made with respect to the linear independence of the conditions given and incorrectly formulated problems are treated. The problems of existence and uniqueness of the system are discussed. It is shown that the problem always has a solution if the conditions $z_j \geq 0$ and (2) are coexistent. However, the system may have more than one solution. Algorithms are proposed for both accurate and approximate input data. An example is given of a problem in which arbitrarily large changes may result in the solution no matter how accurate the approximate input information. Orig. art. has: 43 formulas.

SUB CODE: 09/ SUBM DATE: 21Sep65/ ORIG REF: 001/ OTH REF: 001

Card 2/2

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

BUDAK, Boris Mikhaylovich; FOMIN, Sergey Vasil'yevich, [illegible]
N.A., red.; GOR'KOV, V. A., red.; [illegible]

[Multiple integrals and series] Kratnye integraly i riady. (MIRA 18:11)
Moskva, Nauka, 1965. [illegible] p.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; DVORCV, I.M., kand.geograf.nauk

Development of geothermal research in the U.S.S.R. Vest. AN SSSR 35 (MIRA 18:10)
no.10:21-24 O '65.

1. Chlen-korrespondent AN SSSR (for Tikhonov).

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.

Incorrect problems of optimal planning and stable methods for their solution. Dokl. AN SSSR 164 no.3:507-510 S '65.
(MIRA 18:9)

1. Chlen-korrespondent AN SSSR.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; ARSENIN, V.Ya. (Moskva)

On certain nonlinear functionals. Mat. sbor. 65 no.4:512-521. D '64. (MIRA 18:3)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 53721-65 EWT(d) Pg-4 IJP(c)

ACCESSION NR: AP5014756 UR/0208/65/005/003/0463/0473
518:517.948

15
B

AUTHORS: Tikhonov, A. N. (Moscow); Glasko, V. B. (Moscow)

TITLE: Application of the method of regularization to nonlinear problems

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 5, no. 3, 1965, 463-473

TOPIC TAGS: differential equation, boundary problem, approximation method

ABSTRACT: The authors consider the incorrectly posed problem of solving

$$A[x, z] \equiv \int_{-L}^{L} K[x, \xi, z(\xi)]\,d\xi = u(x), \quad -L \leqslant x \leqslant L, \qquad (1)$$

by considering the problem of finding a function minimizing

$$M_\alpha[z, u] \equiv \int_{-L}^{L} \{A[x, z] - u(x)\}^2\,dx + \alpha \int_{-L}^{L} z'^2\,d\xi, \qquad (2)$$

for sufficiently small α. This is referred to as a regularizing algorithm of (1). The authors reduce the minimization problem to the solution of the Euler equation

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 53721-65
ACCESSION NR: AP5014756

$$P_\alpha[\eta, z] \equiv \int_a^b K[\xi, \eta, z(\xi), z(\eta)]\,d\xi - \alpha z''(\eta) - b[\eta, z(\eta)] = 0 \qquad (3)$$

for one of two types of boundary conditions depending on the additional information supplied with the problem; they quote a uniqueness-existence theorem. For solution they proposed an iteration scheme based on Newton's method, programmed it on a digital computer, and achieved satisfactory results. Orig. art. has: 2 tables, 11 figures, and 24 formulas.

ASSOCIATION: none

SUBMITTED: [illegible]Feb65

NO REF SOV: 007

SUB CODE: MA

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 5711-[illegible] EWT(d); EWP(e)

ACCESSION NR: AP5015385 UR/0042/65/020/003/0254/0255

AUTHOR: Bakhvalov, N. S.; Tikhonov, A. N.

TITLE: All-Union Conference on Numerical Analysis

SOURCE: Uspekhi matematicheskikh nauk, v. 20, no. 3, 1965, 254-255

TOPIC TAGS: mathematic conference, numeric analysis

ABSTRACT: The All-Union Conference on Numerical Analysis, held in Moscow 22-26 January 1965, was attended by some [illegible] scientists. Over [illegible] papers were presented in eight sections: [illegible] and functional equations, [illegible] numerical methods for solving [illegible] methods for solving [illegible] for solving problems in physics and [illegible].

Card 1/4

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 57115-65

ACCESSION NR: AP5015385

In the first section it was revealed that substantial progress has been [illegible] eigenvalue [illegible] and ill-conditioned systems. In the [illegible] has been made in developing optimal methods of integration.

In the section on ordinary differential equations, a series of results were presented on the development of optimal integration methods, the development of methods for solving boundary-value problems, and establishment of two-sided estimates for the solutions of ordinary differential equa- [illegible] dimensional [illegible] the most important [illegible]

In the third section, a great deal of attention was paid to the construc- [illegible] difference schemes for solving partial differential equa- [illegible] were discussed.

Card 2/4

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 57225-65
ACCESSION NR: AP5015385

The papers presented in the fourth section were devoted to iterative algorithms for solving functional equations, [illegible] methods for solving linear and nonlinear [illegible] solving integral equations.

In section five, a great number of papers were presented concerning the solution of specific optimal problems. Many new results of practical importance were obtained. A series of [illegible] for solving entire classes of optimal problems.

In the sixth section, questions connected with the approximate solution of incorrectly formulated [illegible] rithms for their solution were discussed. Several special incorrectly formulated problems were presented.

Card 3/4

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 57115-65
ACCESSION NR: AP5015385

A considerable number of papers presented in the seventh and eighth sections dealt with the development of algorithms suitable for solving entire classes of problems. The rest of the papers [illegible] from solving particular applied problems.

In the closing session, the reports presented by Academician S. L. Sobolev of the Academy of Sciences USSR and by A. N. Tikhonov, Corresponding Member of the Academy of Sciences USSR, analyzed the most important trends in numerical analysis.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MA

NO REF SOV: [illegible] OTHER: [illegible] ATD PRESS: 4035-F

Card 1/1

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

AR/5C
ACCESSION NR: AP5015411 UR/0020/65/162/004/0763/0765

AUTHOR: Tikhonov, A. N. (Corresponding member AN SSSR)

TITLE: Regularization methods for optimal control problems

SOURCE: AN SSSR. Doklady, v. 162, no. 4, 1965, 763-765

TOPIC TAGS: optimal control, approximation calculation

ABSTRACT: The author gives an example of an incorrect variational problem -- i.e., one for which there exist minimizing sequences of functions which fail to converge uniformly to an extremal solution. Suppose there exists a unique smooth optimal control $u^0(t)$ of the following problem. Given the system

$$\frac{dx}{dt} = f(t,x,u), \quad (x = x_1,\ldots,x_n)$$

$$(u = u_1,\ldots,u_m), \quad t_0 \leq t \leq T$$

with controlling functions u(t) from some complete functional class U and initial conditions

$$x(t_0) = u_0$$

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 26552-65
ACCESSION NR: AP5015411

and a continuous nonnegative functional $F[x]$ defined on functions $x(t)$, $t_0 \leq t \leq T$, to be minimized by suitable choice of controls u. Then the sequence of functions $\hat{u}^{\alpha} k(t)$ satisfying

$$G^{\alpha_k}[\hat{u}^{\alpha_k}(0)] \leqslant G_0^{\alpha_k} + \alpha_k \quad (1)$$

converges uniformly to the optimal $\bar{u}_0(t)$. It is shown that under certain conditions of convexity and completeness there exists an optimal control. Orig. art. has: 36 formulas.

ASSOCIATION: none

SUBMITTED: 13Mar65 ENCL: 00 SUB CODE: MA

NO REF SOV: 003 OTHER: 00

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.

Solution of nonlinear integral equations of first order. Dokl. AN SSSR 156 no.6:1296-1299 Je '64. (MIRA 17:8)

1. Chlen-korrespondent AN SSSR.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

ACCESSION NR: AP5011519

AUTHOR: Tikhonov, A. N. (Corresponding member AN SSSR)

TITLE: Nonlinear equations of first kind

SOURCE: AN SSSR. Doklady, v. 161, no. 5, 1965, 1023-1026

TOPIC TAGS: differential equation, Hilbert space

ABSTRACT: Let $A[z]$ be a continuous operator from Z into U, satisfying the uniqueness condition: $A[z_1] \neq A[z_2]$ if $z_1 \neq z_2$, where Z and U are metric spaces satisfying certain conditions formulated in the paper. From techniques originated by the author (DAN, 151, No. 3, 501, 1963) and (DAN, 156, No. 6, 1296, 1964), and the author and S. B. Stasko (Zhurn. vychislit. matem. i matem. fiz., 4, 564, 1964), he develops methods for solving equations $A[z] = u$ of the first kind. He gives certain results for Z and U being Hilbert spaces, where $A[z]$ has a first differential satisfying given conditions. Orig. art. has: 27 formulas.

ASSOCIATION: none

SUBMITTED: 18Nov64 ENCL: 00 SUB CODE: MA

NO REF SOV: 003 OTHER: 000

Card 1/1

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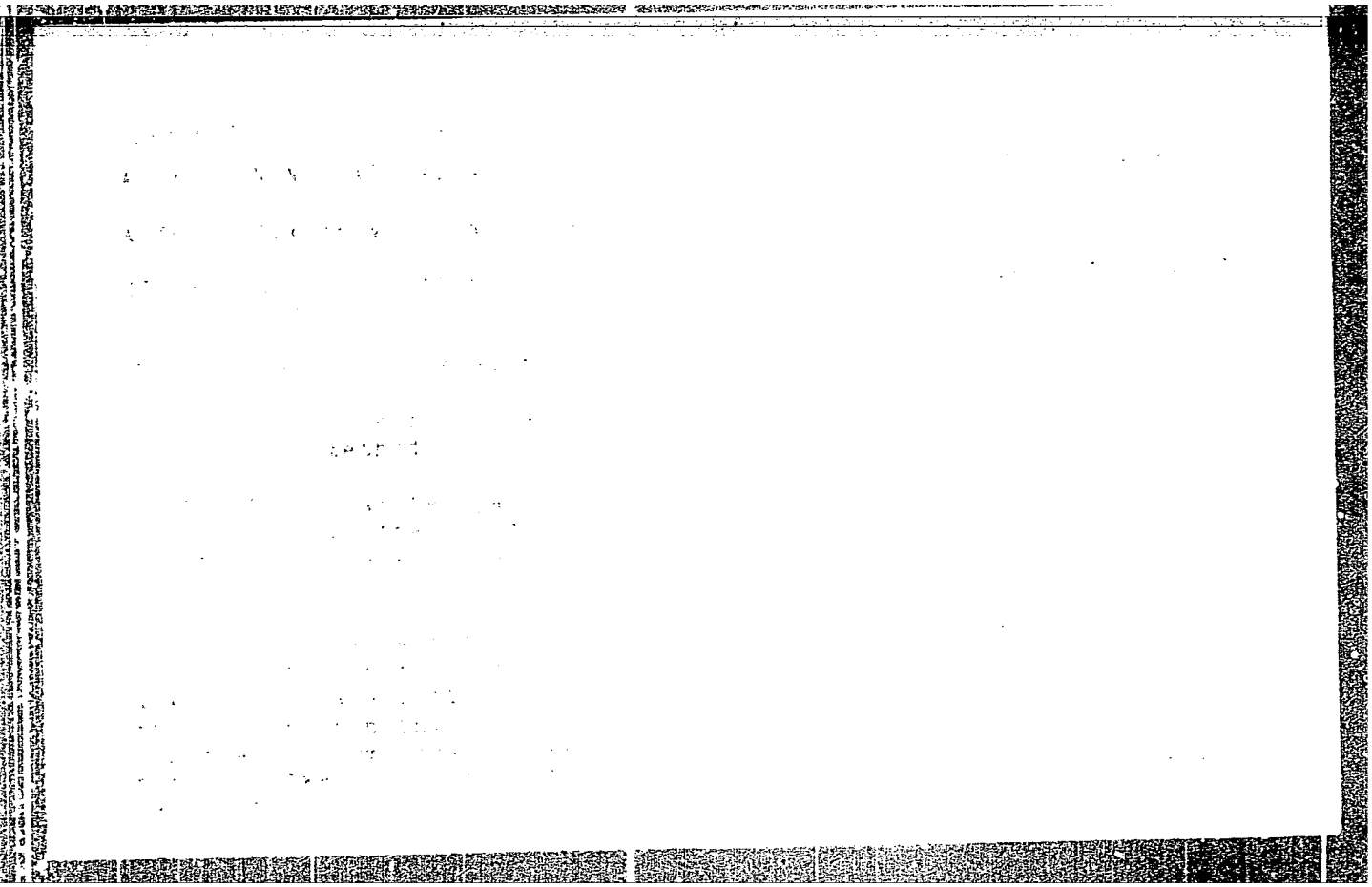

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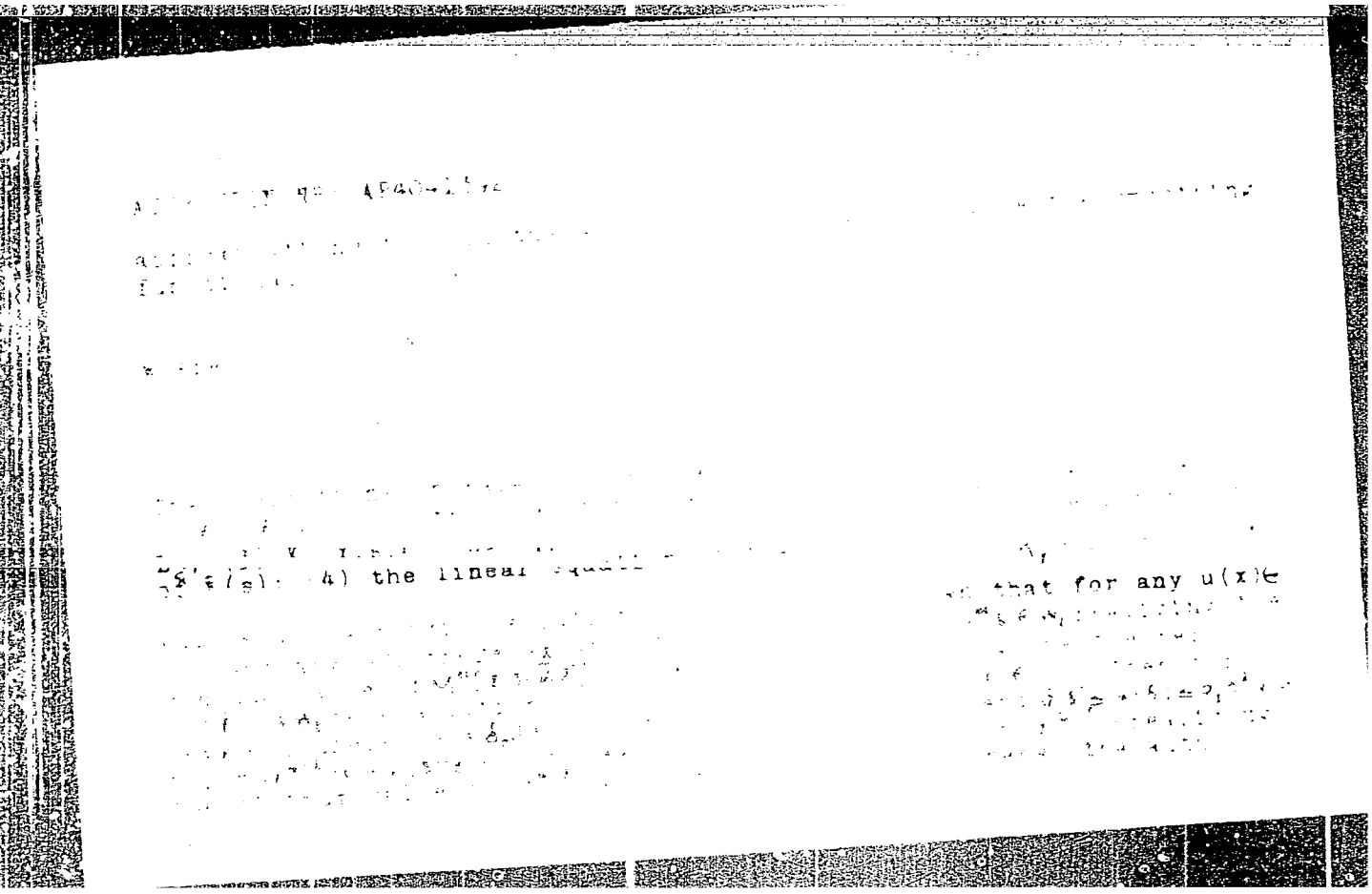

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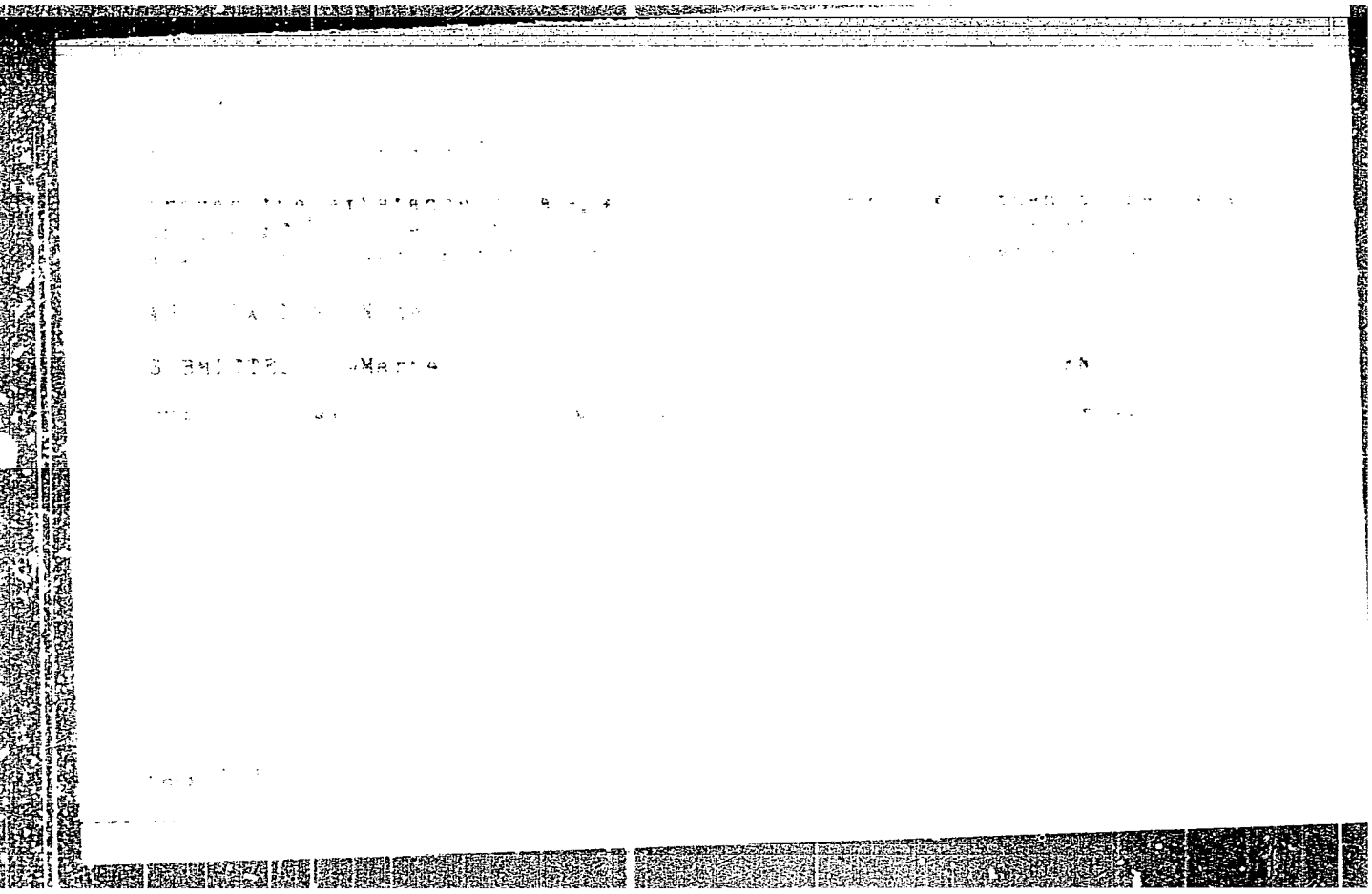

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

ACCESSION NR: AP5019421 UR: 20/65/163/003/0591/0594

AUTHOR: [illegible]

TITLE: On improper problems in linear algebra [illegible]

SOURCE: AN SSSR, Doklady, v. [illegible]

TOPIC TAGS: mathematic matrix, approximation method, algebraic equation, algebra

ABSTRACT: A system of linear algebraic equations is studied:

$$\dot{A}z = \bar{u} \quad A = \{\ \} \quad z = \{z\} \quad u = \{u\}$$

[illegible]

a system [illegible] always [illegible] and otherwise, are stated. A *normal solution* of [illegible] is defined. The normal solution may be expressed by the conditions:

$$AZ^T = \bar{u} \quad [illegible]$$

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

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Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; ARSENIN, V.Ya.; DUMOVA, A.N.; MAYOROV, L.V.; MOSTOVOY, V.I.

New method of restoration of the true spectra. Atom. energ. 18 no.6:
588-593 Je '65. (MIRA 18:7)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; ARSENIN, V.Ya.; VLADIMIROV, L.A.; DOROSHENKO, G.G.; DUMOVA, A.A.

Processing of spectra of gamma quanta and fast neutrons measured by means of single-crystal scintillation spectrometers. Izv. AN SSSR.Ser. fiz. 29 no.5:815-818 My '65. (MIRA 18:5)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 14585-66 EWT(1) GW
ACC NR: AP5028620 SOURCE CODE: UR/0030/65/000/010/0021/0024

AUTHOR: Tikhonov, A. N. (Corresponding member AN SSSR); Dvorov, I. M. (Candidate of geographical sciences)

ORG: none

TITLE: Development of geothermal research in the SSSR

SOURCE: AN SSSR. Vestnik, no. 10, 1965, 21-24

TOPIC TAGS: earth thermodynamics, underground water, electric power source

ABSTRACT: The study surveys recent developments in Soviet geothermal research. The Learned Council on Geothermal Research of the Academy of Sciences SSSR is studying geothermic field distribution in places subject to direct measurement, development and improvement of techniques and instrumentation used in geothermal readings, deep thermal processes and economically useful applications of the heat of the earth. The Geological Institute of the Academy of Sciences SSSR is compiling a geothermal map of the entire SSSR. This map gives temperatures close to the top of crystal base. A chart indicating distribution of thermal waters is nearing completion. Geothermal charts ranging between 1.3 to

UDC: 525.21

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L 14585-66

ACC NR: AP5028620

6 km in depth are planned. These charts will plot the temperature changes to a depth of 50-60 kilometers. The Institute of Earth Physics imeni O. Yu. Schmidt is developing electrical means for measuring heat conductivity directly without bringing samples up to the surface. Magnetic tellurium probes offer some prospect of determining electrical conductivity and temperature at depths of hundreds of kilometers. The All-Union Scientific Research Institute for Refrigeration Machine Building and the Institute of Heat Physics of the Siberian Department of the Academy of Sciences SSSR have studied thermodynamic cycle employing freon-12 heated above the critical point. The first stage in the development of geothermal energy sources will be the construction of power plants of small kilowatt output at places where other types of energy sources are expensive. It is concluded that the economic effect of using hot springs of various temperature and mineral content must be studied further.

SUB CODE: 08,10 / SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

Card 2/2 FW

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

IL'IN, Vladimir Aleksandrovich; POZNYAK, Eduard Genrikhovich; TIKHONOV, A.N., red.; SVESHNIKOV, A.G., red.; SHISHMAREV, I.A., red.

Fundamentals of mathematical analysis] Osnovy matematicheskogo analiza. Moskva, Nauka, 1965. 571 p. (Kurs vysshei matematiki i matematicheskoi fiziki, no.1)
(MIRA 18:9)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

BAKHVALOV, N.S.; TIKHONOV, A.N.

All-Union Conference on Computer Mathematics. Usp. mat. nauk 20 no.3:254-255 My-Je '65. (MIRA 18:6)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N. (Moskva); GLAZKO, V.I. (Moskva)

Use of the regulatization method in nonlinear problems. Zhur. vych. mat. i mat. fiz. 5 no.3:463-473 My-Je '65. (MIRA 18:7)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 4292-66 EWT(d)/T/EWP(1) IJP(c)

ACCESSION NR: AP5024202 UR/0020/65/164/003/0507/0510

AUTHOR: Tikhonov, A. N. (Corresponding member AN SSSR)

TITLE: Incorrect problems of optimal programming and stable methods for their solution

SOURCE: AN SSSR. Doklady, v. 164, no. 3, 1965, 507-510

TOPIC TAGS: linear programming, approximation calculation

ABSTRACT: The author investigates the linear programming problem (see D. B. Yudin and Ye. G. Gol'dshteyn. Lineynoye programmirovaniye, M., 1963; S. Vayda. v sborn. Lineynyye neravenstva i smezhnyye voprosy, IL, 1959; L. V. Kantorovich. Matematicheskiye metody v organizatsii i planirovanii proizvodstva, L., 1939): Find $z \in R_n$ satisfying

$$Az = \bar{u}, \quad A = (a_{ij}), \quad \bar{u} = (\bar{u}_i) \quad (i = 1, \ldots, m; \ j = 1, \ldots, n), \tag{1}$$

$$z_j \geqslant 0 \tag{2}$$

and minimizing

$$C[z] = \sum_j c_j z_j, \quad c_j > 0 \tag{3}$$

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 4292-66

ACCESSION NR: AP5024202

0

without the unverifiable restriction of independence of the rows of A. He constructs an example in which arbitrarily small input changes lead to large output changes (changes of the minimum of C, which may lead to nonuniqueness). He gives sufficient conditions for uniqueness and proves existence, giving an algorithm for obtaining a solution of (1) stable with respect to small perturbations of input data A, $\tilde{u}$, and C. Orig. art. has: 3 formulas.

ASSOCIATION: none

SUBMITTED: 20Apr64 ENCL: 00 SUB CODE: MA

NO REF SOV: 004 OTHER: 001

Card 2/2 DP

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N. (Moskva)

Mathematical basis for the theory of [illegible].
Zhur. vych. mat. i mat. fiz. [illegible] (MIA 18:7)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N. (Moskva)

Stability of algorithms for the sclution of degenerate systems of linear algebraic equations. Zhur. vych. mat. i mat. fiz. 5 no.4:718-722 Jl-Ag '65. (MIRA 18:8)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; BAKHVALOV, N.S.

All-Union Conference on Computer Mathematics. Zhur. vych. mat. i mat. fiz. 5 no.4:779-780 Jl-Ag '65. (MIRA 18:8)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 2283-66 EWT(m)/EPF(n)-2/EWA(h) DM

ACCESSION NR: AP5016927 UR/0089/65/018/006/0588/0593
621.039.519.22

AUTHORS: Tikhonov, A. N.; Arsenin, V. Ya.; Dumova, A. N.; Mayorov, L. V.; Mostovoy, V. I.

TITLE: New method of reconstruction of true spectra 24 B

SOURCE: Atomnaya energiya, v. 18, no. 6, 1965, 588-593

TOPIC TAGS: neutron spectrum, neutron energy distribution, nuclear reactor characteristic, integral equation, Fredholm equation

ABSTRACT: The article presents two examples of the use of a new method of solving problems based on incomplete experimental data, which arise in the reduction of results of experiments on nuclear reactors. This method was developed by one of the authors (Tikhonov, DAN SSSR v. 149, 529, 1963) for Fredholm equations of the first kind. The first example considers the reconstruction of the true energy spectrum of epithermal neutrons in a uranium block of a reactor from the results of measurements with the aid of a mechanical selector.

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

L 2283-66

ACCESSION NR: AP5016927

The second example is devoted to the calculation of the scalar energy flux of thermal neutrons in a heterogeneous lattice moderator, from measurements of the directional flux. The examples illustrate the possibility of solving some problems in reactor physics in which the experimentally obtained spectra are distorted because of shortcomings of the measurement apparatus or of the method. Orig. art. has: 4 figures and 9 formulas

ASSOCIATION: None

SUBMITTED: 15Jun64 ENCL: 00 SUB CODE: NP

NR REF SOV: 004 OTHER: 003

Card 2/2 DP

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.N.; SKUGAREVSKAYA, O.A.; FROLOV, P.I.

Resolving power of the method of magnetic field extrapolation.
Izv. AN SSSR Fiz. zem. no.5:42-50 '65.
(MIRA 18:6)

1. Geologicheskiy institut AN SSSR.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

ACC NR: AT6035242 SOURCE CODE: UR/3043/66/000/005/0017/0020

AUTHOR: Tikhonov, A. N.; Gorbunov, A. D.; Gaysaryan, S. S.

ORG: none

TITLE: Description of an algorithm for optimum mesh construction in solving the Cauchy problem for ordinary differential equations by Runge Kutta methods

SOURCE: Moscow. Universitet. Vychislitel'nyy tsentr. Sbornik rabot, no. 5, 1966. Vychislitel'nyye metody i programmirovaniye (Computing methods and programming), 17-20

TOPIC TAGS: Cauchy problem, Runge Kutta integration method, ordinary differential equation, algorithm, differential equation solution

ABSTRACT: A method is proposed for selecting optimum inhomogeneous meshes when numerically solving a system of N ordinary differential equations:

$$y' = f(x, y), \quad y(x_0) = y_0 \qquad (1)$$

(y and f are N-dimensional vectors) in the $x_0 \leqslant x \leqslant \bar{x}$ segment by a Runge-Kutta method of degree s. Mesh optimality denotes that at point $\bar{x}$ the prescribed accuracy ε is obtained in the least possible number of steps. An inhomogeneous mesh (network) is given by means of constant λ, termed the parameter of the network, and the continuously differentiated function $\phi(x)$ of the distribution of the network steps so that at any node x_i ($-[x_0, x]$ integration step h_i is determined by

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$$h_i = \lambda\varphi(x_i). \qquad (2)$$

Optimality of the network is achieved by proper selection of network parameter λ and function $\phi(x)$. The algorithm in question is for the solution of eq. (1) and embodies a preliminary computation which, although it does not give $y(\bar{x})$ with the necessary accuracy, still makes it possible to compute λ and $\phi(x)$, which makes it possible to achieve the required accuracy at point $\bar{x}$ on the second calculation. The paper gives a method for solving Eq. (1) when N = 1, and adduces two examples of Cauchy problems solved. Orig. art. has: 10 formulas.

SUB CODE: 12/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

ACC NR: AP6025919 SOURCE CODE: UR/0208/66/006/004/0631/0634

AUTHOR: Tikhonov, A. N. (Moscow)

ORG: none

TITLE: On stability of the problem of optimizing functionals

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 6, no. 4, 631-634

TOPIC TAGS: function analysis, optimization, mathematic space

ABSTRACT: The problem of finding an element which minimizes a given functional has attracted and undoubtedly will continue to attract increasingly greater interest in applied mathematics. Given functional F(z) in some metric space Z, let the problem of minimizing F(z) in Z have a unique solution, i.e., let there be a z_0 which is the sole element of Z in which F(z) reaches its minimum $F(z_0) = F_0 < F(z)$ $(z \neq z_0)$. Let us assume that there is a method of permitting construction of a minimizing sequence $\{z_n\}$ so that $\lim_{n\to\infty} F_n = F_0$ $(F_n = F(z_n))$. We will say that the problem of optimizing F_Z in Z is stable if it is soluble and every minimizing sequency z_n converges to z_0. The aim of this paper is to construct a method for finding one class of minimizing sequences for F(z) which converge to z_0 by using auxiliary parmametric functionals M^{α} x (z, F). This involves the proof of two theorems: (1) For any $\varepsilon > 0$ there is such

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ACC NR: AP6025919

an $\alpha_0(\varepsilon) \to 0$ when $\varepsilon \to 0$ that

$$\boxed{p\left(\tilde{z}^{\alpha,\eta}, z_0\right) < \varepsilon,}$$

where

$$\boxed{\tilde{z}^{\alpha,\eta}}$$

is any element almost minimizing

$$\boxed{M^{\alpha}(z, F_{\eta}),}$$

if $\eta/\alpha \leq q < 1$ and $\alpha \leq \alpha_0(\varepsilon)$. (2) If $\bar{Z}$ is a Hilbert space s-compactly and continuously convexly embedded in Z, then there is an element

$$\boxed{\tilde{z}^{\alpha,\eta} \in \bar{Z},}$$

minimizing

$$\boxed{M^{\alpha}[z, F_{\eta}] = F_{\eta}(z) + \alpha\Omega(z),}$$

if $\eta/\alpha \leq q < 1$. Orig. art. has: 16 formulas.

SUB CODE: 12/ SUBM DATE: 26Mar66/ ORIG REF: 002

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

MALOZEMOV, N.A., doktor tekhn.nauk, prof.; TIKHONOV, A.P., inzh.

Studying the wear of the elements of the piston group of diesel locomotive engines during operation. [Sbor.trud.] RIIZHT No.31: 5-27 '61. (MIRA 16:12)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, Aleksandr Porfir'yevich; ZASLAVSKIY, Moisey Abramovich; BESPALOV, K.I., kand.tekhn.nauk, retsenzent; GEL'FGAT, Z.I., inzh., retsenzent; DASHEVSKIY, T.B., kand.tekhn.nauk, red.; FURER, P.Ya., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn.red.

[Technology of machinery manufacture] Tekhnologiia mashinostroeniia. Moskva, Mashgiz, 1963. 532 p. (MIRA 16:6)
(Machinery industry)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.P. (Ber-Chogur)

With the track workers of Kazakhstan. Put' i put.khoz. no.11:44-45 N '57. (MIRA 10:11)

1. Nachal'nik Ber-Chogurskoy distantsii puti Orenburgskoy dorogi.
(Kazakhstan--Railroads--Employees)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A.P., Geroy Sotsialisticheskogo Truda

Looking into the future. Put' i put.khoz. 5 no.12:6 D '61. (MIRA 15:1)

1. Nachal'nik distantsii puti, st. Ber-Chogur, Kazakhskoy dorogi. (Railroads--Employees)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

TIKHONOV, A. S.
ALEKSEY SERGEYEVICH

SOV/124-59-10-11680

Translation from: Referativnyy zhurnal, Mekhanika, 1959, No. 10, p. 87 (USSR)

AUTHORS: Rumyantsev, S. V., Yermolayev, M. D., Domrachev, V. I., Tikhonov, A. S., Bulavkin, A. A.

TITLE: Investigation of the Flame Ignition System as Applied to Aircraft Engines 23

PERIODICAL: Tr. Kazansk. aviats. in-ta, 1958, Vol. 39, 112 pp, ill.

TEXT: Since 1941, the Kazanskiy aviatsionnyy institut [Kazan' Aviation Institute (KAI)] carried out the investigation of the flame ignition system, which was proposed at that time by the workers of the Institut khimicheskoy fiziki AN SSSR (Institute of Physical Chemistry of the AS USSR) A. N. Voinov and A. S. Sokolik. The essence of the flame ignition system consists in the following: The spark ignites a little part (3-5 vol-%) of the charge, which is in a special precombustion chamber and has a constant mixture composition independent of the load ($\alpha \approx 0.8$-0.9); it enters the compression chamber subsequently through special nozzles, and ignites the main part of charge. The composition of this main charge part can vary from $\alpha = 0.8$ to $\alpha = 1.6$-2.0

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

SOV/124-59-10-11680

Investigation of the Flame Ignition System as Applied to Aircraft Engines

depending on the load. A powerful ignition source makes it possible to perform the qualitative regulation and burn pure mixtures efficiently in case of low loads. Such kind of regulation yields a considerable fuel economy and favorably affects the engine resources. The KAI work embraced: 1) Determination of the optimum parameters of the investigated ignition system; 2) determination of the engine characteristics; 3) checking the possibilities to apply this system to engines with direct injection using low-grade fuels; 4) investigation of the working process of an engine in a combined power unit (engine with supercharging and gas turbine). Single cylinder units were tested having cylinders of the VK-105 PF- and ASh-82 engines. For the work section dealing with the combined unit, the V2-cylinder was used. The investigation yielded results, and practially all the problems set forth by the authors were solved successfully.

G. A. Varshavskiy

Card 2/2

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

27543
S/123/61/000/014/043/045
A004/A101

26.1170

AUTHOR: Tikhonov, A.S.

TITLE: On the calculation of negative thrust of turbo-jets

PERIODICAL: Referativnyy zhurnal. Mashinostroyeniye, no. 14, 1961, 34, abstract 14I230 ("Tr. Kazansk. aviats. in-ta", 1960, no. 55, 21 - 30)

TEXT: The author derives an equation to determine the static coefficient of reversing which is equal to the ratio of negative to positive thrust, during the operation of turbo-jets on the ground at zero speed. The author investigates the variation of the static coefficient of reversing during the full expansion of the gas in the reactive cascades during the full expansion of the gas in the nozzle and in the cascades, and also in the case when all the gas or only part of the gas is passing through the reversing cascades. It is pointed out that in the general case of thrust reversal operation, the static coefficient of reversing varies in the range of 8-10%. The author presents simplified equations for the calculation of the static coefficient of reversing for two ranges of reduction stages in the nozzle: 1.85-5 and > 5.

I. Barskiy

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

20604

S/147/61/000/001/013/016
E022/E135

26.1120

AUTHOR: Tikhonov, A.S.

TITLE: Thrust Reversal of Turbo-Jet Engines at Subsonic Speeds of Flight

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, 1961, No. 1, pp. 112-120

TEXT: Extensive investigations indicate that the thrust reversal can usefully be employed not only during the landing but also in flight, so that thrust reversal can now be considered as an essential requirement for a turbojet engine. Thus the suitability of a turbojet engine must be assessed nowadays taking into account the performance with the reverser, which is the object of the present article. The analysis of the problem is purely thermodynamical and based on the following assumptions: the specific heats during the processes in the engine and in the thrust reversal appliances are constant; the efficiency of all the elements of the system is 100%; the flow of air in the passages of the engine is inviscid; the mass rate of flow through the reversing appliances is the same as that leaving the turbine; the gas is

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

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E022/E135

Thrust Reversal of Turbo-Jet Engines at Subsonic Speeds of Flight

fully expanded both in the reactive nozzle and in the reversing vanes. The ratio of the reversed thrust to the forward thrust with the aircraft stationary on the ground is called the static coefficient of reversal (see Ref.1). The ratio of the reversed thrust to the forward thrust when the aircraft is flying is called the overall coefficient of reversal, or simply the coefficient of reversal. In theoretical investigations it is useful to employ a coefficient of reversal which relates the reverse and forward thrusts without taking into account the impulse of the air entering the engine. This is also called the static coefficient of reversal (Ref.2: A.S.Tikhonov : On calculating reverse thrust of turbo-jet engines, Trudy KAI, No. 55, 1960). In this way the overall coefficient of reversal and the static coefficient of reversal can be related theoretically by an equation given in the article. Consequently the static coefficient of reversal may be considered as one of the parameters fully defining the suitability of the reverser. The results of the theoretical investigations may be summarised as follows: 1) The static coefficient of reversal

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

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E022/E135

Thrust Reversal of Turbo-Jet Engines at Subsonic Speeds of Flight

increases with the velocity coefficient (reduced velocity or dimensionless velocity) of flight and is practically independent of the rate of heating in the combustion chamber and of the compression ratio in the compressor. 2) The overall coefficient of reversal increases quickly with the velocity of flight and falls off rapidly as the temperature in the combustion chamber increases. 3) The coefficient of the reversed thrust increases strongly with the velocity coefficient and with the temperature in the combustion chamber. The increase of the thrust coefficient with velocity is associated with simultaneous reduction in the specific fuel consumption, while the increase with the temperature is the result of the increased specific fuel consumption. 4) An increase of the compression ratio in the compressor in the present form of design of turbojet engines does not seem to have any serious effect on the coefficient of reversal or the thrust coefficient.
There are 8 figures and 2 Soviet references.

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APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

20604

S/147/61/000/001/013/016
E022/E135

Thrust Reversal of Turbo-Jet Engines at Subsonic Speeds of Flight

ASSOCIATION: Kafedra konstruktsii aviadvigateley, Kazanskiy aviatsionnyy institut (Department of Aero-engines Design, Kazan' Aviation Institute)

SUBMITTED: June 13, 1960

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APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

method of dual deviation

SOURCE: IVUZ. Aviatsionnaya tekhnika, [illegible]

TOPIC TAGS: turbojet, thrust reversal, [illegible]

ABSTRACT: Thrust reversers mounted on turbojet engines affect the engine operating parameters during thrust reversal. [illegible]

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

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ACCESSION NR: AP5005537

where Z is the ratio of reverse to straight gas flow rates, ψ_p is the velocity ratio, α is the flow deflection angle in the turning vanes, and F(...) is a function). K_0 increases as ψ_p decreases, [illegible] gas temperature and an increase in compressor speed. [illegible] be eliminated in some thrust reversers [illegible] area between the turning vanes or providing an air bypass. In the latter case, [illegible] decreases by 2—3% for each 1% decrease in [illegible]. Orig. [illegible]

ASSOCIATION: none

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APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

ACC NR: AT7001735 SOURCE CODE: UR/2776/66/000/044/0117/0123

AUTHOR: Grishlov, A. I.; Kardonov, B. A.; Pravdin, A. V.; Tikhonov, A. S.

ORG: none

TITLE: Rolling of a plate from KhN67VMTYu alloy

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov, no. 44, 1966. Tekhnologicheskiye i teoreticheskiye voprosy prokatki (Technological and theoretical problems of rolling), 117-123

TOPIC TAGS: heat resistent alloy, metal rolling, mechanical property, nickel base alloy, plate, KhN67VMTYu nickel base alloy

ABSTRACT: A method of rolling plates 5—18 x 1000 x 2000 from KhN67VMTYU heat-resistant nickel-base alloy with high strength properties at 850—900C is described. Forged 560-kg slabs, 120—125 x 500 x 1000 mm, were preheated in a continuous furnace and rolled at 1180—950C from 120 to 25 mm on the 2200 mill and then from 25 to 8 mm on the 1700 mill. Rolling on the three-high 2200 mill was done with two heatings. After the first heating the slabs were reduced in 22-24 passes to 70-80 mm and after the second reheating they were reduced in 18-20 passes to 25—28 mm. The finish temperature was not lower than

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ACC NR: AT7001735

920C. Further rolling to a determined plate thickness was done on the three-high 1700 mill with one or two heatings (1160—1170C), depending on the plate thickness. The finish temperature for plates 8—10 mm thick was 900—930C and for 15 mm plates, 1000C and higher. Plates 12—18 mm thick were cut in two parts and after heating were rolled to a determined thickness. The rolled plates had a tensile strength of 100 kg/mm^2, a yield strength of 58 kg/mm^2, an elongation of 18%, a reduction of area of 20%, and a notch toughness of 5 kgm/cm^2. After rolling, plates 15 or 8—10 mm thick were heated in a continuous furnace for 10 min to 1100 or 1120-1130C, respectively, and then cooled to 750-800C under a water shower and then in air. The heat-treated sheets were then subjected to alkaline and acid pickling followed by blanching. Orig. art. has: 4 figures and 5 tables.

SUB CODE: 13/11/ SUBM DATE: none

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ALEKSEYEV, Sergey Petrovich; TIKHONOV, A.S., kand.tekhn.nauk, nauchnyy red.; RYCHEK, T.I., red.; DORODNOVA, L.A., tekhn. red.

[Noise control in residential and industrial buildings] Bor'ba s shumami v zhilykh i proizvodstvennykh zdaniiakh. Moskva, Proftekhizdat, 1963. 110 p. (MIRA 16:5)
(Noise control)

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

ANDRIASYAN, G.K.; PETYUSHKIN, A.F.; TRUSHKIN, A.M.; VOLODINA, K.D.; TIKHONOV, A.S.

Treating patients with skin diseases with highly concentrated Matsesta baths under polyclinical conditions. Vest.derm.i ven. 35 no.1:49-52 Ja '61. (MIRA 14:3)

1. Iz kurortnoy polikliniki No.2 (glavnyy vrach L.I. Kuznetsova) Kurortnogo upravleniya Sochi - Matsesta Ministerstva zdravookhraneniya RSFSR.
(SKIN--DISEASES) (MATSESTA--MINERAL WATERS, SULFUROUS)

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620001-4

PAVLYUCHENKO, M.M.; POKROVSKIY, I.I.; TIKHONOV, A.S.

Self-diffusion of copper in Cu_2S. Dokl. AN BSSR 9 no. 4: 235-237 Ap '65 (MIRA 19:1)

1. Belorusskiy gosudarstvennyy universitet imeni Lenina.
Submitted January 30, 1965.

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L 36135-66 EWT(m)/EWP(v)/T/EWP(t)/ETI/EWP(k) IJP(c) WB/MJW/JD/HM/HW

ACC NR: AT6016761 (A) SOURCE CODE: UR/2776/65/000/042/0055/0058

AUTHOR: Kardonov, B. A.; Mel'nikov, A. F.; Praydin, A. V.; Tikhonov, A. S.

ORG: none

TITLE: Deformation resistance of EP375 and EP495 alloys

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov, no. 42, 1965. Proizvodstvo bimetallov (Production of bimetals), 55-58

TOPIC TAGS: nickel base alloy, bimetal, metal cladding, chemical plant equipment, metal deformation / EP375 alloy, EP495 alloy, Kh18N9T alloy, 45 steel

ABSTRACT: The EP375 Ni-Cr-Mo alloy (≤0.05% C, ≤1.0% Si, ≤1.0% Mn, 14.5-16.5% Cr, 14.5-16.5% Mo, 3-4.5% W, ≤2.5% Co, ≤7.0% Fe, 0.01% Ce, with Ni as base) and EP495 Ni-Mo alloy (≤0.03% C, ≤0.25% Si, ≤0.5% Mn, 25.0-29.0% Cr, ≤1.5% Fe, 0.01% Ce, 0.05% Ca, 0.05% Mg, with Ni as base), owing to their high strength and corrosion resistance, are highly promising cladding metals for the production of chemical-industry apparatus, since they lead to savings of scarce metals (Ni, Mo, W, Co) and the bimetal sheets thus produced are lighter than solid metal sheets and their rolling requires less pressure and a lower power consumption. Since these alloys are relatively undeformable, the exact mean unit pressures of metal on the rolls must be known in order

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ACC NR: AT6016761

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to determine the optimal rolling regimes. Accordingly, the deformation resistance of these alloys was experimentally determined with the aid of a device ("plastometer," constructed at the South Ural Machine Building Plant) for the plastic deformation of metal at temperatures, rates and degrees of deformation corresponding to real rolling conditions, with oscillographic tracing of the deformation stress, absolute deformation of the specimen, and duration of the deformation process. On this basis it was established that EP375 and EP495 alloys display high deformation resistance over the range of the temperatures of hot deformation. Thus, the deformation resistance of EP495 alloy is twice as high as that of Kh18N9T alloy and four times as high as that of 45 steel. The deformation resistance of EP495 alloy is 5-7% higher than that of EP375 alloy. At temperatures below 1000°C the deformation resistance and tensile strength of these alloys markedly increase, which apparently is due to their structural transformations. Therefore, the temperature at the end of rolling should not be lower than 950-1000°C. The increase in deformation rate to 10 from 0.82 sec^{-1} in sheet mills within the 900-1200°C temperature range causes a 25-30% increase in the deformation resistance of these alloys. Orig. art. has: 3 figures, 1 table, 8 formulas.

SUB CODE: 13, 11, 07/ SUBM DATE: none/ ORIG REF: 002/

Joining of Dissimilar Metals

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30(1)

SOV/10-59-4-6/29

AUTHOR: Tikhonov, A.V.

TITLE: **Solving the Complex Problem of Preventing Agricultural Erosion on the Volga Heights**

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geograficheskaya, 1959, Nr 4, pp 55-66 (USSR)

ABSTRACT: The article deals with soil preservation on the Volga Heights. The area subject to erosion stretches along the right bank of the Volga river from Gor'kiy to Stalingrad, with the districts of Krasnoarmeysk and Zolotoye showing the most advanced stage of soil erosion. The ravines occupy 3-9 % of arable lands in the northern part of this area, whereas in its southern part they constitute as much as 4-13 %. The Erozionnyy otryad Instituta geografii AN SSSR (Erosion Team of the Institute of Geography AS USSR) established that the ravines in that area grow in their upper parts

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Solving the Complex Problem of Preventing Agricultural Erosion on the Volga Heights

at the rate of 3-4 m per year. This rate can come to as much as 8-10 m during a year with extremely heavy showers. The soil erosion results in a sharp drop in nearly all crops (10-50 % and more). Fighting the soil erosion calls for the replacement of heavy S-80-type tractors (longitudinal ploughing) with medium and light duty ones able to perform transversal ploughing. The lately disturbed ratio between the arable lands, pastures, and forests must be restored by reducing the arable lands in favor of pastures and forests. Crop rotation systems favoring ploughing plus fallow must also be changed for the benefit of those favoring cultivation of grass crops. The cultivation of both orchards and vineyards is also important. By 1960 the Saratovskaya oblast' plans planting 10.7 thousand hectares of orchards and 1.9 thousand hectares of vineyards in its 8 districts,

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On the Complex Problem of Preventing Agricultural Erosion on the Volga Heights

located mostly on the right bank of the Volga river. By 1965, the combined orchard and vineyard area is scheduled to reach 25-30 thousand hectares. The article mentions the Novosil'skaya ovrazhnaya stantsiya (Novosil'skaya Experimental Station for Ravines) and the names of the following Soviet authors: D.L. Armand, M.M. Afanas'yeva, A.S. Koznenko, M.G. Glovatinskiy, I.S. Sidorov, S.I. Sil'vestrov, S.S. Sobolev, I.D. Braude, N.I. Sus, and A.V. Tikhonov, There is 1 photograph, 2 map sketches, 1 table, and 15 Soviet references.

ASSOCIATION: Institut geografii AN SSSR (Institute of Geography AS USSR)

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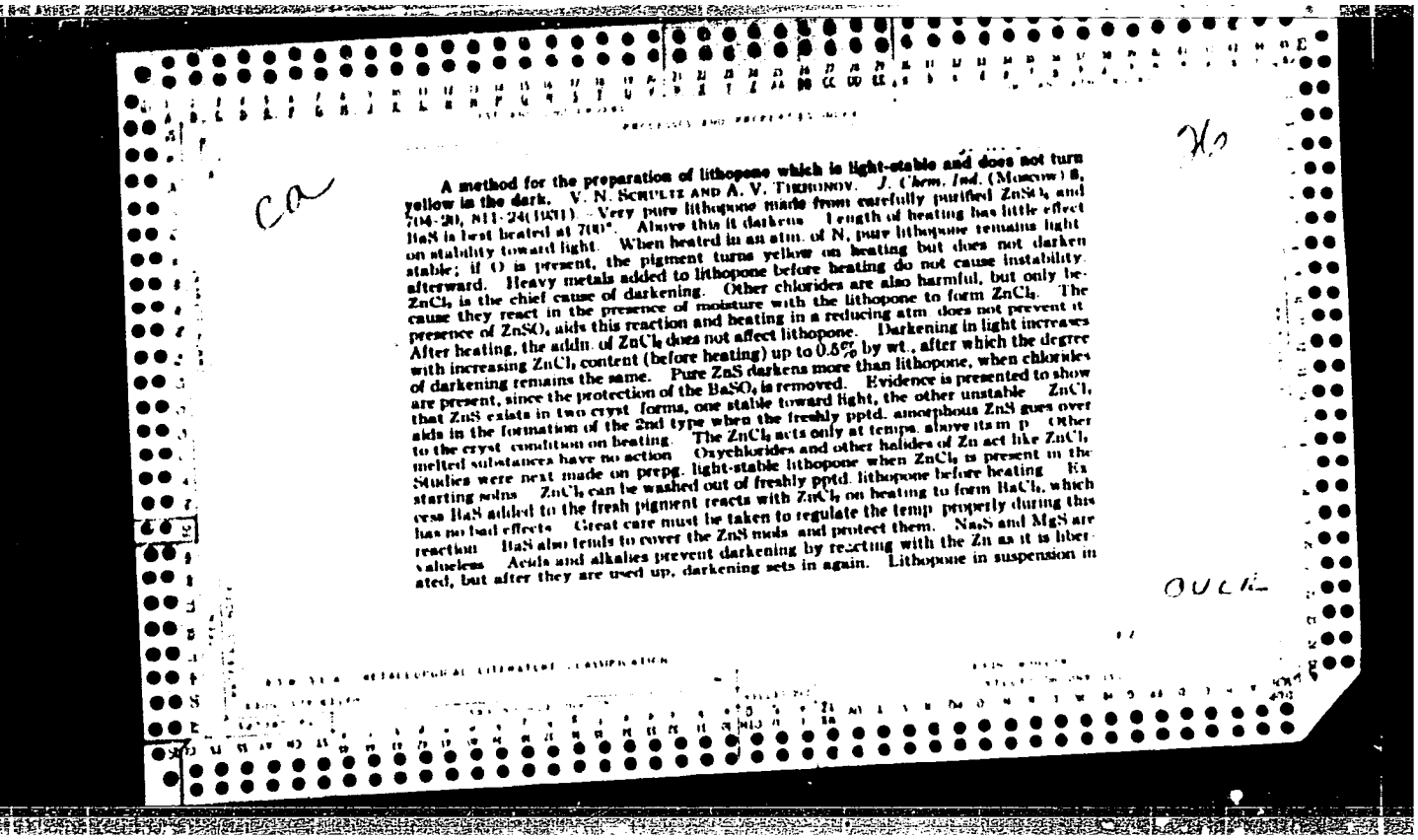

A method for the preparation of lithopone which is light-stable and does not turn yellow in the dark. V. N. SCHULTZ AND A. V. TIKHONOV. *J. Chem. Ind.* (Moscow) 8, 704-20, 811-24(1931). Very pure lithopone made from carefully purified $ZnSO_4$ and BaS is first heated at 700°. Above this it darkens. Length of heating has little effect on stability toward light. When heated in an atm. of N, pure lithopone remains light stable; if O is present, the pigment turns yellow on heating but does not darken afterward. Heavy metals added to lithopone before heating do not cause instability. $ZnCl_2$ is the chief cause of darkening. Other chlorides are also harmful, but only because they react in the presence of moisture with the lithopone to form $ZnCl_2$. The presence of $ZnSO_4$ aids this reaction and heating in a reducing atm. does not prevent it. After heating, the addn. of $ZnCl_2$ does not affect lithopone. Darkening in light increases with increasing $ZnCl_2$ content (before heating) up to 0.5% by wt., after which the degree of darkening remains the same. Pure ZnS darkens more than lithopone, when chlorides are present, since the protection of the $BaSO_4$ is removed. Evidence is presented to show that ZnS exists in two cryst. forms, one stable toward light, the other unstable. $ZnCl_2$ aids in the formation of the 2nd type when the freshly pptd. amorphous ZnS goes over to the cryst. condition on heating. The $ZnCl_2$ acts only at temps. above its m. p. Other melted substances have no action. Oxychlorides and other halides of Zn act like $ZnCl_2$. Studies were next made on prepg. light-stable lithopone. When $ZnCl_2$ is present in the starting solns. $ZnCl_2$ can be washed out of freshly pptd. lithopone before heating. Excess BaS added to the fresh pigment reacts with $ZnCl_2$ on heating to form $BaCl_2$, which has no bad effects. Great care must be taken to regulate the temp. properly during this reaction. BaS also tends to cover the ZnS nuds. and protect them. Na_2S and MgS are valueless. Acids and alkalies prevent darkening by reacting with the Zn as it is liberated, but after they are used up, darkening sets in again. Lithopone in suspension in

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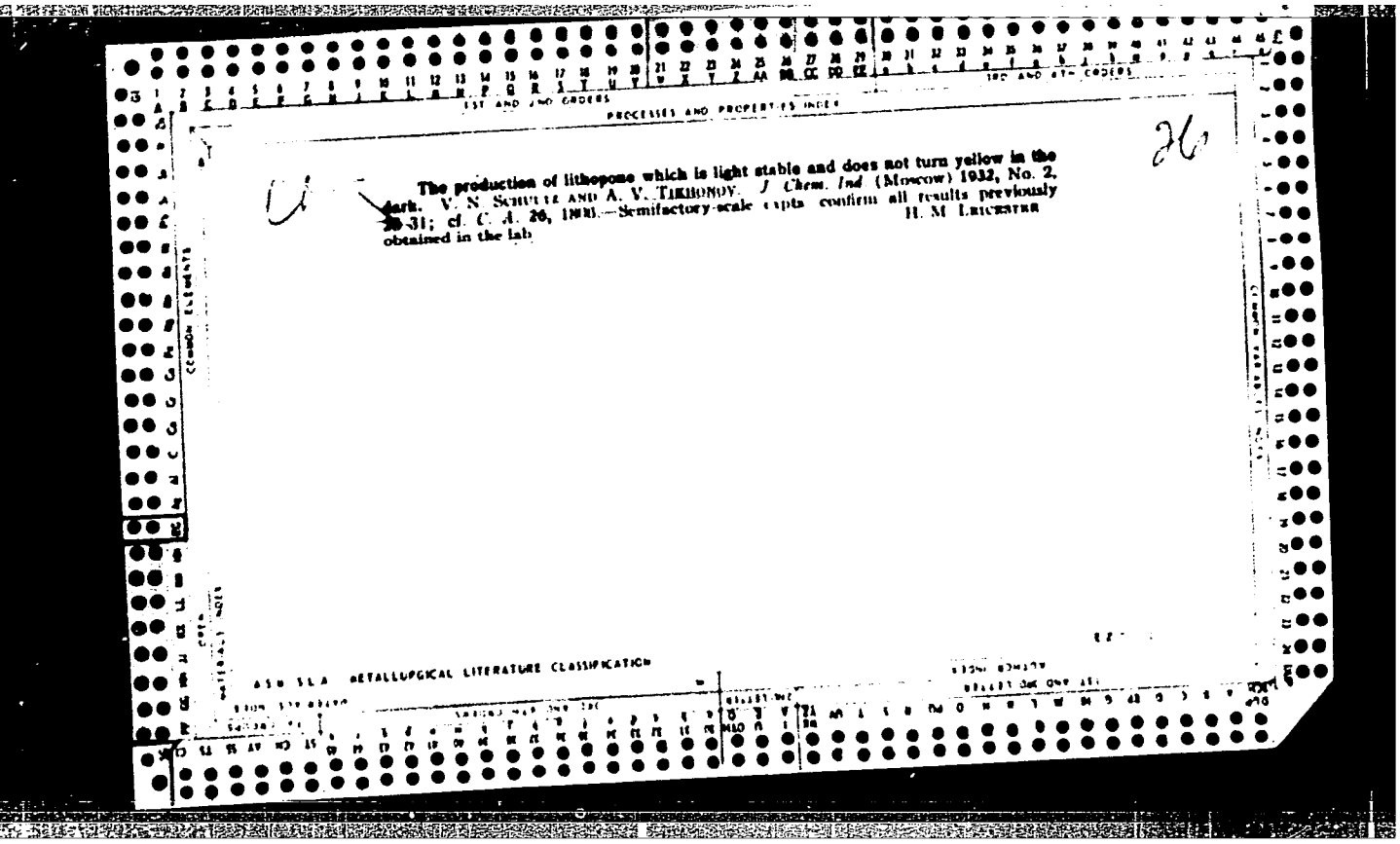

PROCESSES AND PROPERTIES INDEX

The production of lithopone which is light stable and does not turn yellow in the dark. V. N. SCHULZ AND A. V. TIKHONOV. *J Chem. Ind* (Moscow) 1932, No. 2, 30-31; cf. C. A. 26, 1881.—Semifactory-scale expts confirm all results previously obtained in the lab. H. M. LIEBHAFSKY

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

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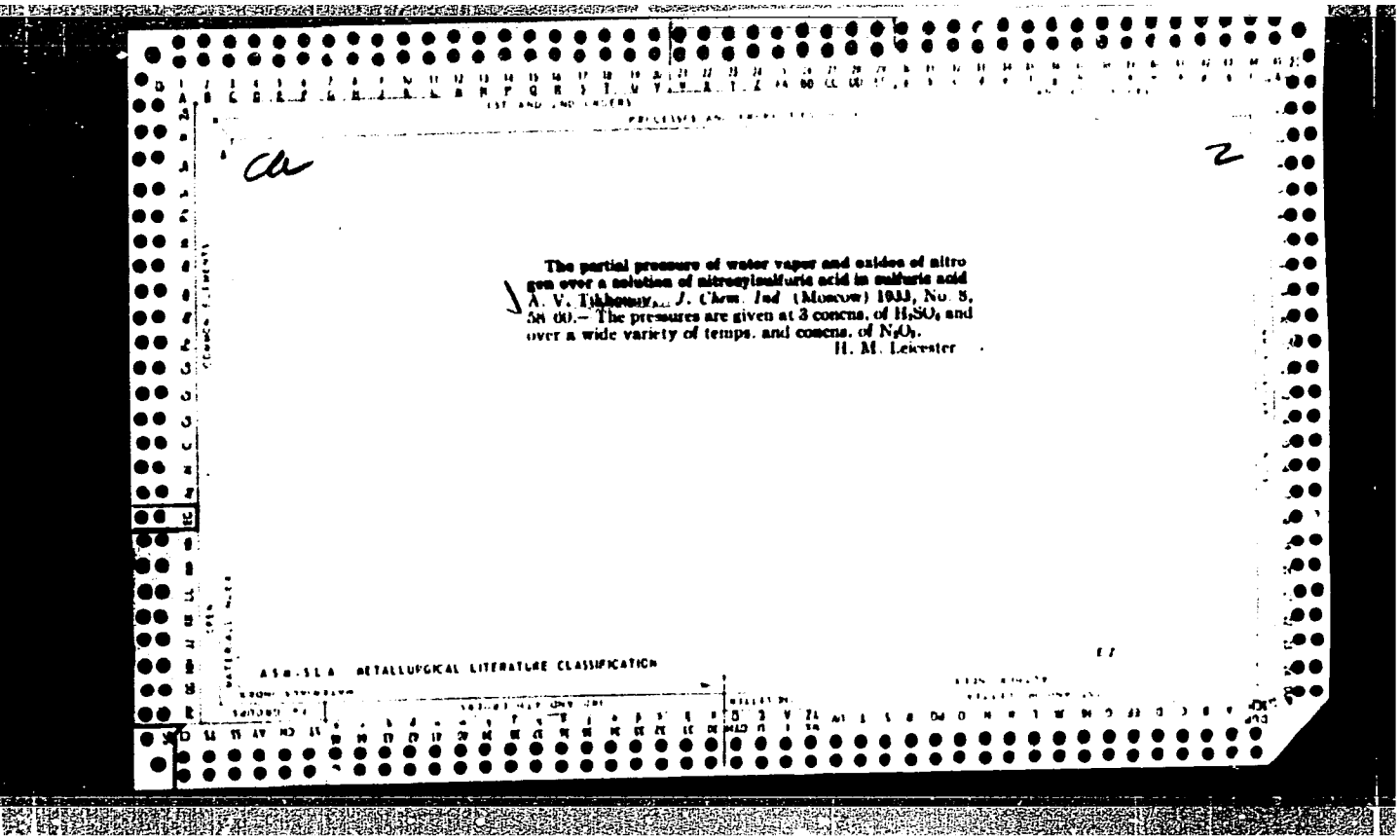

The partial pressure of water vapor and oxides of nitrogen over a solution of nitrosylsulfuric acid in sulfuric acid A. V. Tikhonov, *J. Chem. Ind.* (Moscow) 1933, No. 8, 58-60.— The pressures are given at 3 concns. of H_2SO_4 and over a wide variety of temps. and concns. of N_2O_3.

H. M. Leicester

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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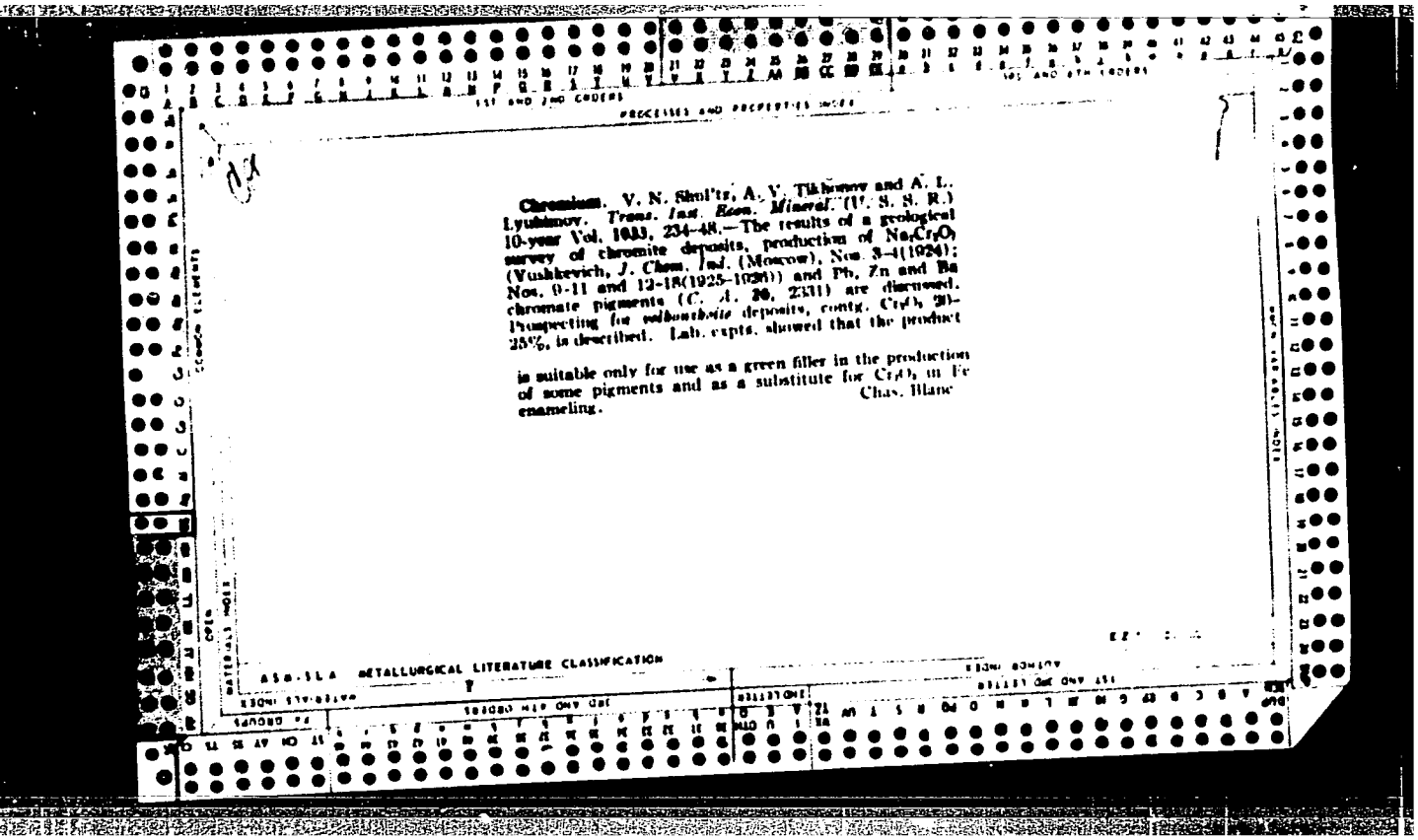

Chromium. V. N. Shul'ts, A. V. Tikhonov and A. L. Lyubimov. *Trans. Inst. Econ. Mineral.* (U. S. S. R.) 10-year Vol. 1933, 234–48.—The results of a geological survey of chromite deposits, production of $Na_2Cr_2O_7$ (Vushkevich, *J. Chem. Ind.* (Moscow), Nos. 3–4(1924); Nos. 9–11 and 12–18(1925–1930)) and Pb, Zn and Ba chromate pigments (*C. A.* **30**, 2331) are discussed. Prospecting for *vokhonskite* deposits, contg. Cr_2O_3 20–25%, is described. Lab. expts. showed that the product is suitable only for use as a green filler in the production of some pigments and as a substitute for Cr_2O_3 in Fe enameling.

Chas. Blanc

A56-11A METALLURGICAL LITERATURE CLASSIFICATION

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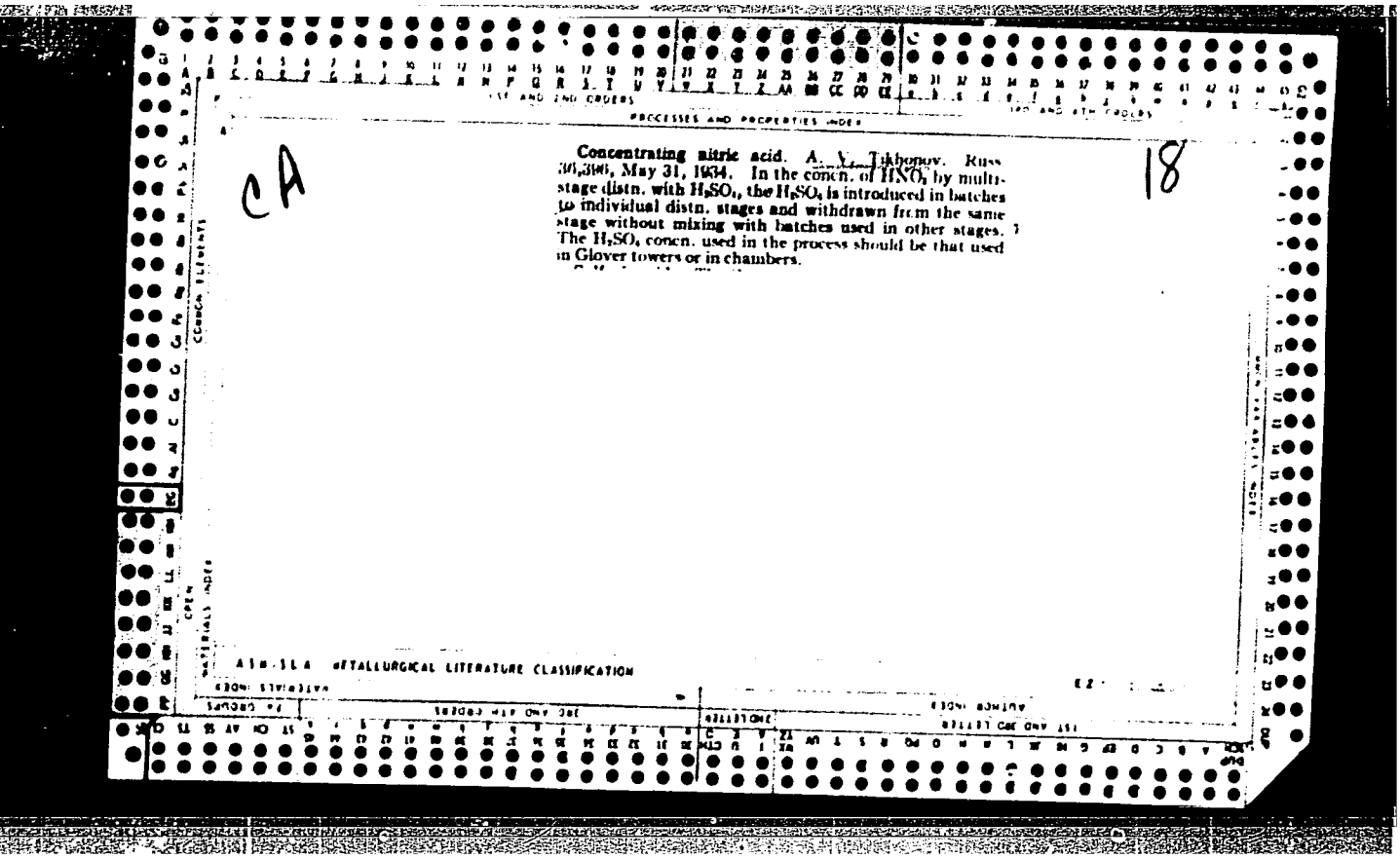

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Concentrating nitric acid. A. V. Jakhontov. Russ. 36,396, May 31, 1934. In the concn. of HNO_3 by multi-stage distn. with H_2SO_4, the H_2SO_4 is introduced in batches to individual distn. stages and withdrawn from the same stage without mixing with batches used in other stages. The H_2SO_4 concn. used in the process should be that used in Glover towers or in chambers.

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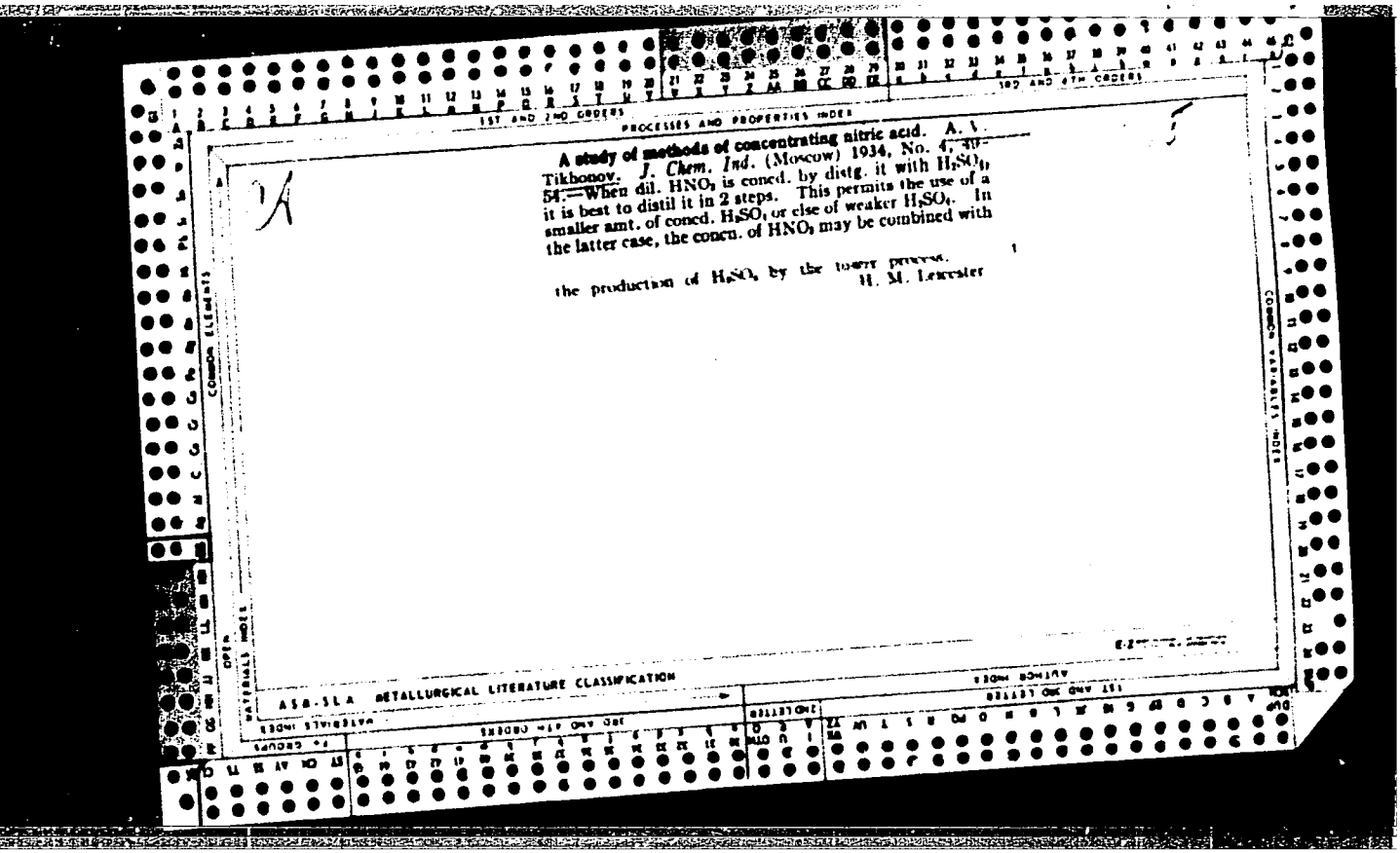

PROCESSES AND PROPERTIES INDEX

A study of methods of concentrating nitric acid. A. V. Tikhonov. *J. Chem. Ind.* (Moscow) 1934, No. 4, 49–54.—When dil. HNO_3 is concd. by distg. it with H_2SO_4 it is best to distil it in 2 steps. This permits the use of a smaller amt. of concd. H_2SO_4 or else of weaker H_2SO_4. In the latter case, the concn. of HNO_3 may be combined with the production of H_2SO_4 by the tower process.
H. M. Leicester

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PROCESSES AND PROPERTIES INDEX

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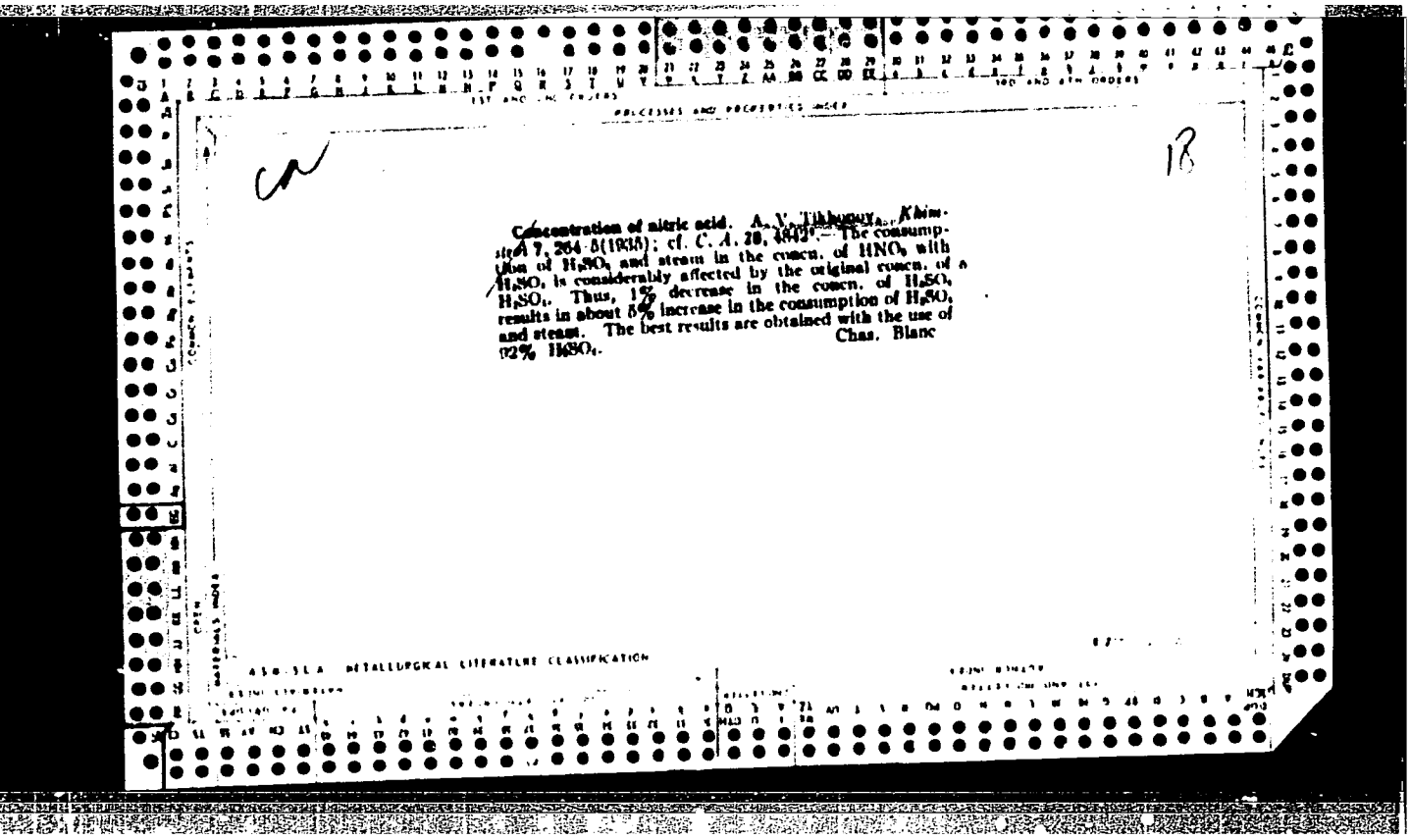

Concentration of nitric acid. A. V. Tikhonov. *Khimstroi* 7, 264-5(1935); cf. *C. A.* 28, 4842[9]. — The consumption of H_2SO_4 and steam in the concn. of HNO_3 with H_2SO_4 is considerably affected by the original concn. of H_2SO_4. Thus, 1% decrease in the concn. of H_2SO_4 results in about 5% increase in the consumption of H_2SO_4 and steam. The best results are obtained with the use of 92% H_2SO_4. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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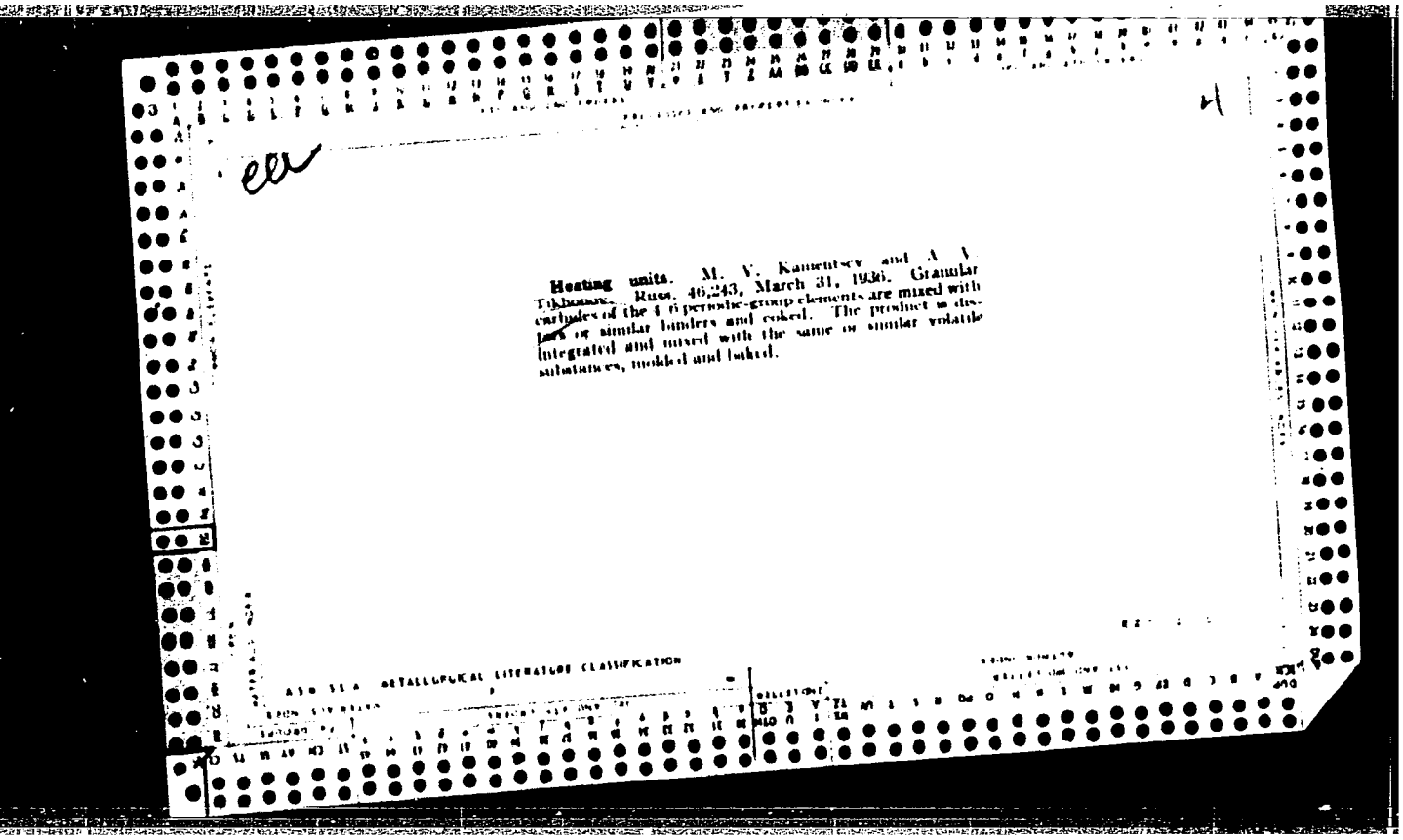

Heating units. M. V. Kamenitsev and A. V. Tikhonov. Russ. 46,243, March 31, 1936. Granular carbides of the 4–6 periodic-group elements are mixed with fats or similar binders and coked. The product is disintegrated and mixed with the same or similar volatile substances, molded and baked.

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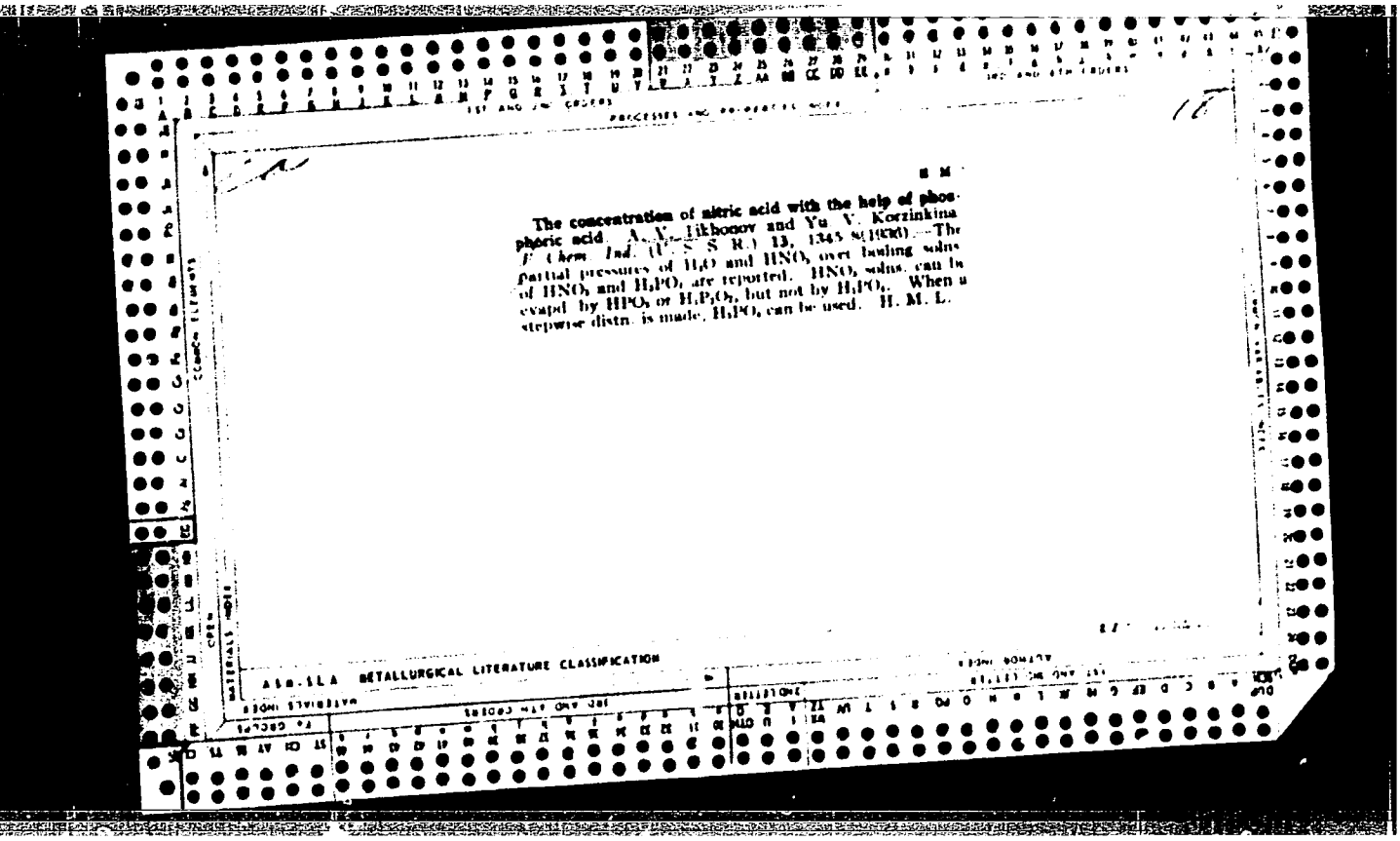

The concentration of nitric acid with the help of phosphoric acid. A. V. Likhoosov and Yu. V. Korzinkina. *Zh. Prikl. Khim.* (U. S. S. R.) 13, 1345-8(1940).—The partial pressures of H_2O and HNO_3 over boiling solns. of HNO_3 and H_3PO_4 are reported. HNO_3 solns. can be evapd. by HPO_3 or $H_4P_2O_7$, but not by H_3PO_4. When a stepwise distn. is made, H_3PO_4 can be used. H. M. L.

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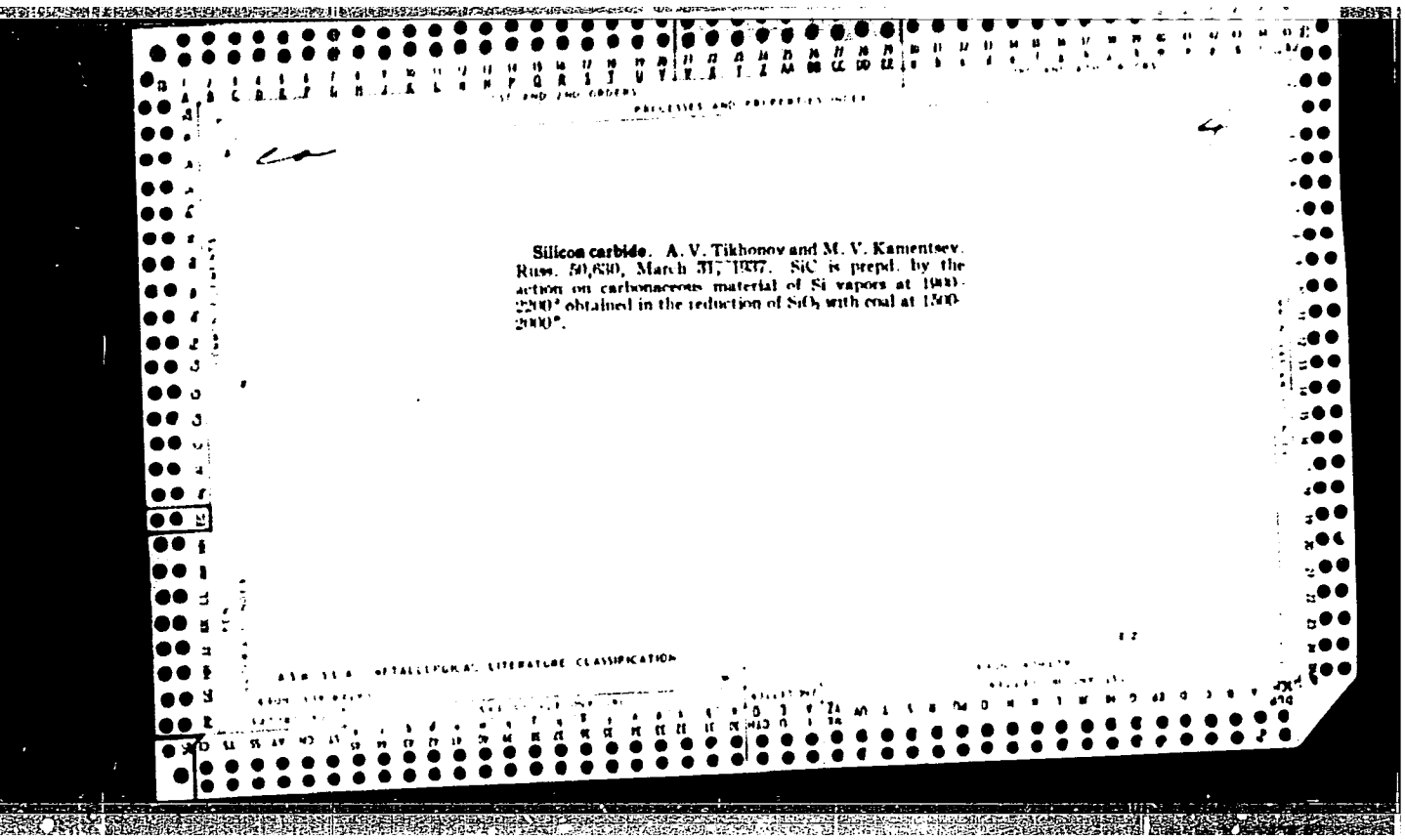

Silicon carbide. A. V. Tikhonov and M. V. Kamentsev. Russ. 50,630, March 31, 1937. SiC is prepd. by the action on carbonaceous material of Si vapors at 1900-2300° obtained in the reduction of SiO_2 with coal at 1500-2000°.

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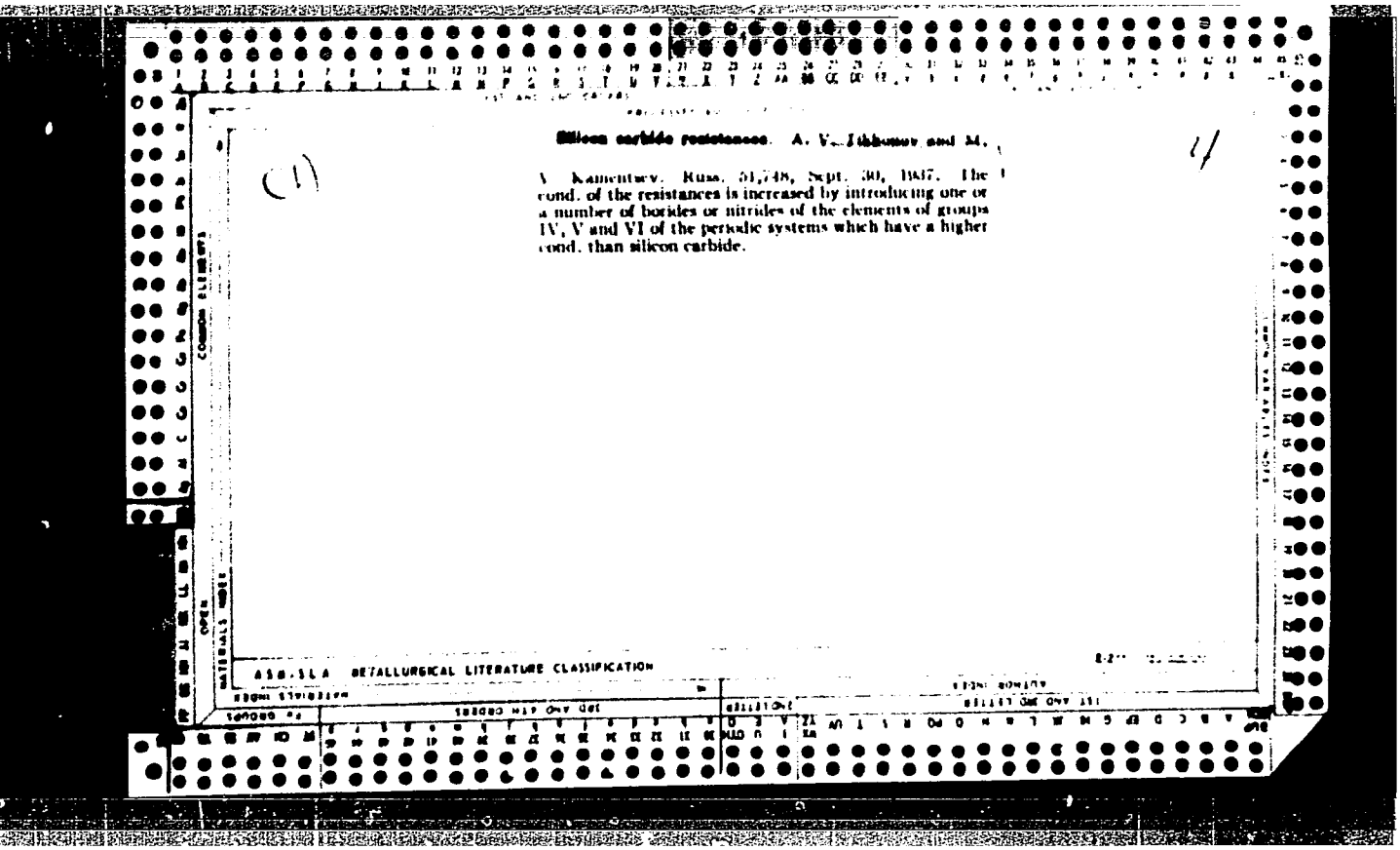

Silicon carbide resistances. A. V. Ikhomov and M. V. Kamentsev. Russ. 51,748, Sept. 30, 1937. The cond. of the resistances is increased by introducing one or a number of borides or nitrides of the elements of groups IV, V and VI of the periodic systems which have a higher cond. than silicon carbide.

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A58.5LA METALLURGICAL LITERATURE CLASSIFICATION

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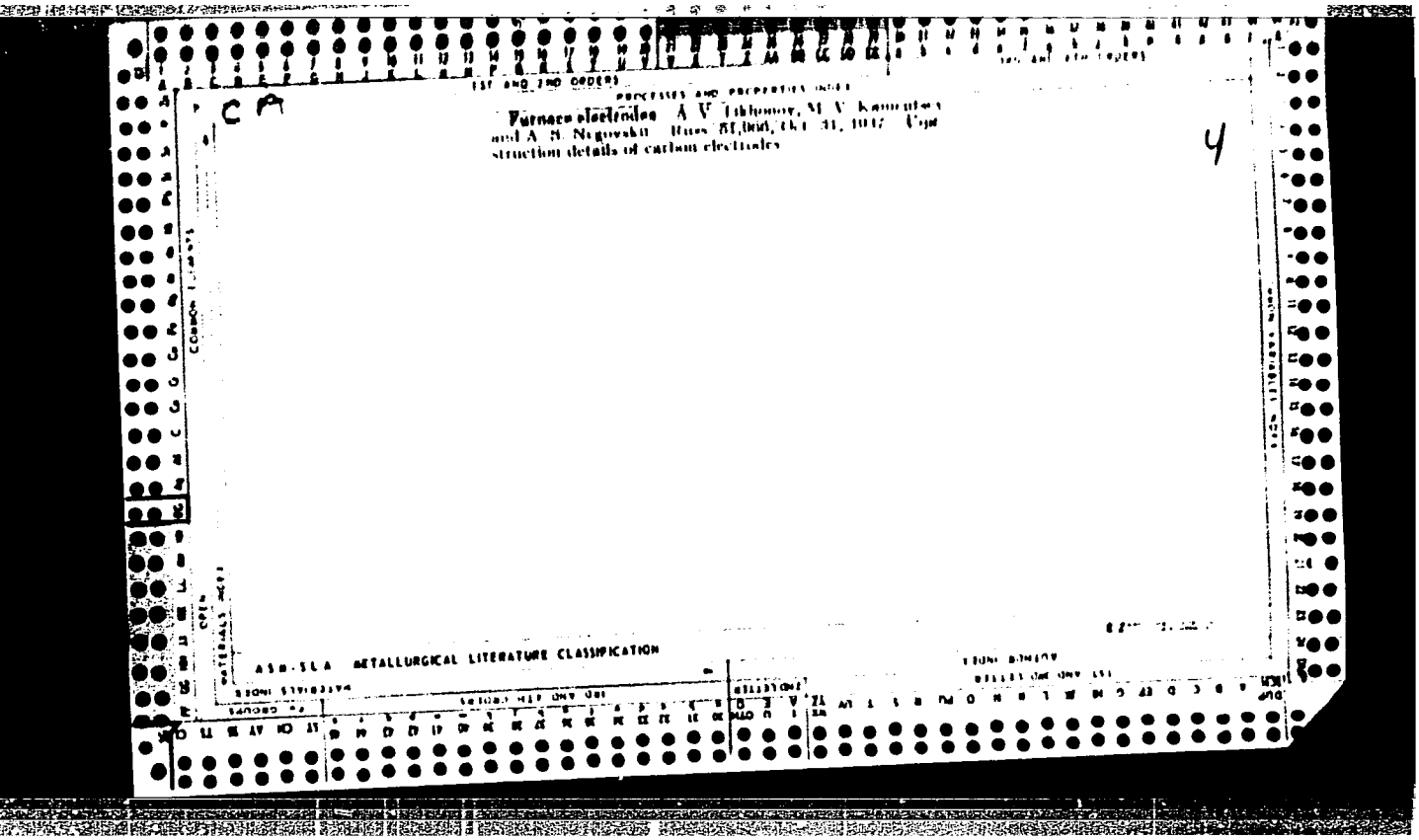

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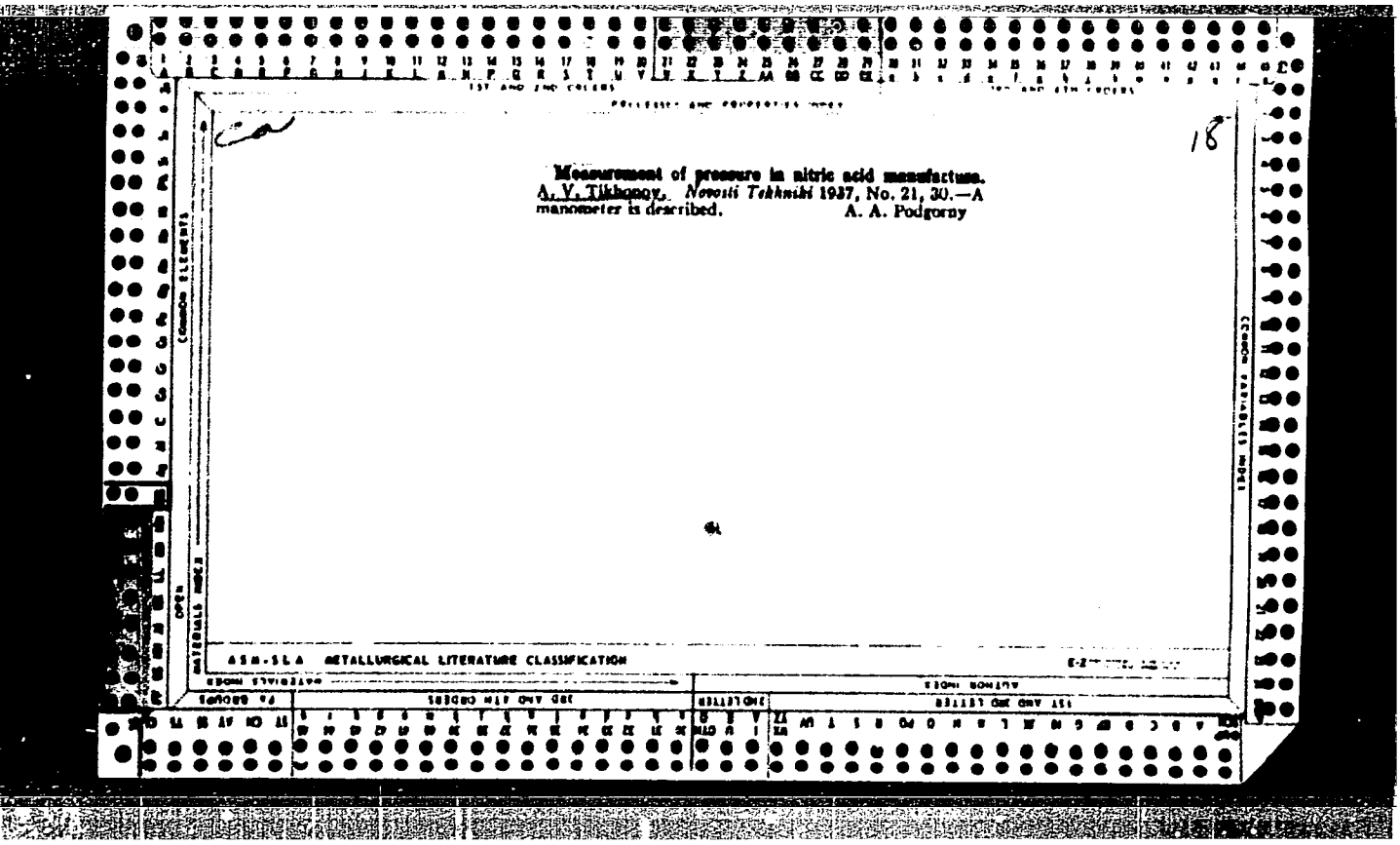

Measurement of pressure in nitric acid manufacture.
A. V. Tikhonov. *Novosti Tekhniki* 1937, No. 21, 30.—A manometer is described. A. A. Podgorny

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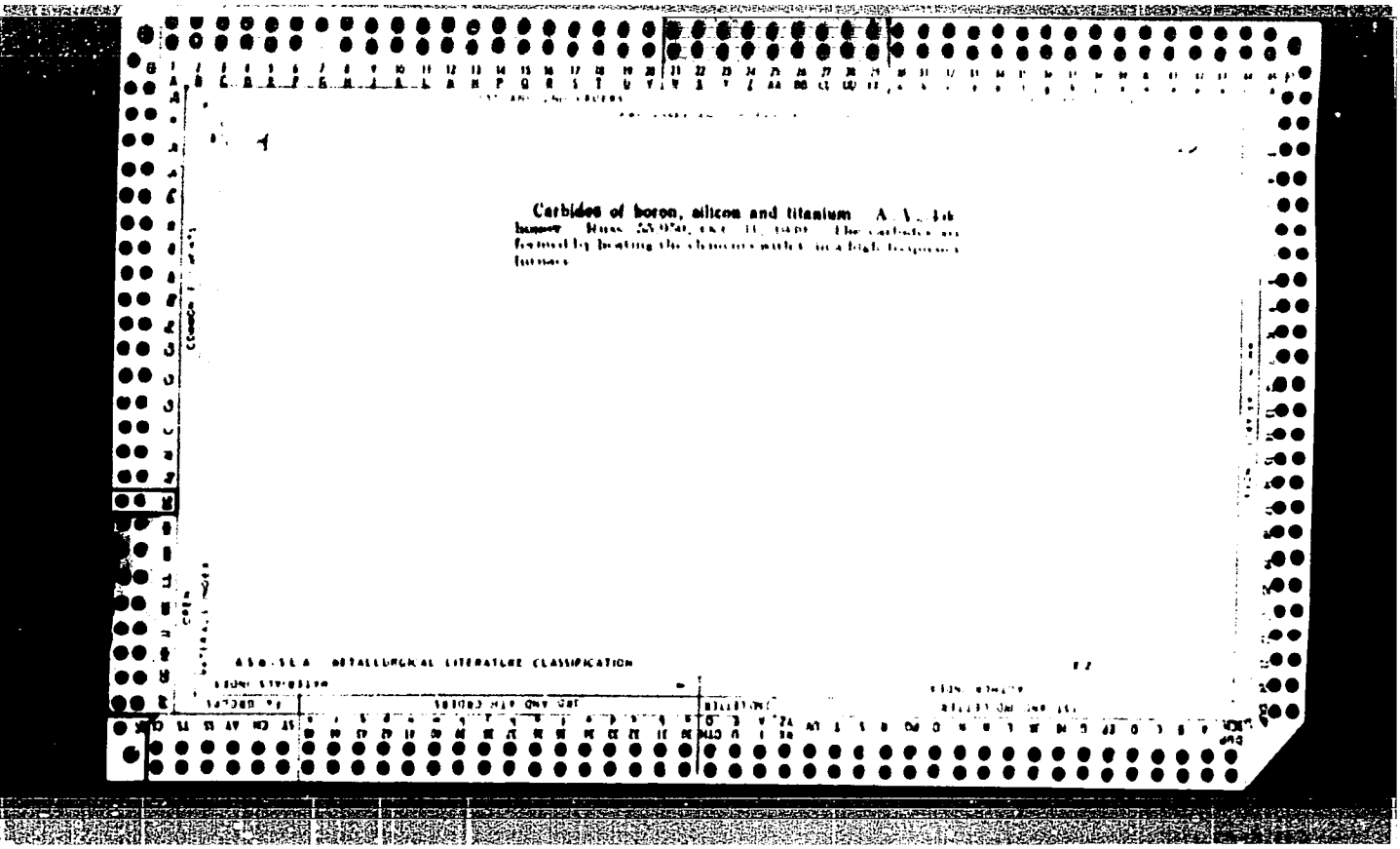

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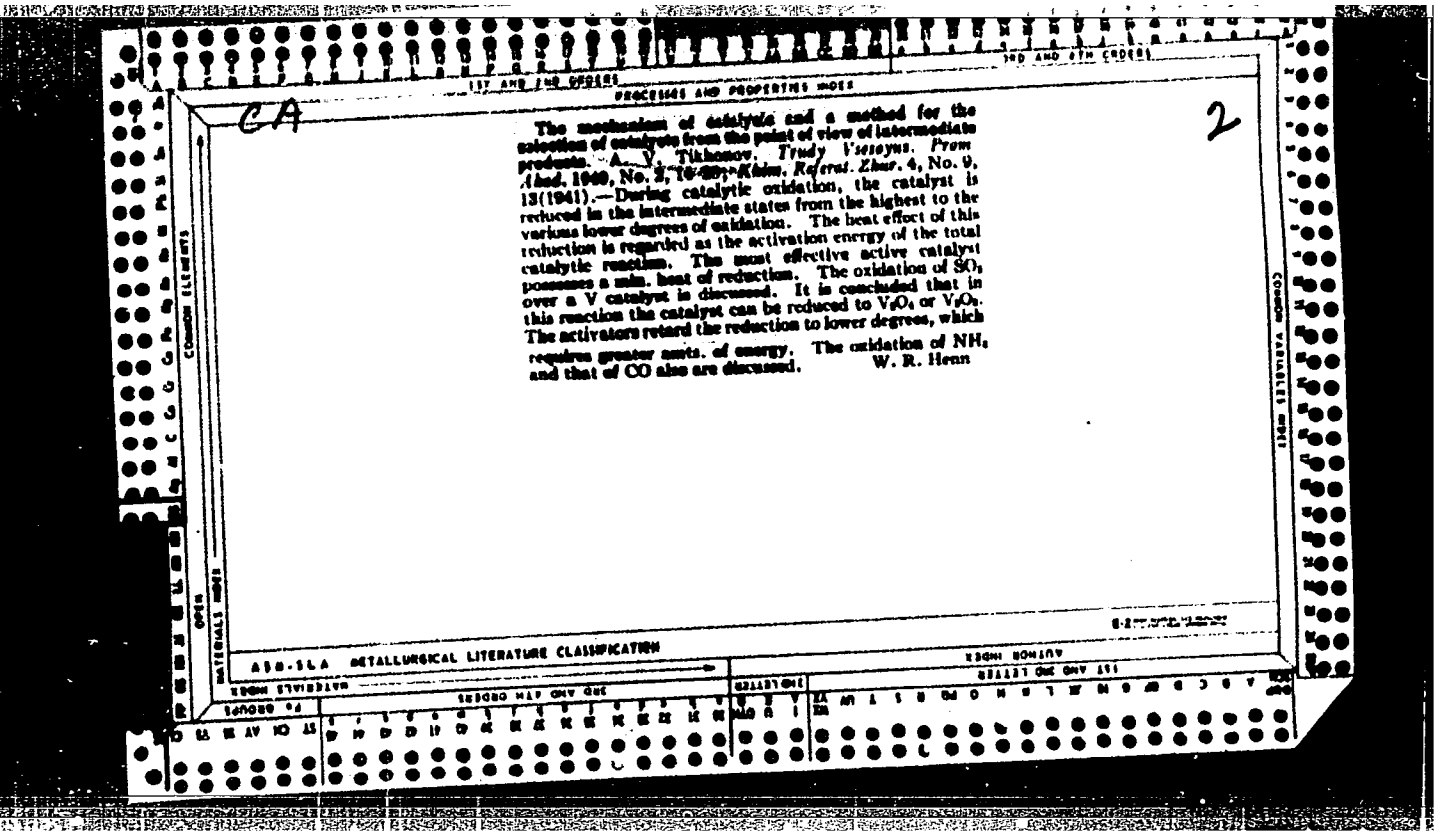

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The mechanism of catalysis and a method for the selection of catalysts from the point of view of intermediate products. A. V. Tikhonov. *Trudy Visesoyus. Prom Akad.* 1940, No. 2, 10-20; *Khim. Referat. Zhur.* 4, No. 9, 13(1941).—During catalytic oxidation, the catalyst is reduced in the intermediate states from the highest to the various lower degrees of oxidation. The heat effect of this reduction is regarded as the activation energy of the total catalytic reaction. The most effective active catalyst possesses a min. heat of reduction. The oxidation of SO_2 over a V catalyst is discussed. It is concluded that in this reaction the catalyst can be reduced to V_2O_4 or V_2O_3. The activators retard the reduction to lower degrees, which requires greater amts. of energy. The oxidation of NH_3 and that of CO also are discussed. W. R. Henn

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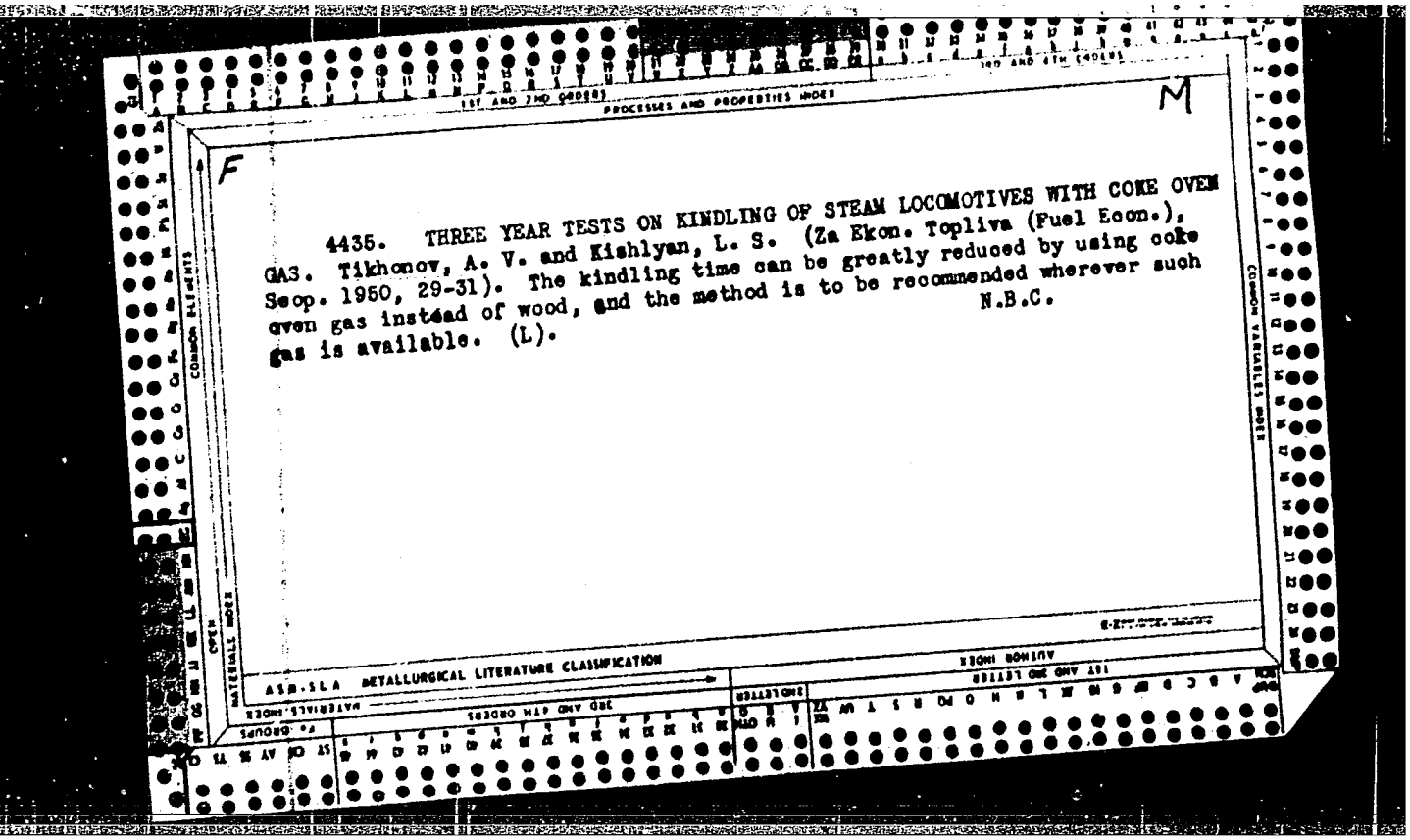

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