"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY A A

24-11-19/31

AUTHORS: Yegiazarov, I. V., Kartvelishvili, N. A., Pervozvanskiy, A.A. (Yerevan, Moscow, Leningrad)

TITLE: On the influence of an air filter rubber hose during simulating on models of an hydraulic shock. (K vliyaniyu rezinovogo shlanga s vozdukhom pri modelirovanii gidravlicheskogo udara).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.11, pp.160-166 (USSR)

ABSTRACT: In earlier work published by one of the authors (Refs.1 and 2) the theory was evolved of hydraulic simulation on models of non-steady state movements inside pressure systems. Four similarity criteria were derived for the general case and two criteria for the conditions of hydraulic impact, i.e. for the ordinary case of disregarding the friction and the ratio of the speed of flow to the speed of the shock wave as compared to unity. From the obtained relations and from the condition that all the time constants should be equal in the nature and in the model, it follows that the geometrical scale α_a = 10 to 20, i.e. the speed of the shock wave should be considerably slower in the model than in the natural object. This condition imposes the necessity of simulating

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

AUTHOR: PERVOZVANSKIY, A.A. PA - 2565

TITLE: Concerning V.L.Inosov's Paper. (Zamechaniya k stat'ye V.L. Inosova, Russian)

PERIODICAL: Avtomatika i Telemekhanika, 1957, Vol 18, Nr 3, pp 282 - 283 (U.S.S.R.)

Received: 4 / 1957 Reviewed: 6 / 1957

ABSTRACT: The conditions suggested by V.L. Inosov in Avtomatika i Telemekhanika, 1954, Vol 15, Nr 4 concerning the stability of a system of any degree of complicatedness could be widely applied for the projecting of regulations only for the reason that hitherto there exists no computation method for the static stability limit of complicated energy systems. The following three main errors in the work by Inosov are enumerated: As the first point especially the physical importance of the function I occuring in the presence of an essential asymmetry in the coefficients C is stressed, and it is shown that the theorems for the investigation of the stability of the energy systems given in the first part of the work are not applicable in the case of automatic controls existing therein.

In point 2 it is stated that Inosov identifies the conditions for the positive amount of energy dispersion on the occasion of forced oscillations with the condition for a positive

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

24-58-3-2/32

AUTHOR: Pervozvanskiy, A.A. (Leningrad)

TITLE: An Approximate Method of Studying Self-Oscillatory Systems Subject to Random Perturbations (Priblizhennyy metod issledovaniya avtokolebatel'nykh sistem pri nalichii sluchaynykh vozdeystviy)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 3, pp 14-24(USSR)

ABSTRACT: The work is an extension of Booton's and Barret's work on statistical linearization to systems which can perform stable self-oscillations (nonlinear systems). The usual equations for the linear and nonlinear links of such systems are used, employing operational methods. Various types of input noise spectra are considered (normal distribution white noise, noise with upper or lower frequency bounds). Special consideration is given to real (bounded) nonlinear elements, such as relay automatic control systems (without backlash), and blocking oscillators. The transfer coefficients of systems with certain typical nonlinearities (ideal relay, relay with an insensitive zone, ditto with backlash, bounded linear amplifiers) are tabulated in a convenient form. The lack of suitable tabulated functions in many cases is stressed. Graphs of certain particularly important functions (or very

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24-5-3-2/38

An Approximate Method of Studying Self-Oscillatory Systems Subject to Random Perturbations.

small scales) are given. The results are mainly particular instances of general solutions by Pugachev, Kazakov, and others, recently published in the Russian literature on automatic control theory. There are 6 figures, 1 "table", and 9 references, 5 of which are Soviet and 4 English.

SUBMITTED: November 20 1957

1. Oscillations--Mathematical analysis 2. Approximate computation--Applications 3. Oscillations--Theory

Card 2/2

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PREVOZVANSKIY, A.A.

Investigation of frequency-regulation dynamics by means of an electrodynamic model (EDM). Nauch.dokl.vys.shkoly; energ. no.3:193-202 '58. (MIRA 12:1)

1. Rekomendovano Institutom elektromekhaniki AN SSSR.
(Electric power distribution--Models)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

SOV/179-59-1-27/36

AUTHOR: Pervozvanskiy, A. A. (Leningrad)

TITLE: Effect of an External Varying Slow Action on Ortho-Vibrating Systems (Avtokolebatel'nyye sistemy pri nalichii medlenno menyayushchikhsya vneshnikh vozdeystviy)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 1, pp 158-161 (USSR)

ABSTRACT: A method of calculation of the dynamic properties of an artho-vibrating system being affected by an external varying slow action is described. It is assumed that the latter can be defined as a function of time. The dynamic equation of the vibrating system with one non-linear term can be expressed as Eq.(1), where Q(p), P(p) and N(p) - linear differential operators, z - regular normal process. It is also assumed that an ortho-vibration exists when z = 0 and that z(t) represents a process with the mathematical expectation equal to 0 with the probability of being variable equal to 1 (Eq.(2), where T - period of ortho-vibration). The solution of Eq.(1) can be defined as a periodic sum x, y, and of slowly varying components x_2, y_2 (Eq.(3)). Both components represent a function of time. It is further assumed

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Effect of an External Varying Slow Action on Ortho-Vibrating Systems

that Eq.(1) satisfies a condition of harmonic linearity. Then $x_1 = A \sin \omega t$ (Eq.(4) and y can be expressed as the first term of a Fourier series:

$$y = q_o(A, x_2) + q_1(A, x_2)\, x_1 \quad .$$

The periodic components can be taken as Eq.(5), or, for the slow variations, the components Eq.(6). As the amplitude A is changing slowly, its equation will take a form Eq.(7), which can be considered as a relationship of the amplitude A and a slow varying component x_2 (Eq.8). This can be expressed as Eq.(9). Then the transmission coefficient $q_o(A, x_2)$ will be expressed by x_2 only and Eq.(6) will take the form Eq.(10). In order to find a solution for Eq.(10) it is necessary to introduce $\partial q_o / \partial A \equiv 0$ at $x_2 = 0$ so that Eq.(11) can be found (A should be substituted by the amplitude

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Effect of an External Varying Slow Action on Ortho-Vibration, ... of ortho-vibration A_o). The linear statistical equation of a slowly approaching component can be based on the normal equation:

$$\phi(x_2) = \frac{1}{\sqrt{2\pi}\sigma_x} \exp\left(-\frac{x_2^2}{2\sigma_x^2}\right)$$

where σ_x - mean deviation of x_2 . Then Eqs.(12) and (13) can be expressed for the mathematical expression of $x_2 = 0$. As an example an accelerometric system is considered (Fig.1, where 1 - excitation coil, 2 - magnet, 3 - electronic commutator, 4 - switches, 5 - power source). The system is applied for measuring of acceleration of a flying object affected by the atmospheric turbulence. The dynamic properties of the system can be expressed as Eq.(14), where x - angle of inclination of the excitation coil, z - effective acceleration, T_1 - damping constant of coil, T_k - electric constant of coil, T_2^2 - inert constant of coil, k_1, k_2, k_3 -

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Effect of an External Varying Slow Action on Ortho-Vibrating Systems

- transmission ratios. The non-linear characteristic $f(x)$ of the electronic commutator is shown in Fig.2. The values of ω and A for $z = 0$ are calculated as:

$$\omega = \omega_0 = \sqrt{\frac{c}{a}} \quad , \qquad A = A_0 = \frac{4k_1}{\pi} \frac{a}{bc - ad} \quad ,$$

and the acceleration due to wind component is extrapolated as

$$z(t) = hv(t) \quad .$$

The velocity $v(t)$, found experimentally, can be considered as a random function (Ref.4). It can be defined as a correlation function $R_v(\tau)$ for $\tau \leqslant 15$ as shown in Fig.3 (1 - turbulent distortion, 2 - approximate value). The solution of Eq.(14) can be expressed as $x = x_2 + A \sin \omega t$. From Eq.(8) the formula (15) is found, from which it is evident

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that $x_2 \leqslant A$ (Eq.(16). The linear expression, Eq.(17), is based on Eq.(11). The formula for mean deviation σ_x contains a term $S_z(\omega)$ which is a spectral density of $z(t)$. The order of computation is as follows: first the Eqs.(18) and (19) are found from Eq.(15), next the value of q_o^*, based on Eq.(17), is determined. Assuming that the distribution of x_2 is normal, the calculation of $q^0(\sigma_x)$ and $J_1(\alpha)$ are derived from Eq.(13) (the value of $J_1(\alpha)$ is shown in the form of a graph in Fig.4). Thus, from Eq.(14), the formula for σ_x is obtained as follows:

$$\sigma_x^2 = \frac{1}{2\pi} \int_{-\infty}^{\infty} \frac{k_3^2\left[T_k^2\omega^2 + 1\right] S_z(\omega)d\omega}{\left[-b\omega^2 + d + k_1 q_{st}(\sigma_x)\right]^2 + \omega^2\left[-a\omega^2 + c\right]^2}$$

The mean value of amplitude and the values of $J_2(\alpha)$, $J_3(\alpha)$, $J_4(\alpha)$ (Fig.5) are found from the formula at the bottom of

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Effect of an External Varying Slow Action on Ortho-Vibrating Systems

p 161. The author tnanks I. P. Pal'tov for the description of the accelerometer and V. S. Baranova for computations. There are 5 figures and 4 Soviet references.

SUBMITTED: July 4, 1958.

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, A.A. (Leningrad)

Natural-vibration systems in the presence of slowly changing external factors. Izv.AN SSSR.Otd.tekh.nauk.Mekh. i mashinostr. no.2:158-161 Ja-F '59. (MIRA 12:5)
(Vibration)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, A.A. (Leningrad)

Effect of oscillations of interrelated angles between devices on the frequency-changing process of a complex electric power system. Izv. AN SSSR. Otd. tekh. nauk. Energ. i avtom. no.6:34-40 N-D '59. (MIRA 13:8)

(Frequency regulation) (Electric power plants)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

80946
S/024/60/000/03/008/026
E140/E463

16,9500

AUTHOR: Pervozvanskiy, A.A.

TITLE: The Application of Markov Chains to Calculate the Steady-State Error of Extremal Regulators

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, Nr 3, pp 64-72 (USSR)

ABSTRACT: The problem posed in this work is close to that of Ref 2 with new results mainly concerning the steady-state operation. The dynamic characteristics of extremal-regulation system are defined by their behaviour in the transient process (searching for the extremal) and in the steady-state (maintaining the system close to the extremal against the influences of noise and movement of the extremal position itself). The present article considers extremal regulators of the stepwise type. The executive organ of such systems carries out alternately two types of motion: test motions, to determine the partial derivative of the output variable with respect to the input (or its sign), and a corrective step on the basis of the results obtained in the test step. In such systems there are both systematic and random errors.

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S/024/60/000/03/008/028
E140/E463

The Application of Markov Chains to Calculate the Steady-State Error of Extremal Regulators

Errors due to the characteristics of the controlled object may be compensated by using a computer which compares the output signal with the input signal after passage of the latter through a computer constituting a dynamic model of the system. If the system characteristics themselves are varying this cannot be realized exactly. The errors arising from this and from noise have a random character. To simplify the analysis, a linear model is assumed in which the test and working steps displace the object to a series of discrete points at fixed distances along a single axis. The number of the points is finite due to the finite range of the executive organ. The probability of a step in either direction is independent of the previous history of the system and is defined only by the coordinates of the point characterizing the operation of the system at a given moment. The problem thus reduces to a one-dimensional random walk and may be described in terms of Markov chains. The problem is to determine the optimal

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E140/E463

The Application of Markov Chains to Calculate the Steady-State Error of Extremal Regulators

amplitude of the test steps corresponding to a given noise level. If these steps are made larger the probability of a false determination of the correct direction of the working step is reduced but, at the same time, the displacement from the extremal introduced by the test step itself increases. Two special cases are analysed: piecewise-linear characteristic and parabolic characteristic. Further, the influence of the time expended in the test steps is analysed. For this problem the test steps are assumed to constitute harmonic oscillations in the presence of white noise. With these assumptions, it is found that the probability of a correct step approaches arbitrarily close to unity as the period of test oscillation increases without limit. A more realistic model takes into account a linearly increasing systematic noise (non-stationary noise). In this case increasing the time constant of the test motion may lead to increasing deviation from the extremal. The present

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S/024/60/000/03/008/028
E140/E463

The Application of Markov Chains to Calculate the Steady-State Error of Extremal Regulators

analysis assumes a constant extremal characteristic. To analyse systems in which the extremal coordinate changes during the time of search will require the use of non-homogeneous Markov chains for which suitable mathematical apparatus does not yet exist. In an appendix, the probability of a step is calculated for two examples; the test steps are a sequence of discontinuous displacements of fixed amplitude; the test signal is harmonic. There are 4 Soviet references.

SUBMITTED: August 31, 1959

Card 4/4

4

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

85057
S/024/60/000/005/003/017
E140/E435

16.9500 (1024, 1031, 1344)

AUTHOR: Pervozvanskiy, A.A. (Leningrad)

TITLE: The Search Time in Discrete Extremum Control Systems

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, No.5, pp.87-95

TEXT: The search time is the time required to pass from some initial position to a required region close to the extremum. It is a random quantity dependent on the values of the coordinates involved. The present article considers a system with constant step for search over a piecewise-linear characteristic and is a further development of work by A.A.Fel'dbaum (Ref.1). It is assumed that the error values are uncorrelated random quantities with mathematical expectation equal to zero. This implies that the correlation time of random noise acting during the measurements is less than the duration of the measurement interval and that the basic time constant of the control process is much smaller than the interval between working steps so that the dynamic error may be neglected. It is pointed out that S.Serdengecti (Ref.2) has successfully solved the probability estimate of error taking into account object inertia. The basic method for the investigation is

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E140/E435

The Search Time in Discrete Extremum Control Systems

that of Fuller on random walk. Furthermore, the problem is considered of searching with a step length proportional to the derivative - the gradient method. It is found that the estimate of dynamic properties of such systems only on the basis of the mathematical expectation of the search time is not always possible since the latter does not characterize the noise immunity of the system. Finally, the case is considered of a very small working step. Comparison of results shows that the mathematical expectation of search time for systems with a constant step is more sensitive to variation of the noise level than that calculated for a system with proportional search. A system was constructed on an analogue computer using a low-frequency noise generator and satisfactory agreement with calculations was found. There are 1 figure, 1 table and 7 Soviet references (1 a translation from English).

SUBMITTED: April 28, 1960

Card 2/2

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, A.A. (Leningrad)

Continuous systems of extremum control with random interferences [with summary in English]. Avtom. i telem. 21 no.7:958-963 Jl'60. (MIRA 13:10)
(Automatic control)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PAL'MOV, V.A.; PERVOZVANSKIY, A.A.

Computing characteristics of the matrix methods used for calculating vibrations. Trudy LPI no.210:199-212 '60. (MIRA 13:11)
(Vibration) (Matrix mechanics)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

82935
S/103/60/021/009/003/013
B012/B063

16.9500

AUTHORS: Baranova, V. S., Pervozvanskiy, A. A. (Leningrad)

TITLE: Parametric Phenomena in the Simplest Continuous Extremal Control System

PERIODICAL: Avtomatika i telemekhanika, 1960, Vol. 21, No. 9, pp. 1250 - 1253

TEXT: The present paper deals with the simplest inertialess system with a high-frequency noise at the input of the object. It is a continuous control system which seeks and maintains the extreme value of the characteristic of the inertialess object in the presence of intense random noise. This noise is in the frequency band containing the frequency of the trial periodic action. The accompanying figure shows the block diagram of the system. The parabola $y = -x^2$ is assumed to be the characteristic of the object. Next, equations are written down for the object, the demodulator, and the switching member. It is shown that the inclusion of a parameter in the equation that describes the coordinate x of the switching member is required by the high-frequency

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Parametric Phenomena in the Simplest Continuous Extremal Control System

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B012/B063

noise at the input of the object. This parameter is variable with time. The method described in the paper of Ref. 3 is also used here, but the error is corrected. The conditions for the maintenance of stability are derived. The error was mentioned by V. I. Osorin in the periodical "Mekhanika", 1959, No. 10. The results obtained in the present work were experimentally verified by Ye. P. Gil'bo. Though the problem to be solved was very simple, it was possible to obtain a certain physical result that is valid for all continuous extremal systems based on the method of gradients. The result is the following: A consideration of random noise makes it necessary to treat the problem of stability of such systems more closely than has been done, e.g., in the paper of Ref. 4. Finally, it is noted that if there is a high noise level at the input of the object, control of the "tracking" of the extreme value may become impossible due to the parametric noise. There are 1 figure and 4 Soviet references.

SUBMITTED: March 14, 1960

Card 2/2

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PERVOZVANSKIY, A.A.

Natural vibration systems in an automatic-control unit in the presence of random actuations. Trudy LPI no.210:282-289 '60.
(MIRA 13:11)

(Automatic control) (Vibration)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

16.8000 (1031, 1132, 1344)

S/044/61/000/004/030/033
C111/C222

AUTHOR: Pervozvanskiy, A.A.

TITLE: The work of the simplest continuous system of the extremal control in presence of random disturbances

PERIODICAL: Referativnyy zhurnal. Matematika, no. 4, '96', abstract 4 V 206. ("Nauchno-tekhn. inform. by[illegible] Leningr. politekhn. in-t", 1959, no. 8, 87-92)

TEXT: By a limiting process the corresponding discrete case the author investigates the system of extremal control which is described by the equation

$$T \frac{dx}{dt} = \text{sign} \left[f'(x) + \frac{dz}{dx} \right]$$

where z(t) is a stationary random process. The author obtains expressions for the mean time until the first arrival from the origin x_0 into the extremum as well as for the exactness of the presentation of the extremal value of the initial coordinate of the object in the stationary process.

[Abstracter's note : Complete translation.]

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

KATKOVNIK, V.Ya (Leningrad); PERVOZVANSKIY, A.A. (Leningrad)

Self-oscillatory operation of a relay system with disturbance by random signals. Avtom. i telem. 22 no.5:599-604 My '61.
(MIRA 14:6)

(Automatic control)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

KATKOVNIK, V.Ya. (Leningrad); PERVOZVANSKIY, A.A. (Leningrad)

Dynamics of a relay-type self-oscillatory optimalizing control system.
Avtom. i telem. 22 no.12:1576-1584 D '61. (MIRA 14:12)
(Automatic control)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

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16.4400

S/179/62/000/005/007/012
E031/E135

AUTHORS: Kolovskiy, M.Z., and Pervozvanskiy, A.A. (Leningrad)

TITLE: On linearisation by the method of distribution functions for problems in the theory of non-linear oscillations

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no.5, 1962, 118-128

TEXT: The problem is to determine approximately the polyharmonic solutions of non-linear equations of the type

$$Q(p)y + R(p)x = S(p)z, \qquad y = f(x) \qquad \left(p \equiv \frac{d}{dt}\right) \tag{1.1}$$

where: $Q(p)$, $R(p)$ and $S(p)$ are polynomials in the operator p; $f(x)$ is a non-linear function; z is a given function of the time (harmonic or polyharmonic). The method of harmonic linearisation, in which

$$x = a \sin t \tag{1.2}$$

and

$$f(x) \approx qx \tag{1.3}$$

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and the method of linearisation proposed by Ya.G. Panovko, can both be regarded as particular cases of a more general method of linearisation, differing in their choice of distribution function. A periodic or almost periodic solution is obtained from the linearised equation resulting from the substitution in (1.1) of $qx_o + r$ (x_o is the difference between x and its mean value); q and r are obtained from the conditions that

$$J = \int_L \left[f(x) - qx_o - r \right]^2 w(x, \alpha_1, \ldots, \alpha_e)\, dx \qquad (2.4)$$

has a minimum ($w(x,\alpha_1,\ldots,\alpha_e)$ is the distribution function). The required solution can always be written in the form

$$x = a_o + \sum_{i=1}^{n} a_i \sin(\omega_i t + \theta_i) \qquad (2.7)$$

where a_o, a_i, ω_i, θ_i are functions of the α_k. The α_k are

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

conveniently taken as the moments of the distribution function and only the first two are usually needed - $\alpha_1 = m_x$ (the mean), and $\alpha_2 = \sigma_x^2 + m_x^2$ (where σ_x^2 is defined by

$$\sigma_x^2 = \int_L x_o^2 w(x, \alpha_1, \ldots, \alpha_e)\, dx. \qquad (2.5)$$

If $m_x = 0$, then $r = 0$ and $q = q(\sigma_x)$ and the equation

$$\sigma_x^2 = \frac{1}{2}\left[a_1^2(\sigma_x) + \ldots + a_n^2(\sigma_x)\right] \qquad (2.12)$$

can be used to determine σ_x. Knowing σ_x, the coefficients a_i can be found.
In the final section, using the method of Van der Pohl, the stability of polyharmonic solutions found by the above method is considered from the equation

$$\ddot{x} + b\dot{x} + f(x) = A_1 \sin(\omega_1 t + \varphi_1) + \ldots + A_n \sin(\omega_n t + \varphi_n) \qquad (3.1)$$

There are 6 figures.
Card 3/3 SUBMITTED: June 1, 1962

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PHASE I BOOK EXPLOITATION SOV/6358

Pervozvanskiy, Anatoliy Arkad'yevich

Sluchaynyye protsessy v nelineynykh avtomaticheskikh sistemakh (Random Processes in Nonlinear Automatic Systems) Moscow, Fizmatgiz, 1962. 351 p. 12,000 copies printed.

Ed.: O. K. Sobolev; Tech. Ed.: I. Sh. Aksel'rod.

PURPOSE: This book is intended both for engineers concerned with the design of automatic systems and for students, aspirants, and scientific personnel concerned with the theory of automatic control and regulation.

COVERAGE: The book describes methods for statistical analysis and synthesis of nonlinear automatic systems, with emphasis on feedback systems. Efficient methods of calculating stationary and nonstationary conditions, and results of the statistical investigation of adaptive systems, are presented. The author expresses his gratitude to Ye. P. Popov and A. A. Fel'dbaum. There are 118 references, 98 Soviet (including 10 translations), and 20 English.

Card 1/6

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, A. A.

Dissertation defended at the Institute of Automation and Telemechanics for the academic degree of Doctor of Technical Sciences:

"Random Processes in Nonlinear Automatic Systems."

Vestnik Akad Nauk, No. 4, 1963, pp. 119-145

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

S/179/63/000/001/028/031
E140/E135

AUTHORS: Kolovskiy, M.Z., and Pervozvanskiy, A.A. (Leningrad)

TITLE: On the stability of solutions obtained by the method of statistical linearization

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no.1, 1963, 184-189

TEXT: The method of statistical linearization is the most effective for the approximate solution of stationary regimes in nonlinear feedback systems. The present article examines the solution of equations of the type

$$Q(p)Y + R(p)X = S(p)Z, \quad Y = f(X) \quad (p = d/dt) \qquad (1)$$

where Q, R and S are polynomials and Z a stationary random process. The problem reduces to the solution of two, in general transcendental equations having one or several solutions, corresponding respectively to stable or unstable regimes. Whereas the method of harmonic linearization (describing functions) has

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On the stability of solutions ...

been extensively studied, in the case of statistical linearization the problem of the stability of solutions has not even been posed. The problem consists in the examination of the behavior, as $t \rightarrow \infty$, of the solutions of an equation for the variance of the initial solution, i.e. a linear equation with variable coefficients constituting random functions of time. For equations of order higher than first, no methods are known for solving such a problem. However, in view of the degree of approximation of the initial method, it would appear that it would suffice if it were possible to determine whether the mean value and the dispersion of the variance remain bounded as $t \rightarrow \infty$. The method given here for obtaining this more approximate solution employs the basic assumption that the probability distribution of the variance is the same as that of the initial solution. A Volterra's integral equation is obtained, and solved by means of the Laplace transform. Two examples are worked, one in which

$$(p^2 + 2n\,p)X + f(X) = Z \qquad (33)$$

where f is an odd function, and

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E140/E135

On the stability of solutions ...

$$Z(t) = \sum_{i=1}^{m} A_i \sin(\omega t + \psi_i)$$

and a relay servomechanism (Fig.1) described by Eq.(1) where

$Q(p) = k_1 k$, $R(p) = p(p^2 + 2\zeta p + 1)$ $S(p) = k_1 p$

$R_z(\tau) = D_z \exp(-\beta|\tau|)$

The result is given in the form of a Nyquist plot. A subsequent paper will consider the stability of oscillatory regimes perturbed by stationary random noise. There are 3 figures.

SUBMITTED: October 1, 1962

Fig.1.

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

GIL'BO, Ye.P.; PERVOZVANSKIY, A.A.

Steady state in the discrete system of step-by-step optimalizing control taking into consideration the inertness of the controlled object in the presence of random disturbances. Trudy LPI no.226: 147-156 '63. (MIRA 16:9)

(Automatic control)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

IOVLEV, Yu.A.; PERVOZVANSKIY, A.A.; SAVCHKOV, V.K.; CHELPANOV, I.B.

Theory of narrow-band self-adjusting filters. Trudy LPI no.226:157-159 '63. (MIRA 16:9)
(Electric filters)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

KATKOVNIK, V.Ya.; PERVOZVANSKIY, A.A.

Random disturbances of periodic conditions in relay systems.
Trudy LPI no.226:170-178 '63. (MIRA 16:9)
(Automatic control)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

KOLOVSKY, M.Z.: OSORIN, V.I.: PERVOZVANSKY, A.A.(Leningrad)

"Probability methods in the theory of vibrations".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

L 26687-65 EWT(1)/EEC-4/EWA(h) Pab

ACCESSION NR: AT5002369 S/2563/64/000/235/0079/0090

AUTHOR: Iovlev, Yu. A.; Pervozvanskiy, A. A.; Savchkov, V. K.; Chelpanov, I. B.

TITLE: Suppression of the harmonic content of a signal by means of a system of self-tuning filters

SOURCE: Leningrad. Politekhnicheskiy institut. Trudy, no. 235, 1964. Dinamika i prochnost' mashin (Dynamics and strength of machines), 79-90

TOPIC TAGS: low frequency, narrow band filter, filter stability, self tuning filter, harmonic suppression

ABSTRACT: Suppressing the harmonic content of a signal by means of a system of self-tuning filters requires the construction of a system of narrow-band wave-traps possessing the amplitude-frequency characteristics shown in Fig. 1. of the Enclosure. After presenting the system of differential equations describing the behavior of a system of self-tuning filters, the authors introduce the basic variants in the block diagram of the filter system. Two variants of feeding signals across the inputs of the filters are discussed: the fundamental signal is fed across the filter input, or the fundamental signal is combined with the outgoing

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

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ACCESSION NR: AT5002369

signals from the other filters. In addition, four variants are discussed for controlling the filters. Then a static calculation of the filter system is carried out for the two latter variants: the filters are independent, and each filter is controlled by its outgoing signal and the sum error signal. The work of two filters for one harmonic content is then analyzed. It is concluded that two filters ensure a theoretically accurate compensation of the harmonic signal. The effect of small perturbations on the stability of two filters tuned to one harmonic content is then determined. The results obtained enabled the authors to solve the problem of the work of the two filters when the incoming signal consists of two harmonic components. From this, the author determines the work of an arbitrary number of filters when the incoming signal contains any number of harmonic components. Orig. art. has: 12 figures and 37 formulas.

ASSOCIATION: Leningradskiy politekhnicheskiy institut imeni M. I. Kalinina (Leningrad polytechnic institute)

SUBMITTED: 00 ENCL: 01 SUB CODE: EC

NO REF SOV: 00 OTHER: 000

Card 2/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

L 26687-65
ACCESSION NR: AT5002369 ENCLOSURE: 01

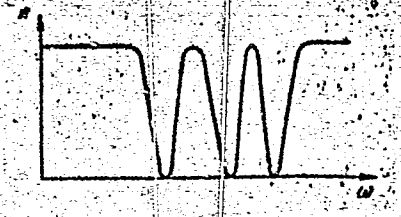

Figure 1. Amplitude-frequency characteristics of a narrow-band wavetrap.

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, A.A.

Evaluating the effect of a linearization by a normal random signal. Trudy LPI 252:147-152 '65. (MIRA 18:9)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

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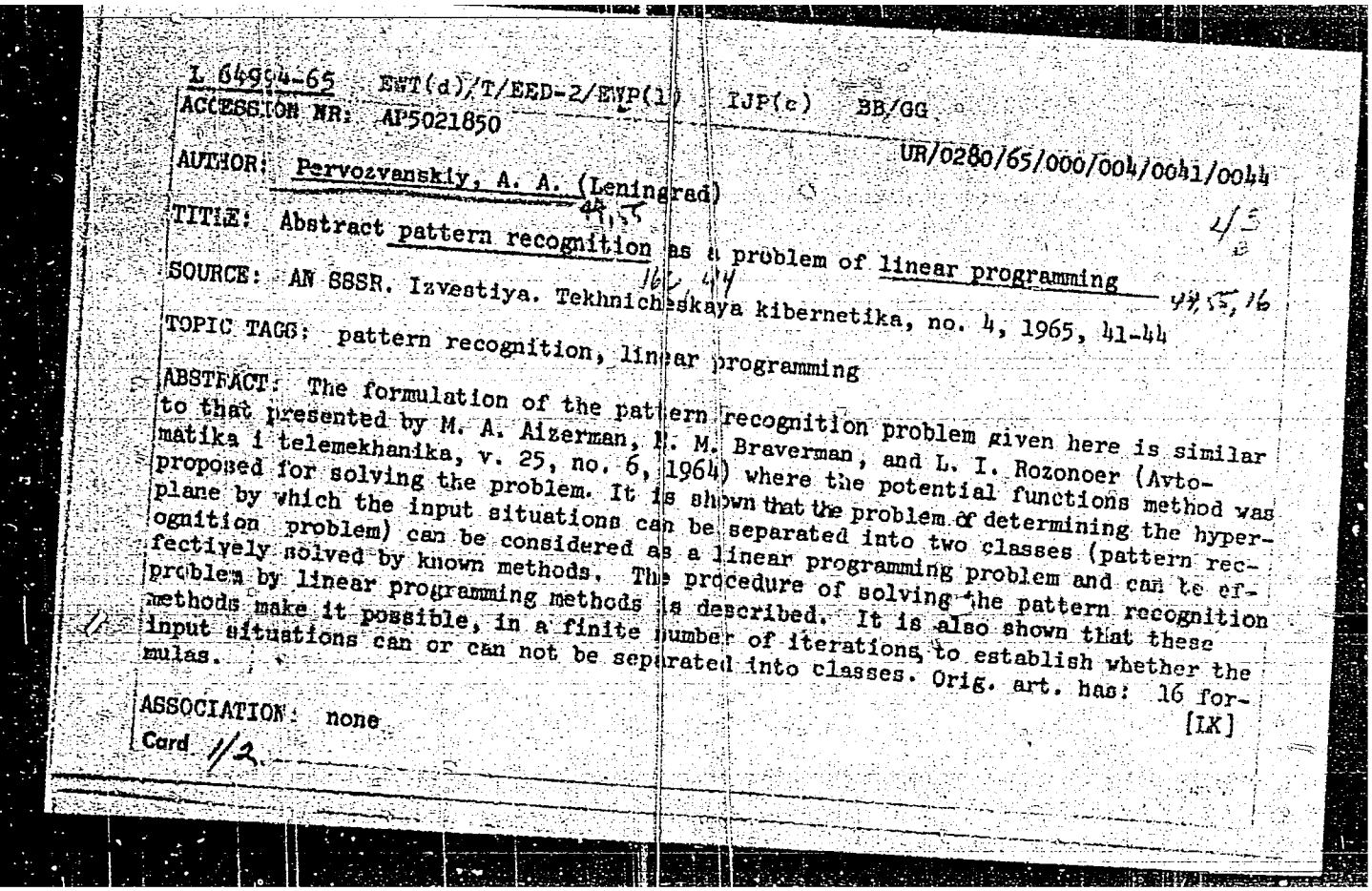

L 64994-65 EWT(d)/T/EED-2/EWP(1) IJP(c) BB/GG

ACCESSION NR: AP5021850 UR/0280/65/000/004/0041/0044

AUTHOR: Pervozvanskiy, A. A. (Leningrad) 44,55 4/5

TITLE: Abstract pattern recognition as a problem of linear programming 16, 44 44,55,16

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 4, 1965, 41-44

TOPIC TAGS: pattern recognition, linear programming

ABSTRACT: The formulation of the pattern recognition problem given here is similar to that presented by M. A. Aizerman, E. M. Braverman, and L. I. Rozonoer (Avtomatika i telemekhanika, v. 25, no. 6, 1964) where the potential functions method was proposed for solving the problem. It is shown that the problem of determining the hyperplane by which the input situations can be separated into two classes (pattern recognition problem) can be considered as a linear programming problem and can be effectively solved by known methods. The procedure of solving the pattern recognition problem by linear programming methods is described. It is also shown that these methods make it possible, in a finite number of iterations, to establish whether the input situations can or can not be separated into classes. Orig. art. has: 16 formulas. [IK]

ASSOCIATION: none

Card 1/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

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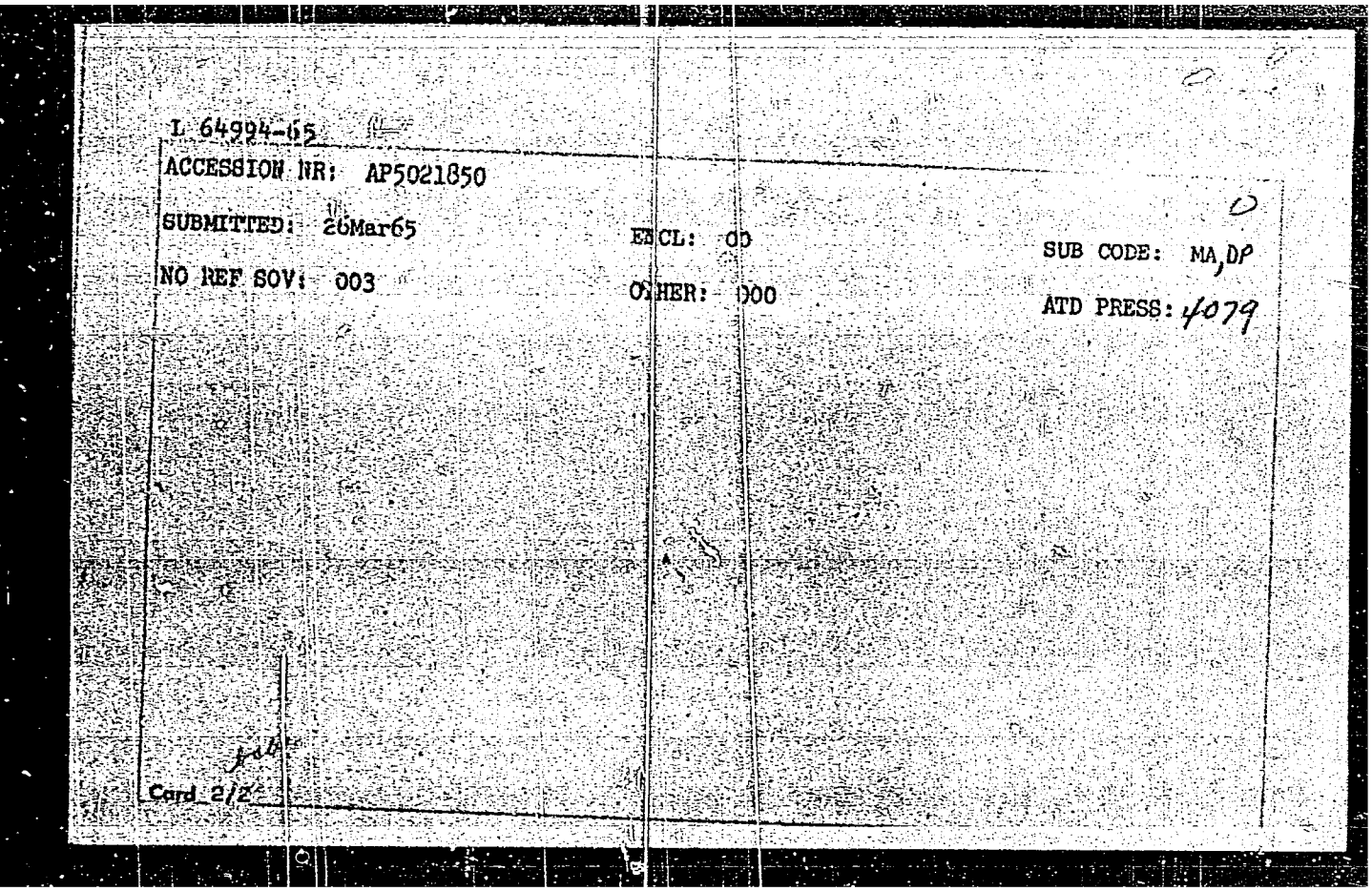

L 64924-65

ACCESSION NR: AP5021850

SUBMITTED: 26Mar65 ENCL: 00 SUB CODE: MA,DP

NO REF SOV: 003 OTHER: 000 ATD PRESS: 4079

Card 2/2

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

L 52745-65 EWT(d)/EPF(n)-2/EWP(1) Po-4/Pq-4/Pg-4/Pu-4/Px-4/Pl-4 IJP(c) WW/BC

ACCESSION NR: AP5013129 UR/0373/65/000/002/0051/0057

AUTHOR: Pervozvanskiy, A. A. (Leningrad) 44 B

TITLE: Minimum of maximum deviation of a controlled linear system

SOURCE: AN SSSR. Izvestiya. Mekhanika, no. 2, 1965, 51-57

TOPIC TAGS: optimal control, integral equation 16

ABSTRACT: The author considers

$$x(t) = \int_0^T [h_u(t, \tau) u(\tau) + h_s(t, \tau) s(\tau)]\, d\tau. \qquad (1)$$

where h_u and h_s are weight functions in u (control and s (given function)). He desires to find u minimizing $\max_{0 \le t \le T} |x(t)|$ under $|u(\tau)| \le 1$. He constructs approximate solutions by techniques of dynamic programming and gets an estimate of the precision of his solutions. Orig. art. has: 2 figures and 34 formulas.

ASSOCIATION: none

Card 1/2 AP5013129 Submitted: 04 Sep 64

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

SEREBRENNIKOV, Mendel' Girshevich; PERVOZVANSKIY, Anatoliy Arkad'yevich; Prinimal uchastiye ROMANOV, M.F.; MERKIN, D.R., red.

[Discovery of hidden periodicities] Vyiavlenie skrytykh periodichnostei. Moskva, Nauka, 1965. 244 p. (MIRA 18:4)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, A.A. (Leningrad)

Recognition of abstract images as a problem of linear programming. Izv. AN SSSR. Tekh. kib. no.4:41-44 Jl-Ag '65. (MIRA 18:11)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

L 11932-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l)
ACC NR: AT5028842 SOURCE CODE: UR/2563/65/000/252/0147/0152

48
47
B+1

AUTHOR: Pervozvanskiy, A. A.

ORG: Leningrad Polytechnic Institute (Leningradskiy politekhnicheskiy institut)

TITLE: Evaluating the effect of linearizing normal random signals

SOURCE: Leningrad. Politekhnicheskiy institut. Trudy. no. 252. 1965. Dinamika i prochnost' mashin; mekhanika i protsessy upravleniya (Dynamics and durability of machines; mechanics and processes of control), 147-152

TOPIC TAGS: statistic analysis, electronic signal, normal distribution, linear approximation, nonlinear automatic control, linear automatic control

ABSTRACT: Certain rules are set for transforming normal random signals by passing through nonlinearities of sufficiently general nature. The mean, or expectation, value of a signal m_x is defined in terms of the mean as well as the mean-square value of the input values

$$m_x = m_x(m_z, \sigma_z).$$

This expression for m_x is then Taylor-expanded in m_z and expressed as

$$m_x = \sum_{k=0} c_k \left(\frac{m_z}{\sigma_z}\right)^k$$

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

L 11932-66

ACC NR: AT5028842

where the coefficient c_n is given by

$$c_n = \frac{1}{\sqrt{2\pi n!}} \int_{-\infty}^{\infty} f(\sigma_x) e^{-\frac{\sigma^2}{2}} H_n(\sigma) d\sigma.$$

Upon an integration by parts of c_n, one has

$$m_x = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} f(\sigma_x + m_x) e^{-\frac{\sigma^2}{2}} d\sigma$$

where c_1, in particular, represents the amplification factor. To show that this linearization can be applied to a wide class of nonlinear problems and to evaluate the linearization domain, an odd function f(z) is selected, and the following ratio is evaluated

$$\max_f \left| \frac{c_3}{c_1} \right|.$$

The conditions under which the calculations are carried out are given by

$$\left.\begin{aligned} f(z) &= 1 \quad \text{at} \quad z > h; \\ 0 \leqslant f(z) &\leqslant 1 \quad \text{at} \quad 0 \leqslant z \leqslant h; \\ f(-z) &= -f(z). \end{aligned}\right\}$$

The analysis leads to the determination of the extrema of the integral

$$I_\lambda[f] = \int_0^{\infty} f(\sigma) e^{-\frac{\sigma^2}{2}} (\sigma^3 + \lambda\sigma) d\sigma.$$

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

L 11932-66
ACC NR: AT5028842

The final expression obtained is then

$$\Delta = \frac{m^2}{\sigma^2} \max_f \left|\frac{c_1}{c_1}\right| = \frac{m^2}{\sigma^2} \max\left(\frac{1}{6}\left|\frac{k^3}{\sigma^3} - 1\right|; \frac{1}{6}\right) =$$

$$= \begin{cases} \frac{1}{6} \cdot \frac{m^2}{\sigma^2}; & \frac{k}{\sigma} \leqslant \sqrt{2}; \\ \frac{1}{6} \cdot \frac{m^2}{\sigma^2}\left(\frac{k^3}{\sigma^3} - 1\right); & \frac{k}{\sigma} > \sqrt{2}. \end{cases}$$

which for Δ = 0.1 leads to the fact that the nonlinearity is approximately linearized if

$$\sigma^2 > \frac{1}{0.6} m^2; \quad \sigma^2 > \frac{k^3}{2} \sigma.$$

Orig. art. has: 25 equations.

SUB CODE: 13,12 SUBM DATE: none/ SOV REF: 002

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Card 3/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

L 10436-66 EWT(d) IJP(c)

AM5023897 BOOK EXPLOITATION UR/ 534.1

Serebrennikov, Mendel' Girshevich; Pervozvanskiy, Anatoliy Arkad'-yevich

Manifestation of hidden periodicities (Vyyavleniye skrytykh period-ichnostey). Moscow, Izd-vo "Nauka," 1965. 244 p. illus., biblio. 7500 copies printed.

TOPIC TAGS: periodic function, vibration analysis, oscillatory process

PURPOSE AND COVERAGE: This monograph deals with procedures for finding hidden periodicities in various oscillatory processes. The book is intended for a wide range of specialists engaged in the mathematical description of oscillatory processes on the basis of observation data (oscillograms and other data). It is assumed that the readers have the usual Soviet engineering mathematics background and some knowledge of the theory of random processes and mathematical statistics.

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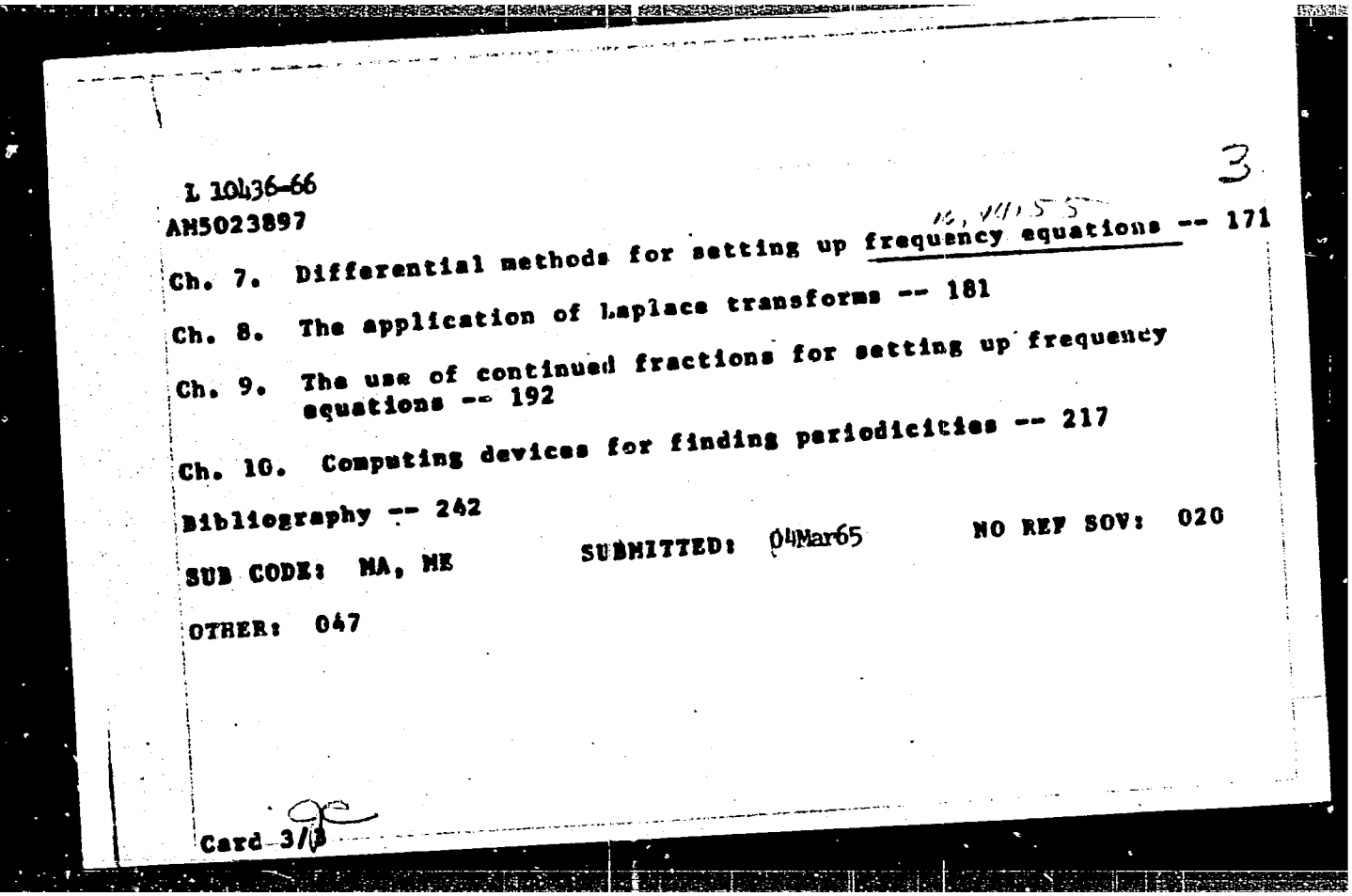
"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240



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SUB CODE: MA, ME SUBMITTED: 04Mar65 NO REF SOV: 020

OTHER: 047

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, A.I.

Equipment for the wet autogenous crushing of ores at the Vasabo (Sweden) Plant. Obog. rud. 8 no.2:37-39 '63. (MIRA 17:2)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

HELYAYEV, A.M.; IOFFE, E.I.; PERVOZVANSKIY, A.I.; NAVASARDYAN, Ye.N.; BLIOKH, S.S.; REVAZASHVILI, B.I.; PROTOPOPOV, M.M.; RAKHMATULLIN, K.Kh.; SEMENOV, V.I.; KRIVOSHEIN, S.S.; SHVETSOV, A.P.; NAZAROV, M.F.; OTROZHDENNOV, A.I.; ZHUKOV, D.D.; HELYAYEV, A.M.

Speeches. Trudy Mekhanobr. no.93:122-173 '56. (MIRA 11:6)
(Ore dressing--Equipment and supplies) (Waste products)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, I.

USSR
ON: Forest Land, Timberland

SOURCE: N: Leninskoye Znamya, Petrozavodsk, 4 June 1947
Abstracted in USAF "Treasure Island", on file in Library of Congress, Air Information Division, Report No. 49702

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

F-6

USSR/Microbiology - Medical and Veterinary Microbiology

Abs Jour : Ref Zhur-Biologiya, No 1, 1957, 717

Author : B. P. Pervushin

Inst :

Title : On the Diagnostic Value of the Khedlson Reaction in Brucellosis in Humans

Orig Pub : Zh. mikrobiol., epidemiol., i immunobiologii, 1955, No 6, 82-88

Abstract : On the basis of literary data and results of investigations of 602 sera of persons free of brucellosis, a conclusion has been arrived at that the Khedlson raction of agglutionation is not an absolute specifc test of brucellosis infection, but in some cases serves to expose normal

Card 1/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

USSR/Microbiology - Medical and Veterinary Microbiology F-6

Abs Jour : Ref Zhur-Biologiya, No 1, 1957, 717

Abstract : antibodies in relation to brucellosis and normal immunization. This should be taken into consideration first of all in regard to persons who come from ecozootic foci. The positive reaction of Khedlson when confrontedwith the negative reactions of "Rayt and Brune" should be evaluated with great care in the diagnosis of brucellosis. In such cases it is necessary to resort to further observation of the patient and repeated laboratory investigations, in addition to the consideration of epidemiological anamnesia.

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, I.

ON Segzha Paperkombinat; shortage of fir pulp-wood; waste of fir timber available; Yuzhkarelles Trust Mechanized lumber camps, Segezha, Karelo-Finskaya SSR

Soviet Source: N: Leninskoye Zanmya 6 July 1947 Petrozavodsk
Abstracted in USAF "Treasure Island", on file in Library of Congress, Air Information Division, Report NO. 62043 Unclassified.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, I. V.

Forests and Forestry - Karelia

On the possible volume of principal yield in the forests of the Karelo-Finnish S. S. R. Izv. Kar-Fin. fil. AN SSSR No. 1, 1951.

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

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, I. V.

USSR/Chemical Technology. Chemical Products and Their Application -- Wood chemistry products. Cellulose and its manufacture. Paper, I-23

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 6248

Author: Komshilov, N. F., Pervozvanskiy, I. V., Pilipchuk, O. I., Spirkova, L. I.

Institution: Karelo-Finnish Filiate of the Academy of Sciences USSR

Title: Raw Material Base of Rosin and Extractive Industry of the Karelo-Finnish SSR

Original Publication: Tr. Kar.-Fin. fil. AN SSSR, 1956, No 3, 67-80

Abstract: Data are provided concerning supplies of stump lightwood. Average pitch content of lightwood from Medvezh'yegorskiy forestry is 17% (on the basis of wood containing 20% moisture).

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

1. PERVOZVANSKIY, I. V.

2. USSR (600)

4. Karelia-Forests and Forestry

7. On the possible volume of principal yield in the forests of the Karelo-Finnish S. S. R. Izv. Kar-Fin. fil. AN SSSR no. 1, 1951

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

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, V.V.

Possible variations in constructing plane photogrammetric nets in surveying with aerial photographs in two scales. Geod.i kart. no.4:40-42 Ap '62. (MIRA 15:12)
(Aerial photogrammetry)

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PERVOZVANSKIY, V.V.

22351-Pervozvanskiy, V.V. O Molibdenovom Metode Opredeleniya Ketosakharov. Izvestiya Akad. Nauk. BSSR, 1949, No. 3 S. 141-51.-Bibliogr: 6 NAZV.

SO: Letopis' No. 30 1949

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, V. V.

"Tentative work in Using Materials of Aerial Survey in the Scale 1:60,000 for the Production of a Topographical Map of 1:25,000 Scale", Sb. nauch. Trudov. in-ta geol., aerosyemki i kartogr., No. 2, pp35-36, 1954.

Pictures of 1:60,000 scale were tentatively used for determining altitudes on the 1:25,000 pictures, for decoding, drawing in relief, and compiling an original map of 1:25,000 scale. These methods may be applied in the compilation of a 1:25,000 map with cross sections of 5-10 meters, if the error tolerances in mapping the relief are 2/3 of the cross sections. (RZhAstr, No. 1, 1955)

SO: Sum 812, 6 Feb 1956.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, V. V.

"Formation of Gluconic Acid During the Oxidation of Glucose by Bacteria," Mikrobiol., 8, No. 2, 1939.

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PERVOZVANSKIY, V. V.

"Formation of Gluconic Acid by Bacterium Putidum L.

Et. N," Mikrobiol, 8, No. 3-4, 1939.

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PERVOZVANSKIY, V.V.

Preparing aerial photographs for contouring on the topographic stereometer. Geod. i kart. no.9:32-36 S '60. (MIRA 13:11)
(Coordinates) (Surveying)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, V.V.; YELIZAROV, N.F.

Stereotopographic surveying in wooded regions. Geod. i kart. no.1: 31-39 Ja '62. (MIRA 15:1)

(Aerial photogrammetry)

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3(4)

AUTHOR: Pervozvanskiy, V. V. SOV/6-59-4-6/20

TITLE: Considering the Influence of Systematic Deformation of Aerial Photographs (Uchet vliyaniya sistematicheskoy deformatsii aerofotos"yemochnykh materialov)

PERIODICAL: Geodeziya i kartografiya, 1959, Nr 4, pp 21-23 (USSR)

ABSTRACT: In the differentiated evaluation of aerial photographs for the preparation of maps by the stereophotogrammetric method, the differences in altitude on the topographic stereometer are determined by the formula $h = \frac{H}{b + \Delta p} \cdot \Delta p$. H is the flying height over the initial point of the pair of aerial photographs (stereophotographic pair), b is the basis of photographing at the scale of the initial surface of the pair of aerial photographs. Δp is the difference of the longitudinal parallaxes. To increase the accuracy of the photogrammetric procedure in determining the heights, the values contained in this formula must be correctly used. The influence of systematic deformation of aerial photographs

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is investigated for this purpose. The systematic deformation of the aerial photograph (of the aeronegative) can be represented geometrically as a change in the scale of the aerial photograph, at a corresponding change of the focal distance and an unchanged flying height. It is shown that H must also be free of distortions caused by systematic deformation if one wants to obtain an h-value not distored by the influence of systematic deformation. It is shown that the values of b and Δp should not be corrected because of the systematic deformation. The flying height H, however, must be indicated in the same system as the difference in altitude h. It is pointed out that the formulas contained in the regulations for topographic surveys on scales of 1 : 10,000 and 1 : 25,000 should be corrected from this point of view.

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PERVOZVANSKIY, V.V.; GAVRILOV, S.G.

Results of work in the engraving of topographical maps.
Geod. i kart. no.9:50-54 S '61. (MIRA 14:9)
(Map printing)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOZVANSKIY, V. V.

22351. PERVOZVANSKIY, V. V. O molibdenovom metode opr·deleniya ketosakharov. Izvestiya akad. Nauk. Bssr, 1949, No. 3, s. 141-51.—Bibliogr: 6 Nazv.

SO: LETOPIS' No. 30, 1949

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVOIVANSKIY, V.V.

Compiling a map on a scale of 1:25,000 from aerial photographs on a scale of 1:8,000. Geod. i kart. no.11 24-25 0 '64.

(MIRA 18:1)

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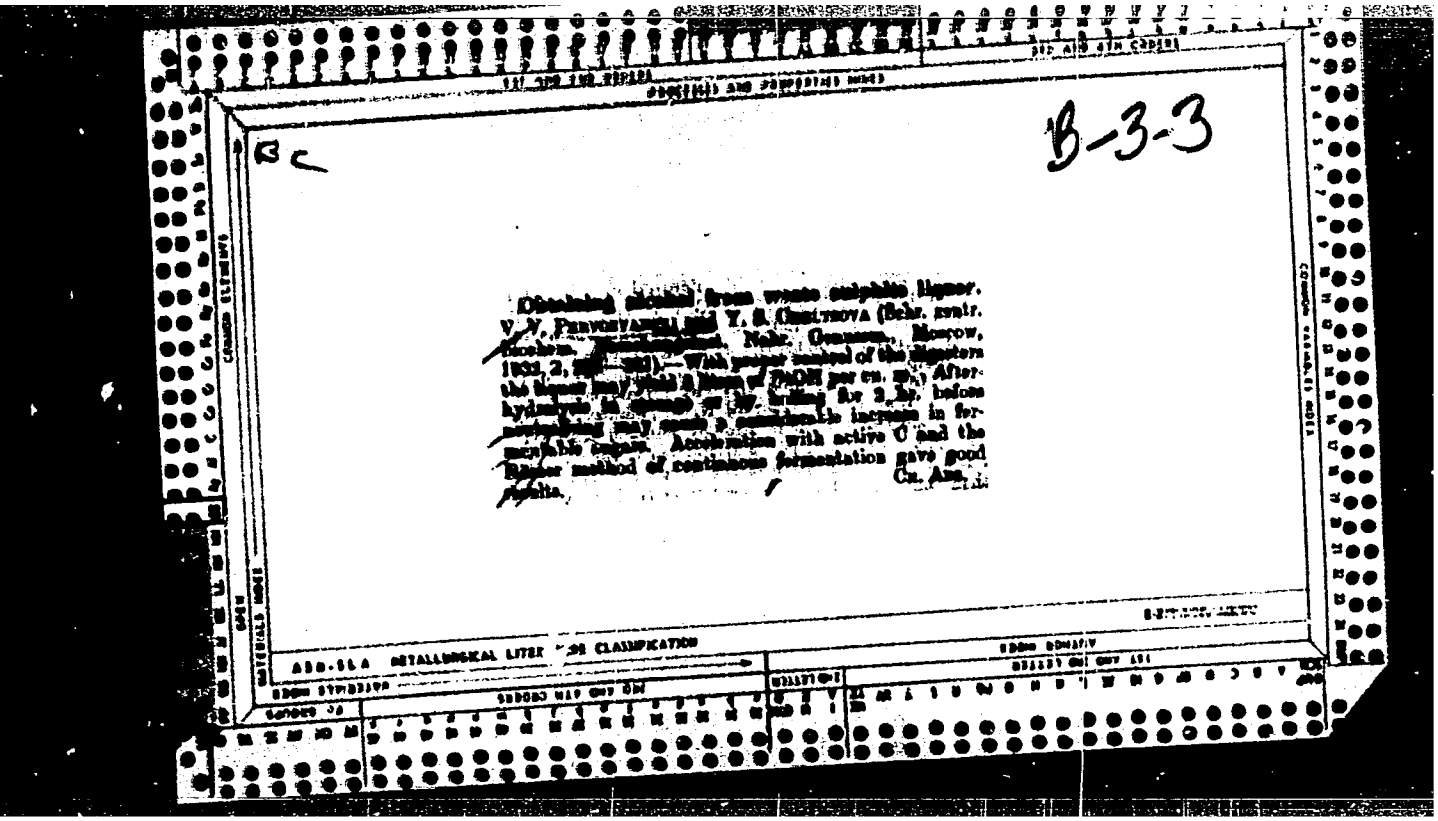

B-3-3

Obtaining alcohol from waste sulphite liquor. V. V. Pervosvanskii and Y. S. Chelyshova (Schr. zentr. biochem. Forschungsinst. Nahr. Genussm., Moscow, 1932, 2, [illegible]).—With proper control of the digesters the liquor may yield [illegible] litres of EtOH per cu. m. After hydrolysis in storage or by boiling for 2 hr. before neutralizing may cause a considerable increase in fermentable sugars. Acceleration with active C and the Rösser method of continuous fermentation gave good results. Ch. Abs.

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

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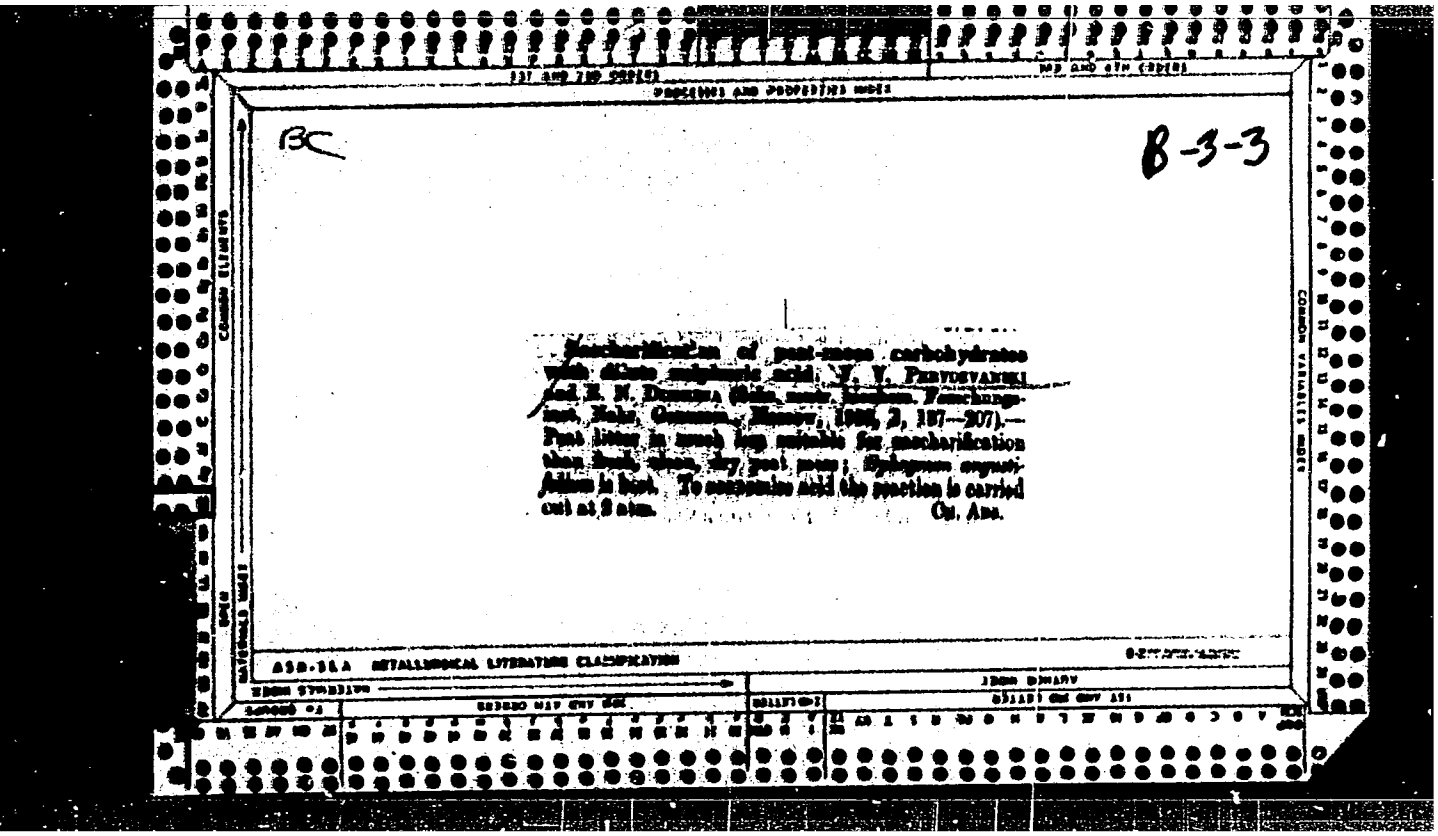

BC

B-3-3

Saccharification of peat-moss carbohydrates with dilute sulphuric acid. V. V. Pervosvanski and E. N. Dobrina (Sekr. nauk. biochem. Forschungsinst. Nahr. Genussm., Moscow, 1936, 2, 187—207).—Peat litter is much less suitable for saccharification than fresh, clean, dry peat moss; *Sphagnum angustifolium* is best. To economise acid the reaction is carried out at 2 atm. Ch. Abs.

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COMMON ELEMENTS

COMMON VARIABLES INDEX

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AUTHOR INDEX

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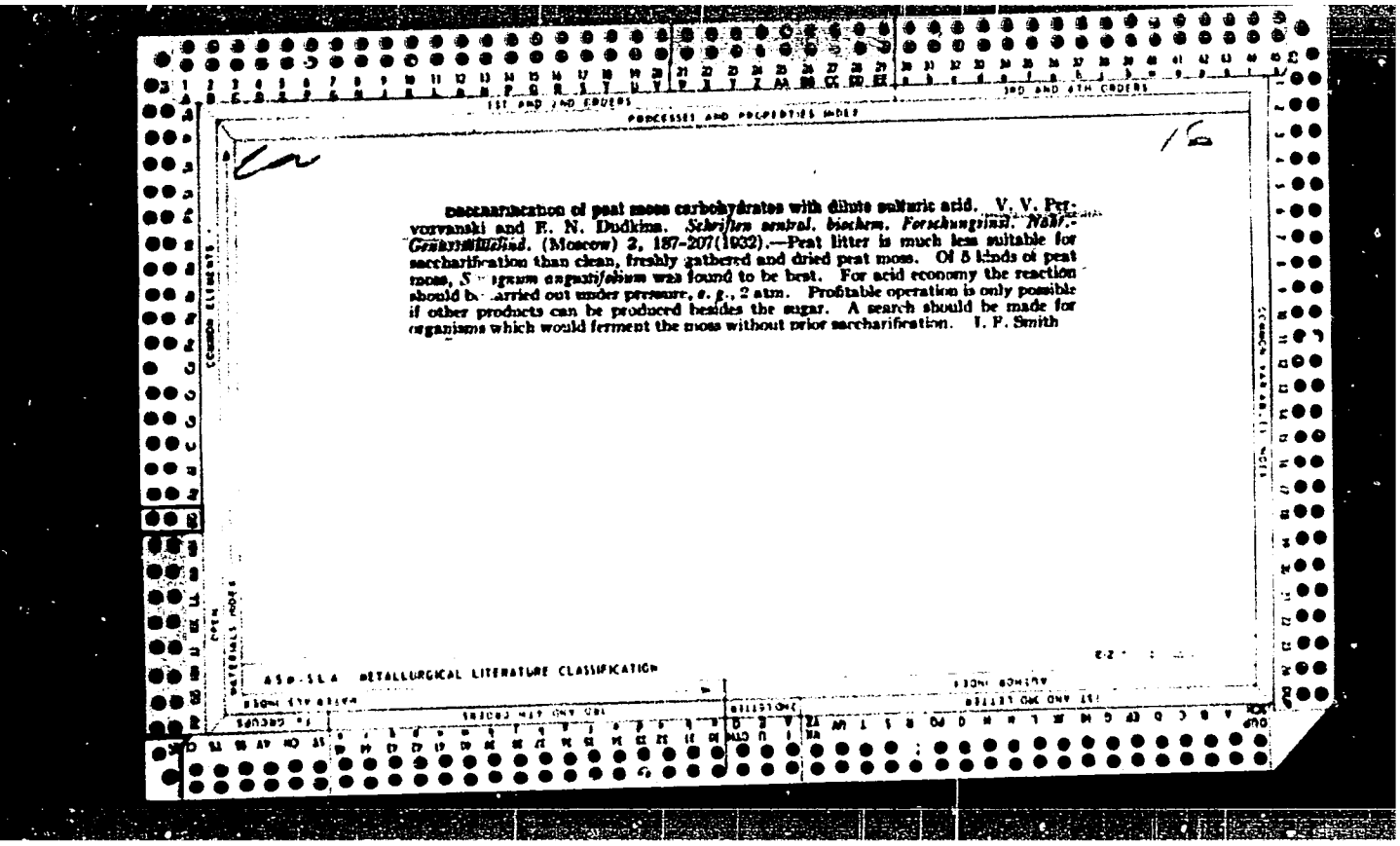

Saccharification of peat moss carbohydrates with dilute sulfuric acid. V. V. Perevorvanski and E. N. Dudkina. *Schriften zentral. biochem. Forschungsinst. Nahr.-Genussmittelind.* (Moscow) 2, 187-207(1932).—Peat litter is much less suitable for saccharification than clean, freshly gathered and dried peat moss. Of 5 kinds of peat moss, *Sphagnum angustifolium* was found to be best. For acid economy the reaction should be carried out under pressure, *e. g.*, 2 atm. Profitable operation is only possible if other products can be produced besides the sugar. A search should be made for organisms which would ferment the moss without prior saccharification. I. P. Smith

A50-51A METALLURGICAL LITERATURE CLASSIFICATION

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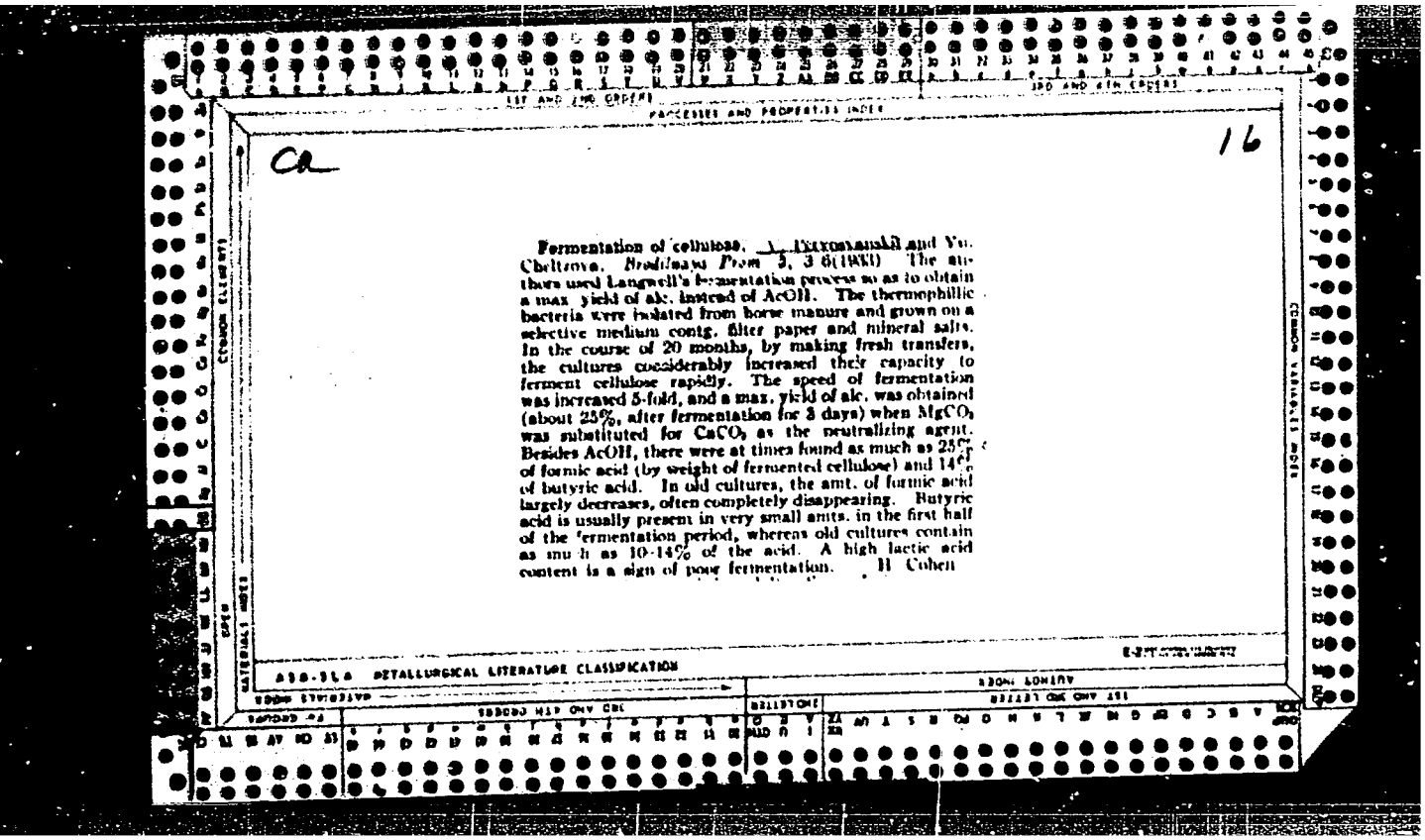

16

Ca

Fermentation of cellulose. [illegible] and Yu. Cheltsova. *Biokhimiya Prom* 3, 3 6(1938) The authors used Langwell's fermentation process so as to obtain a max. yield of alc. instead of AcOH. The thermophillic bacteria were isolated from horse manure and grown on a selective medium contg. filter paper and mineral salts. In the course of 20 months, by making fresh transfers, the cultures considerably increased their capacity to ferment cellulose rapidly. The speed of fermentation was increased 5-fold, and a max. yield of alc. was obtained (about 25%, after fermentation for 3 days) when $MgCO_3$ was substituted for $CaCO_3$ as the neutralizing agent. Besides AcOH, there were at times found as much as 25% of formic acid (by weight of fermented cellulose) and 14% of butyric acid. In old cultures, the amt. of formic acid largely decreases, often completely disappearing. Butyric acid is usually present in very small amts. in the first half of the fermentation period, whereas old cultures contain as much as 10-14% of the acid. A high lactic acid content is a sign of poor fermentation. H Cohen

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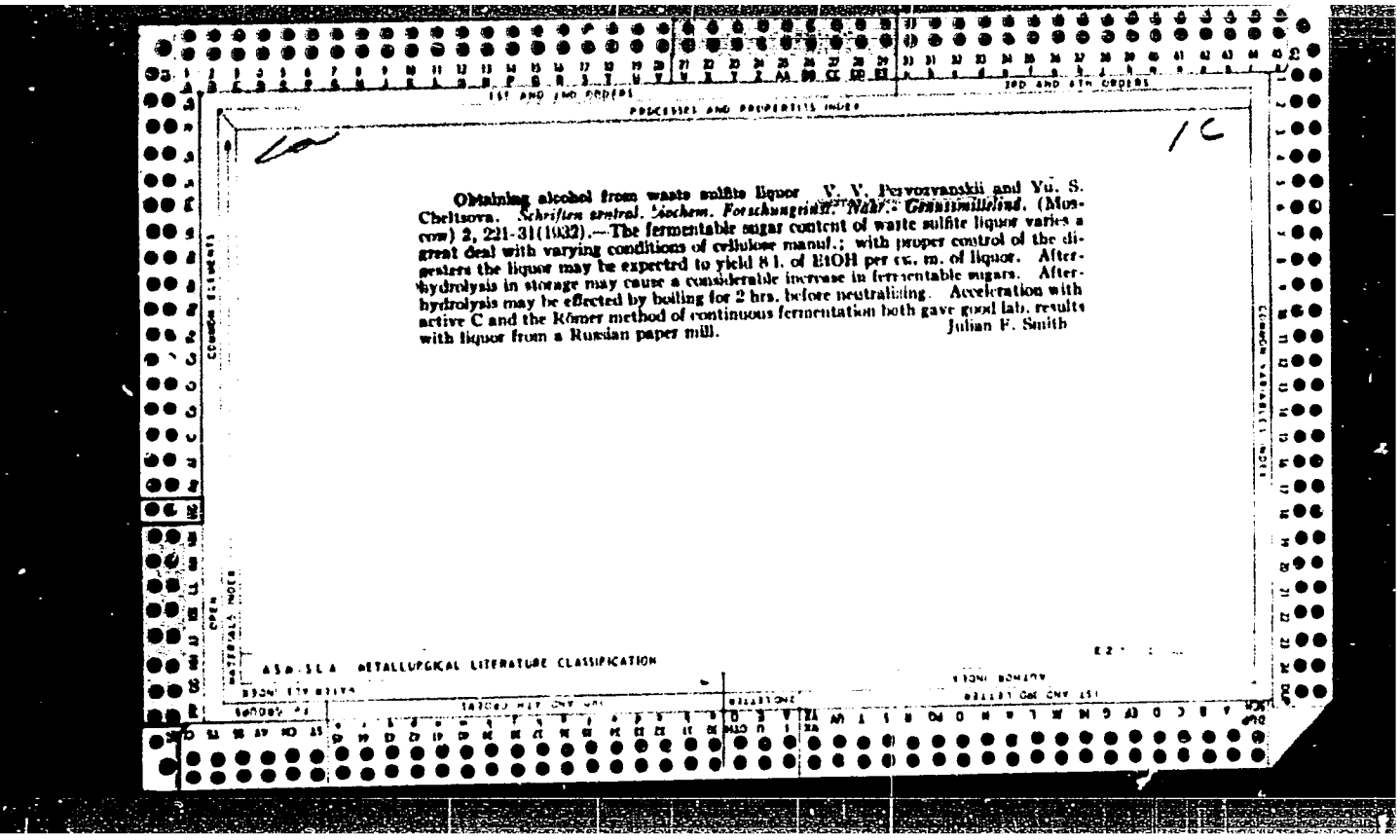

Obtaining alcohol from waste sulfite liquor. V. V. Pervozvanskii and Yu. S. Cheltsova. *Schriften zentral. biochem. Forschungsinst. Nahr.- Genussmittelind.* (Moscow) 2, 221-31(1932).—The fermentable sugar content of waste sulfite liquor varies a great deal with varying conditions of cellulose manuf.; with proper control of the digesters the liquor may be expected to yield 8 l. of EtOH per cu. m. of liquor. After-hydrolysis in storage may cause a considerable increase in fermentable sugars. After-hydrolysis may be effected by boiling for 2 hrs. before neutralizing. Acceleration with active C and the Römer method of continuous fermentation both gave good lab. results with liquor from a Russian paper mill.
Julian F. Smith

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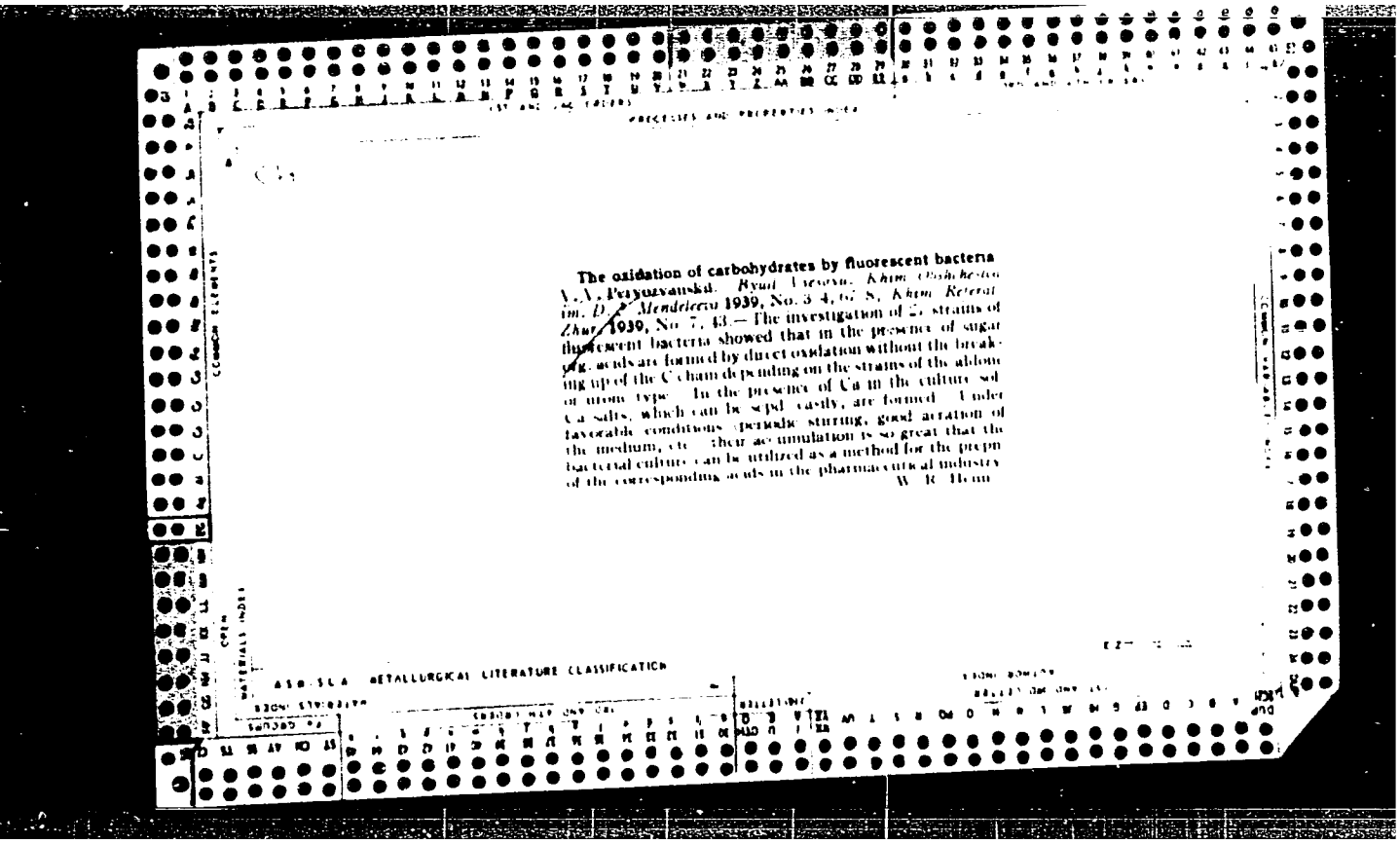
PROCESSES AND PROPERTIES INDEX



The oxidation of carbohydrates by fluorescent bacteria

V. V. Peryozvanskii. *Byul. Vsesoyuz. Khim. Obshchestva im. D. I. Mendeleeva* 1939, No. 3-4, 67-8; *Khim. Referat. Zhur.* 1939, No. 7, 43.—The investigation of 2[illegible] strains of fluorescent bacteria showed that in the presence of sugar org. acids are formed by direct oxidation without the breaking up of the C chain depending on the strains of the aldone or urone type. In the presence of Ca in the culture sol. Ca salts, which can be sepd. easily, are formed. Under favorable conditions (periodic stirring, good aeration of the medium, etc.) their accumulation is so great that the bacterial culture can be utilized as a method for the prepn. of the corresponding acids in the pharmaceutical industry.

W. R. Henn

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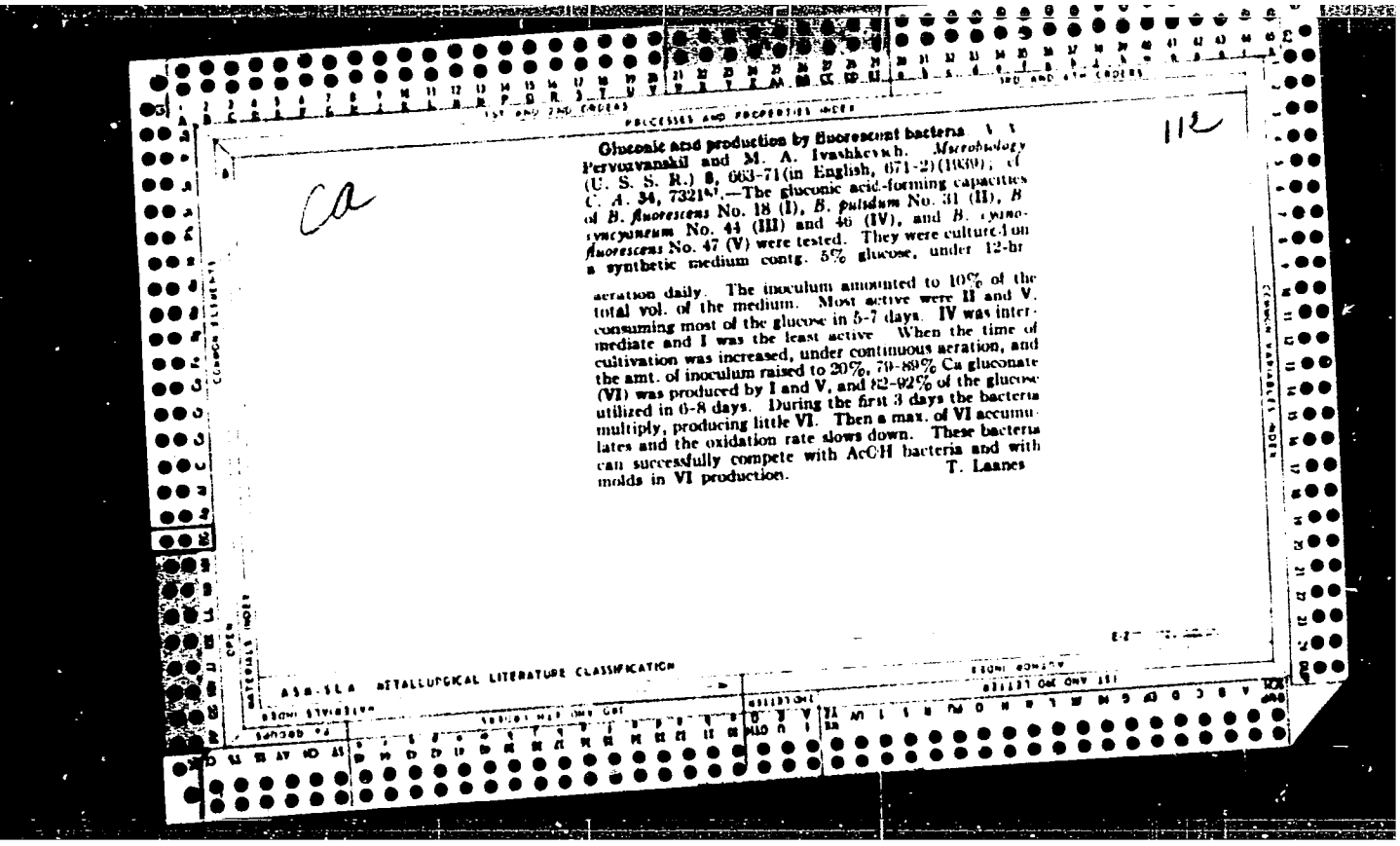

Ca

112

Gluconic acid production by fluorescent bacteria. V. V. Pervuzvanskii and M. A. Ivashchenko. *Microbiology* (U. S. S. R.) **8**, 663-71 (in English, 671-2) (1939); cf. *C. A.* **34**, 7321[8].—The gluconic acid-forming capacities of *B. fluorescens* No. 18 (I), *B. putidum* No. 31 (II), *B. cyanofluorescens* No. 44 (III) and 46 (IV), and *B. cyanofluorescens* No. 47 (V) were tested. They were cultured on a synthetic medium contg. 5% glucose, under 12-hr aeration daily. The inoculum amounted to 10% of the total vol. of the medium. Most active were II and V, consuming most of the glucose in 5-7 days. IV was intermediate and I was the least active. When the time of cultivation was increased, under continuous aeration, and the amt. of inoculum raised to 20%, 70-89% Ca gluconate (VI) was produced by I and V, and 82-92% of the glucose utilized in 6-8 days. During the first 3 days the bacteria multiply, producing little VI. Then a max. of VI accumulates and the oxidation rate slows down. These bacteria can successfully compete with AcOH bacteria and with molds in VI production.

T. Laanes

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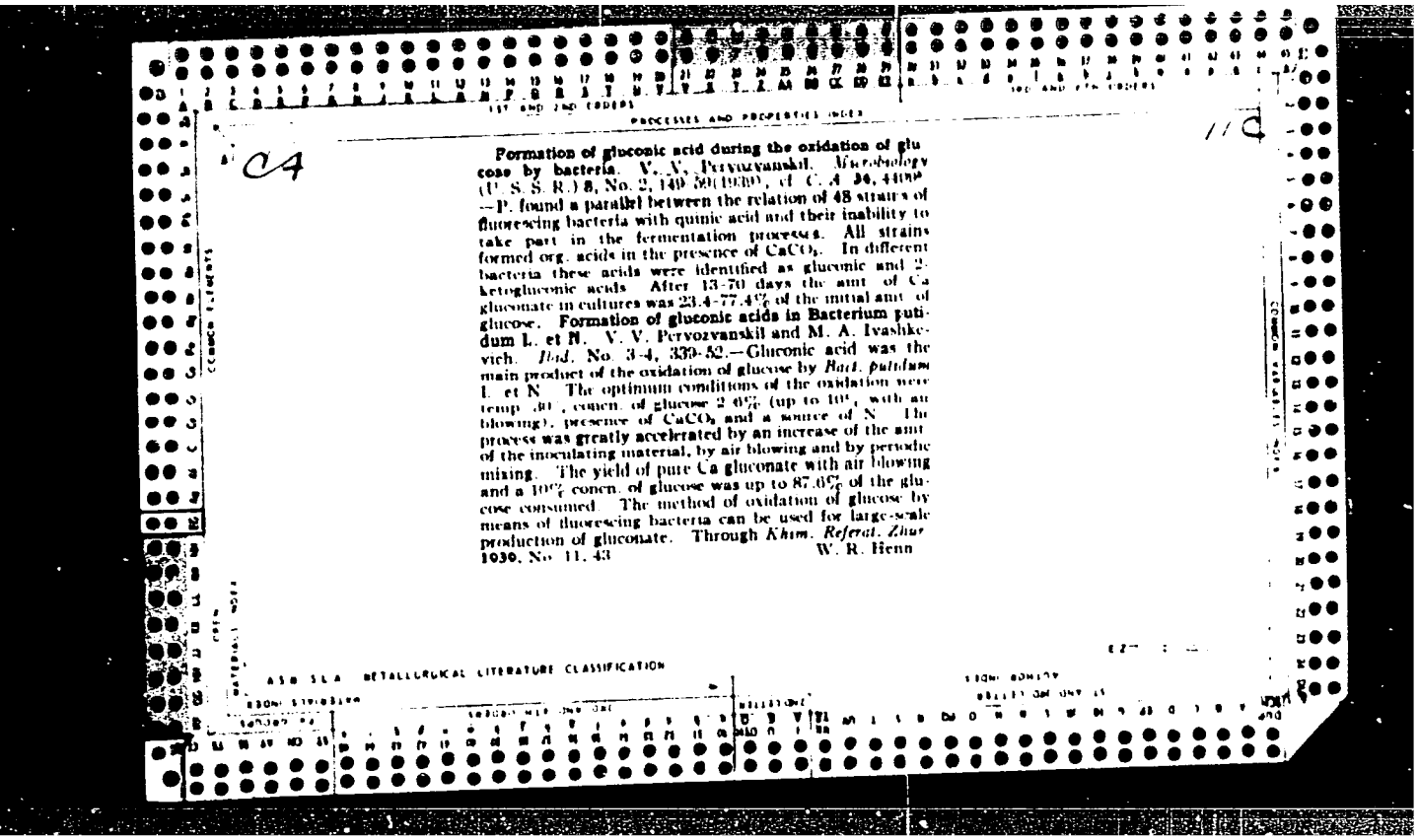

C4

Formation of gluconic acid during the oxidation of glucose by bacteria. V. V. Pervozvanskii. *Microbiology* (U. S. S. R.) 8, No. 2, 149-50(1939); cf. *C. A.* 34, 4409⁹. —P. found a parallel between the relation of 48 strains of fluorescing bacteria with quinic acid and their inability to take part in the fermentation processes. All strains formed org. acids in the presence of $CaCO_3$. In different bacteria these acids were identified as gluconic and 2-ketogluconic acids. After 13-70 days the amt. of Ca gluconate in cultures was 23.4-77.4% of the initial amt. of glucose. **Formation of gluconic acids in Bacterium putidum L. et N.** V. V. Pervozvanskii and M. A. Ivashkevich. *Ibid.* No. 3-4, 339-52.—Gluconic acid was the main product of the oxidation of glucose by *Bact. putidum* L. et N. The optimum conditions of the oxidation were temp. 30°, concn. of glucose 2.0% (up to 10%, with air blowing), presence of $CaCO_3$ and a source of N. The process was greatly accelerated by an increase of the amt. of the inoculating material, by air blowing and by periodic mixing. The yield of pure Ca gluconate with air blowing and a 10% concn. of glucose was up to 87.6% of the glucose consumed. The method of oxidation of glucose by means of fluorescing bacteria can be used for large-scale production of gluconate. Through *Khim. Referat. Zhur.* 1939, No. 11, 43.

W. R. Henn

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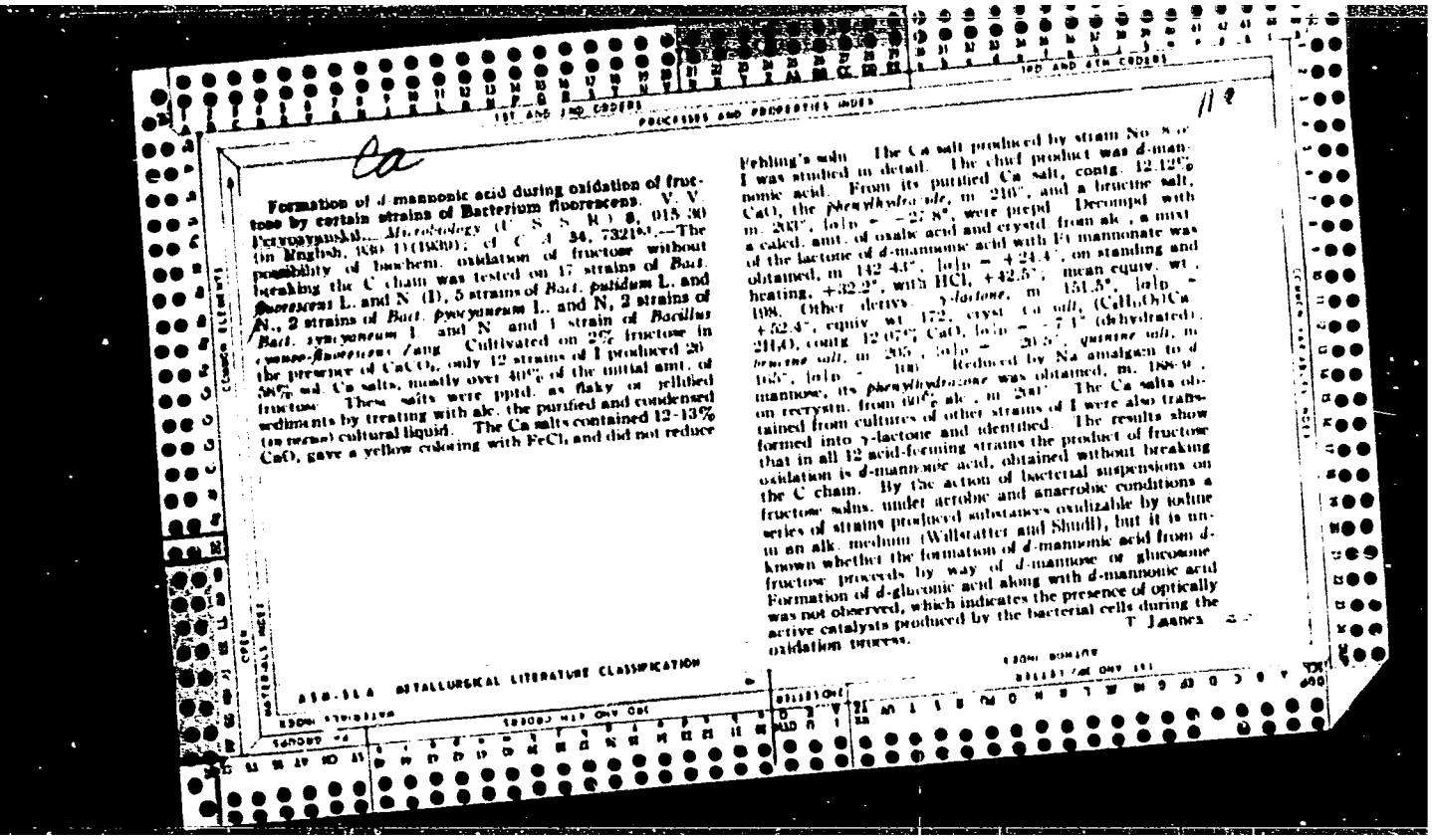
1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Ca



Formation of *d*-mannonic acid during oxidation of fructose by certain strains of Bacterium fluorescens. V. V. Pervozvanskii. *Microbiology* (U. S. S. R.) 8, 915-30 (in English, 930-1)(1939); cf. C. A. 34, 7321[8].—The possibility of biochem. oxidation of fructose without breaking the C chain was tested on 17 strains of *Bact. fluorescens* L. and N. (I), 5 strains of *Bact. putidum* L. and N., 2 strains of *Bact. pyocyaneum* L. and N, 2 strains of *Bact. syncyaneum* L. and N. and 1 strain of *Bacillus cyaneo-fluorescens* Zang. Cultivated on 2% fructose in the presence of $CaCO_3$, only 12 strains of I produced 20-58% sol. Ca salts, mostly over 40% of the initial amt. of fructose. These salts were pptd. as flaky or jellified sediments by treating with alc. the purified and condensed (*in vacuo*) cultural liquid. The Ca salts contained 12-13% CaO, gave a yellow coloring with $FeCl_3$ and did not reduce Fehling's soln. The Ca salt produced by strain No. 8 of I was studied in detail. The chief product was *d*-mannonic acid. From its purified Ca salt, contg. 12.12% CaO, the *phenylhydrazide*, m. 210°, and a brucine salt, m. 203°, $[\alpha]_D$ = −27.8°, were prepd. Decompd. with a calcd. amt. of oxalic acid and crystd. from alc., a mixt. of the lactone of *d*-mannonic acid with Fr mannonate was obtained, m. 142-43°, $[\alpha]_D$ = +24.4°, on standing and heating, +32.2°, with HCl, +42.5°; mean equiv. wt., 198. Other derivs.: *γ-lactone*, m. 151.5°, $[\alpha]_D$ = +52.4°, equiv. wt. 172, cryst. Ca salt, $(C_6H_{11}O_7)_2Ca \cdot 2H_2O$, contg. 12.07% CaO, $[\alpha]_D$ = −7.1° (dehydrated); *brucine salt*, m. 205°, $[\alpha]_D$ = −20.5°; *quinine salt*, m. 165°, $[\alpha]_D$ = −100°. Reduced by Na amalgam to *d*-mannose, its *phenylhydrazone* was obtained, m. 188-9°, on recrystn. from 60% alc., m. 201°. The Ca salts obtained from cultures of other strains of I were also transformed into γ-lactone and identified. The results show that in all 12 acid-forming strains the product of fructose oxidation is *d*-mannonic acid, obtained without breaking the C chain. By the action of bacterial suspensions on fructose solns. under aerobic and anaerobic conditions a series of strains produced substances oxidizable by iodine in an alk. medium (Willstatter and Shudl), but it is unknown whether the formation of *d*-mannonic acid from *d*-fructose proceeds by way of *d*-mannose or glucosone. Formation of *d*-gluconic acid along with *d*-mannonic acid was not observed, which indicates the presence of optically active catalysts produced by the bacterial cells during the oxidation process.

T. Lasnex

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PERVUKHIN, A.

Economic obsolesence of equipment and amortization norms. Vop.ekon. no.1:116-125 Ja '57. (MLRA 10:3)
(Depreciation)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

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BURSHTEYN, Grigoriy Yakovlevich, doktor ekon. nauk; LEVIN, G.I., kand. ekon.nauk, retsenzent; PERVUKHIN, A.G., retsenzent; PROBST, A.Ye., doktor ekon.nauk, retsenzent; KHARCHENKO, A.K., doktor tekhn. nauk, retsenzent; GOLUBYATNIKOVA, G.S., red.izd-va; BOLDYREVA, Z.A., tekhn. red.; MAKSIMOVA, V.V., tekhn. red.

[Capital assets of the coal industry] Osnovnye fondy ugol'noi promyshlennosti. Moskva, Gosgortekhizdat, 1963. 211 p. (MIRA 16:8)

(Coal mines and mining--Finance)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

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PERVUKHIN, A.G.

Production cost of coal and ways of reducing it. Ugol' 30 no.2:1-5 F '55. (MLRA 8:4)

1. Nachal'nik Planovogo upravleniya Ministerstva ugol'noy promyshlennosti SSSR.
(Coal mines and mining)

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PERVUKHIN, A.G.

GRAFOV, L.Ye., red.; GUBERMAN, I.D., red.; ZADEMIDKO, A.N., red.; ZASYAD'KO, A.F., red.; KRASNIKOVSKIY, G.V., red.; KUZ'MICH, A.S., red.; LALAYNTS, A.M., red.; MEL'NIKOV, L.G., red.; MENDELI, E.O., kand. tekhn.nauk; ONIKA, D.G., doktor tekhn.nauk, red.; PANOV, A.D., red.; POCHENKOV, K.I., red.; TERPIGOREV, A.M., akademik, red.; USKOV, A.A., red.; KHARCHENKO, A.K., red.; SHCHEDRIN, M.A., red.; BOYKO, A.A., red.; MELAMED, Z.M., kand.tekhn.red.; PERVUKHIN, A.G., red.; BARABANOV, F.A., red.; SOSNOV, G.A., red.; TSYPKIN, V.S., red.; ALADOVA, Ye.I., tekhn.red.

[Restoration of the coal industry in the Donets Basin] Vosstanovlenie ugol'noi promyshlennosti Donetskogo basseina. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po ugol'noi promyshl. Ugletekhizdat. Vol.1. 1957. 371 p. Vol.2. 1957. 782 p. (MIRA 11:4)
(Donets Basin--Coal mines and mining)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVUKHIN, A.G.

Against charging mining equipment to turn-over funds. Ugol' 34 no.6:38-39 Je '59. (MIRA 12:8)

1.Gosplan SSSR.
(Mining machinery) (Coal mines and mining--Accounting)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVUKHIN, A.G.; GORLIN, M.Yu.

Prospects for the construction of enterprises in the coal industry. Shakht. stroi. 6 no.7:1-3 Jl '62. (MIRA 15:7)

1. Gosudarstvennyy nauchno-ekonomicheskiy sovet Soveta Ministrov SSSR.

(Coal mines and mining)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PLINER, L.A.; PERVUKHIN, A.G., glavnyy inzhener.

Introducing advanced technology in the Karpunino Forest Industry Establishment. Mekh.trud.rab. 10 no.2:33-35 F '56. (MLRA 9:5)

1. Direktor lespromkhoza (for Pliner)
(Karpunino--Lumbering)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

SHTURKIN, D.A.; PERVUKHIN, A.P.

Ferromagnetic sonde for flaw detection. Zav.lab. 26 no.11:1301-1304 '60. (MIRA 13:11)

1. Institut fiziki metallov Akademii nauk SSSR.
(Magnetic testing)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

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85533

S/032/60/026/011/025/035
B004/B067

18.8720

AUTHORS: Shturkin, D. A. and Pervukhin, A. P.

TITLE: Ferroprobe Defectqscope

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 11, pp. 1301-1304

TEXT: An apparatus is described, which is used to detect defects in small steel products having the shape of rotating bodies. The specimens are magnetized outside the device and then placed near two probes whose signals are transmitted to the separator via an amplifier. Fig. 2 shows a diagram of the two series-connected probes. 1,2 denote the cores of 80 HXC (80NKhS) permalloy wire, 0.1 mm thick. I: exciter coil, II: search coil, ЗГ audio-frequency generator, ЛВ tube voltmeter, И specimen, B its magnetic field. The second harmonic of the emf is selected in the circuit. Fig. 3 shows the scheme of the separator. 1 denotes a rotating brass pipe driven by the engine 4, which transports the specimen to the probes 2. ЗГ is the audio-frequency generator, У the amplifier, 3 the separator with separating magnet 5. There are 3 figures.

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Ferroprobe Defectoscope

S/032/60/026/011/025/035
B004/B067

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

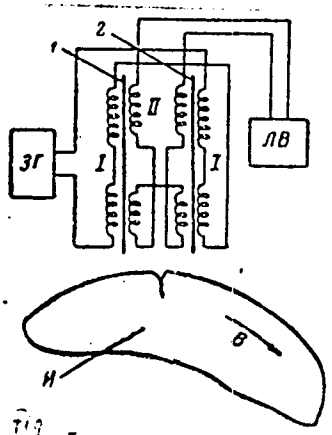

Рис. 2.

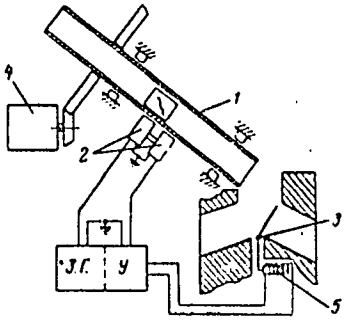

Рис. 3

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVUKHIN, B.V., gornyy inzhener; LEBEDEV, Yu.P., gornyy inzhener.

Drifting in the Khaidarkan mines. Gor.zhur. no.5:54-55 My '56.
(MLRA 9:8)

(Khaidarkan--Mining engineering)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVUKHIN, D., inzhener (TsPKB-1)

Some remarks on "Regulations on the electrical equipment of seagoing vessels ("Regulations on the electrical equipment of seagoing vessels entered into the Sea Register of the U.S.S.R." Reviewed by D.Pervukhin). Mor.flot.16 no.8:32 Ag '56. (MLRA 9:10)
(Ships--Equipment and supply) (Electric machinery)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVUKHIN, D.F., inzh.

Regulations on the electric equipment of merchant ships.
Sudostroenie 29 no.5:65-66 My '63. (MIRA 16:9)
(Electricity on ships)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

YEGOROV, B.A.; PERVUKHIN, F.S.; SOKOLOV, P.D.

Investigation of tannin-bearing plants. Bot.zhur.41 no.9:1407-1409 S '56. (MLRA 9:11)

1. Botanicheskiy institut imeni V.L.Komarova Akademii nauk SSSR, Leningrad.
(Tannins)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

PERVUKHIN, F.S.; SMIRNYAGINA, M.M.

Effect of gibberellin on the growth and development of gramineous and leguminous plants. Izv. Tib. Ord. AN SSSR no.9:101-105 '[illegible]. [illegible]

1. "Sentral'nyy botan[illegible] [illegible] Sibirskogo [illegible] AN SSSR.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001240

USSR / Cultivated Plants. Technical, Oleaceous, Sugar Bearing Plants. M-6

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 58683

Author : Yegorov, B. A.; Pervukhin, F. S.; Sokolov, P. D.
Inst : Botanical Inst.-t, Acad. Sci., USSR
Title : Problems Pertaining to the Study of Tannin Bearing Plants

Orig Pub : Botan. zh., 1956, 41, No 9, 1407-1409

Abstract : The results of studies of conferences on plant resources of the USSR, conducted in 1954, and on cultivation of new useful plants, conducted in 1956 under the auspices of the Botanical institute, Acad. Sci., USSR are explained. It is indicated that the tannin-extracting industry must increase the planned production of tannides in the sixth five year period by 25% in comparison with 1954. Along with non-marketable

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R00124

USSR / Cultivated Plants. Technical, Oleaceous, Sugar Bearing Plants. M-6

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 58683

oak wood pulp, the industry utilizes presently the bark of spruce, willow, larch, roots of bistort, sea lavender, rhubarb (chukhra) and leaves of smoke tree in small quantities. It is necessary to strengthen the coordination of studies of tannin bearing plants between various scientific-research institutions and to improve their connection with production organizations. It is necessary to develop a speedy and accurate method of quantitative determination of tannins. Attention is drawn on increasing work with grassy tanning plants. The conference showed the necessity of introduction into commercial cultivation in Uzbekistan and in the Southern Kazakhstan of tanning bistort. It is recommended to investigate the

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