KRUZHKOV, N.

Audio frequency generator. Radio no.11:50-51 N '56. (MLRA 9:12)
(Oscillators, Electron-tube)

KRUZHKOV, N.

Universal multimeter. V pom. radioliub. no.4:50-62 '57. (MIRA 11:2)
(Radio measurements)

KRUZHKOV, N.

USSR/ Electronics - Measurement

Card 1/1 Pub. 89 - 28/30

Authors : Kruzhkov, N.

Title : Simple oscillator

Periodical : Radio 1, 59 - 60, Jan 56

Abstract : The technical specifications and instructions for assembling are given for an oscillograph containing an amplifier of vertical deviation on a 6ZH4 tube, an amplifier of horizontal deviation and rectifier on a 6N8S tube, a generator of saw-tooth voltage on a 6N8S tube and a LO-247 electronic beam tube. It is intended that the oscillograph be built by radio amateurs of average qualifications. Illustrations; circuit diagram.

Institution : .....

Submitted : .....

05390
SOV/107-59-8-10/49

8(2), 9(4)

AUTHOR: Kruzhkov, N.

TITLE: A Transistorized Avometer

PERIODICAL: Radio, 1959, Nr 8, pp 12 - 13, p 15 (USSR)

ABSTRACT: The author describes an avometer for measuring direct and alternating voltages up to 1000 volts with an input impedance of 100 kiloohm per volt, direct and alternating currents up to 1 amp and resistances up to 10 megohms. The author recommends using bridge circuits, similar to those shown in Figure 1 a-c. He based his avometer on the bridge circuit shown in Figure 1c. Here, the current to be measured is fed simultaneously to the bases of two transistors. One of the transistor resistances increases while the other is reduced. The complete circuit diagram of the avometer is shown in Figure 2. The sensitivity of the bridge circuit used is about 5-8 microamps when using

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KRUZHKOV, Nik.

Their names are not forgotten. Komm. Vooruzh. Sil 46 no.6:86-88 Mr '65. (MIRA 18:11)

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R000826820004-1"

KRUZHKOV, S.

Hero of socialist labor. Za bezop.dvizh. 6 no.8:1-3 Ag '63.
(MIRA 16:9)

KHUZHKOV, S.N.

Methods for deriving generalized solutions to the Cauchy problem for a quasi-linear equation of the first order.
Usp. mat. nauk 20 no.6:112-118 N-D '65. (MIRA 18:12)

1. Submitted Feb. 23, 1965.

L 29114-66 EWT(d) IJP(c)
ACC NR: AP6019394 SOURCE CODE: UR/0042/65/020/006/0112/0118

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B

AUTHOR: Kruzhkov, S. N.

ORG: none

TITLE: Methods for the construction of generalized solutions to Cauchy's problem for a first-order quasilinear equation

SOURCE: Uspekhi matematicheskikh nauk, v. 20, no. 6, 1965, 112-118

TOPIC TAGS: Cauchy problem, function, viscosity, approximation

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ABSTRACT: It is known that approximate solutions to Cauchy's problem in the large for the equation $\frac{\partial u}{\partial t}+\frac{\partial \varphi(u)}{\partial x}=0,\ \varphi''(u)>0$ can be constructed by the method of finite differences and the method of "vanishing viscosity." The question of the convergence of the approximate solutions was considered in articles by O. A. Oleynik, while an article by N. S. Bakhvalov established an evaluation for the error of a solution constructed by the method of finite differences. The present article suggests a comparatively simple proof of convergence which makes it possible at the same time to obtain an evaluation of the error in an approximate solution. To evaluate the norm of the difference of two approximate solutions, the author uses the technique of smoothing by means of mean functions and the method of optimal (in a certain sense) choice of a smoothing parameter. Orig. art. has: 17 formulas. /JPRS/

SUB CODE: 12/SUBM DATE: 23Feb65/ORIG REF: 005

Card 1/1

ACC NR: AP6032935 SOURCE CODE: UR/0208/66/006/005/0884/0894

AUTHOR: Kruzhkov, S. N. (Moscow)

ORG: none

TITLE: Applying the finite-difference method to a nonlinear first-order equation with many variables

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 6, no. 5, 1966, 884-894

TOPIC TAGS: nonlinear differential equation, function analysis, mathematic analysis, finite difference, difference method

ABSTRACT: This work is closely related to the author's previous investigations (S. N. Kruzhkov. DAN SSSR, 1964, 155, no. 4, 743-746; 1966, 167, no. 2, 286-289; Matem. sb., 1966, 70 (112), no. 3, 394-416), with the difference that it deals with the substantiation of the finite-difference method of solution of the nonlinear equation

$$u_t + f(t, x, u, u_x) = 0,$$

$$x = (x_1, \ldots, x_n), \quad u_t = \frac{\partial u}{\partial t}, \quad u_x = \left(\frac{\partial u}{\partial x_1}, \ldots, \frac{\partial u}{\partial x_n}\right). \quad (1)$$

 UDC: 518:517.944/.947

ACC NR: AP6032935

with the initial conditions

$$u\big|_{t=0} = u_0(x) \qquad (2)$$

by means of a generalized version of Lax's method and estimates the error of the approximate solution. For simplicity of exposition, attention is confined to the equation

$$\mathcal{L}(u) = u_t + f(u_x) = 0; \qquad (3)$$

where the function $f(\upsilon)$, $\upsilon = (\upsilon_1, \ldots, \upsilon_n)$, is twice continuously differentiable in the Euclidean space $E_n(\upsilon)$ and convex: if $f_i(\upsilon) = \partial f(\upsilon) / \partial \upsilon_i$, $f_{ij}(\upsilon) = \partial^2 f(\upsilon) / \partial \upsilon_i \partial \upsilon_j$, then

$$\sum_{i,j=1}^{n} f_{ij}(\upsilon)\xi_i\xi_j > 0 \qquad (4)$$

for any real $\upsilon$ and $\xi = (\xi_1, \ldots, \xi_n) \neq 0$. With respect to the initial function $u_0(x)$ it is assumed that $|u_0(x) - u_0(y)| \leq K_0|x - y| = K_0[(x_1 - y_1)^2 + \ldots + (x_n - y_n)^2]^{1/2}$ and that

$$\Delta^2 u_0(x, \Delta x) = u_0(x + \Delta x) - 2u_0(x) + u_0(x - \Delta x) \leq K_1|\Delta x|^2, \quad K_1 \geq 0, \qquad (5)$$

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ACC NR: AP6032935

for any real vector $\Delta x \neq 0$. On denoting by the symbol $S_\rho$ the sphere $\{x: |x| \leq \rho\}$, B -- the cross section of the cone $\mathcal{K} = \{(t, x) : |x| \leq \rho_0 - Rt,\ 0 \leq t \leq \rho_0 / R\}$ with the hyper plane $t = \tau$; and C -- any constant depending only on n, $\rho_0$, on the constants K with a subscript, and on quantities determined by the values of the function f(v) in its first and second derivatives for $|v| \leq \sqrt{n} K_0$, the following basic theorem, which can be used to substantiate a broad class of approximate methods of the solution of problem (3), (2), is formulated and proved: If the functions $u^\epsilon(t, x)$ $0 < \epsilon < 1$ are defined in the $\mathcal{K}$ cone and satisfy in $\mathcal{K}$ the Lipschitz condition, then

$$\max_{\mathcal{K}} |u^{\epsilon_1} - u^{\epsilon_2}| \leq C(\epsilon_1 + \epsilon_2 + \delta)^{1/(n+1)} \quad (6)$$

and

$$\|\mathrm{grad}(u^{\epsilon_1} - u^{\epsilon_2})\|_{L_1(B^\tau)} \leq C(\epsilon_1 + \epsilon_2 + \delta)^{1/2}, \quad (7)$$

where

$$\delta = \max_{S_{\rho_0}} |u^{\epsilon_1}(0, x) - u^{\epsilon_2}(0, x)|. \quad (8)$$

Orig. art. has: 25 formulas.

SUB CODE: 12/ SUBM DATE: 20Sep 65/ ORIG REF: 005/ OTH REF: 002

Card 3/3

L 07411-67 EWT(d) IJP(c)
ACC NR: AP6032845 SOURCE CODE: UR/0020/66/170/003/0501/0504

AUTHOR: Kruzhkov, S. N.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

21
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TITLE: An a priori estimate for the derivative of the solution of a parabolic equation and some applications

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SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 501-504

TOPIC TAGS: partial differential equation, parabolic equation, boundary value problem, Cauchy problem, approximation method

ABSTRACT: The following equation of the parabolic type is studied in the rectangle $Q\{(t, x): 0 \leqslant t \leqslant T, 0 \leqslant x \leqslant l\}$:

$$u_t = a(t, x, u, u_x)u_{xx} + b(t, x, u, u_x) \quad (1)$$

under the following assumptions about the functions $a(t, x, u, p)$ and $b(t, x, u, p)$: for $(t, x) \in Q$, $|u| \leqslant M$ and derivatives of $p$

$$0 < a_0 \leqslant a(t, x, u, p) \leqslant a_1(|p|^m + 1), \quad m \geqslant 0, \quad (2)$$

$$|b(t, x, u, p)| \leqslant Ka(t, x, u, p)(p^2 + 1). \quad (3)$$

The function $u(t,x)$ is continuous in $Q$ and satisfies equation (1). A priori estimates

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UDC: 517.946.9

L 07411-67

ACC NR: AP6032845

are made for the modulus of the derivative $u_x$ and its Hoelder constants, which depend only on $M$, $a_0$, $a_1$, $m$, and $K$, i.e., without any assumptions as to the continuousness of the coefficients of (1). The results are applied to the study of boundary value problems and the Cauchy problem for (1) and for a nonlinear parabolic equation of form

$$u_t = a(t, x, u, u_x, u_{xx}).$$

The proofs of the estimates are based on the fact that with the introduction of an additional space variable, the problem of finding the inner estimate is reduced to a study of the solution of a new quasilinear parabolic equation near the boundary of a three-dimensional region where the solution vanishes. Orig. art. has: 19 formulas.

SUB CODE: 12/ SUBM DATE: 16Dec65/ ORIG REF: 007/ OTH REF: 002

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AUTHOR: Kruzhkov, S.N. S/020/60/132/01/08/064

TITLE: Cauchy Problem In the Large for Some Nonlinear First Order Differential Equations

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 1, pp. 36-39

TEXT: In $t \geqslant 0$ the author considers the problem

(1) $u_t + \varphi(u_x) = 0$ , $\varphi''(v) \geqslant a > 0$ , $\varphi(0) = \varphi'(0) = 0$

(2) $u(0,x) = u_o(x)$ ,

where $u_o(x)$ is arbitrarily bounded. The author defines the generalized solution of (1), (2) and proves its existence and uniqueness as well as the continuous dependence on the initial conditions. The properties of the generalized solutions are investigated; in $t > 0$ they are continuous for all initial conditions. The results are used in order to investigate the Cauchy problem for

(3) $v_t + (\varphi(v))_x = 0$ , $\varphi''(v) \geqslant a > 0$ , $\varphi'(0) = 0$

with initial conditions given by a functional. There are 3 definitions,

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Cauchy Problem in the Large for Some Nonlinear First Order Differential Equations

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3 lemmata and 9 theorems.
The author thanks Professor O.A. Oleynik for the theme.
There are 5 references; 4 Soviet and 1 American.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

PRESENTED: December 28, 1959, by I.G. Petrovskiy, Academician

SUBMITTED: December 24, 1959

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AUTHORS: Oleynik, O. A., Kruzhkov, S. N.

TITLE: Quasilinear parabolic equations of second order with several independant variables

PERIODICAL: Uspekhi matematicheskikh nauk, v. 16, no. 5, 1961, 115 - 155

TEXT: One considers the existence of solutions for Cauchy problems and for boundary value problems for quasilinear parabolic equations of second order with several independant variables. Considered are solutions "in the large", i. e. solutions for an arbitrary previously given t-interval. In the introduction it is stated first of all that for an arbitrary parabolic equation

$$u_t - a_{ij}(t, x, u, u_x)u_{x_i x_j} = f(t, x, u, u_x)$$

with sufficiently smooth $a_{ij}$ and f, there always exists a "local" solution of the considered problems, i.e. for a sufficiently small t-interval. For the existence of solutions "in the large" it proves to be necessary that the growth of the $a_{ij}$ and of f satisfies certain restrictions

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§2 contains apriori estimations of the solutions of linear parabolic equations. There are mentioned results of the following references: (Ref 31: I. Nash, Continuity of solutions of parabolic and elliptic equations, Amer. Journ. Math. 80, no. 4(1958), 931 - 954; Ref 8: A. Friedman, On quasi-linear parabolic equations of the second order II, Journ. Math. and Mech. 9, no. 4(1960), 539 - 556; Ref 26: A. Friedman, Boundary estimates for second order parabolic equations and their applications, Journ. Math. and Mech. 7, no. 5(1958), 771 - 791; Ref 34: A. Friedman, Interior estimates for parabolic systems of partial differential equations, Journ. Math. and Mech. 7, no. 3.(1958), 393 - 417) as well as the following generalisation of the theorem of J. Nash: Let $\Omega$ be a domain of $E_n$, $\Omega^\delta$ be the largest subdomain of $\Omega$, its distance from the boundary of $\Omega$ being $\delta > 0$. Let $Q^\delta = \{\Omega^\delta \times (0, T)\}$, $Q = \{\Omega \times (0, T)\}$; let T be the lower base and S the face of Q; in Q one considers bounded solutions of the parabolic equation

$$\frac{\partial u}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i}\left(a_{ij}(t,x)\frac{\partial u}{\partial x_j}\right) + \sum_{i=1}^{n} b_i(t,x)\frac{\partial u}{\partial x_i} + f(t,x) \qquad (2.3)$$



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the coefficients being sufficiently smooth, $a_{ij}(t, x) = a_{ji}(t, x)$ and

$$\mu_1 \sum_{i=1}^{n} \xi_i^2 \leqslant \sum_{i,j=1}^{n} a_{ij}(t, x) \xi_i \xi_j \leqslant \mu_2 \sum_{i=1}^{n} \xi_i^2, \quad 0 < \mu_1 \leqslant \mu_2, \qquad (2.4)$$

$$|b_i| \leqslant B, \quad i = 1, \ldots, n, \quad |f| \leqslant N. \qquad (2.5)$$

being satisfied. Then

Theorem 2: Let $u(t, x)$ be a solution of (2.3) in $Q$; $|u(t, x)| \leqslant M$. Then for $(t_1, x_1), (t_2, x_2) \in Q^{\delta}$, $0 < t_1 \leqslant t_2$, $0 < \delta \leqslant 1$ holds the inequality

$$|u(t_2, x_2) - u(t_1, x_1)| \leqslant A \max\left[\frac{M+N}{\delta^{\alpha}}, (M+N) B^{\alpha}, \frac{M}{\min(\sqrt{t_1}, 1)}\right] |x_2 - x_1|^{\alpha} +$$

$$+ A \max\left[\frac{M+N}{\delta^{2\beta}}, (M+N) B^{2\beta}, \frac{M}{\min(\sqrt{t_1}, 1)}\right] (t_2 - t_1)^{\beta} \qquad (2.6)$$

for a certain $\alpha \in (0, \frac{1}{2})$, $\beta \in (0, \frac{1}{4})$.

$A$, $\alpha$, $\beta$ are constants, only depending on $\mu_1$, $\mu_2$ and $n$.

The following later used signs are introduced in §2: $u \in C^q(q =$

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$= 0, \alpha, 1+\alpha, 2+\alpha$) means that $|u|_q$ is finite. Let $P_1(t', x')$, $P_2(t'', x'') \in Q\{\Omega \times (0, T)\}$; then

$$d(P_1, P_2) = (|x' - x''|^2 + |t' - t''|)^{\frac{1}{2}}, \qquad (2.20)$$

$$|u|_0 = \sup_Q |u|, \quad |u|_\alpha = |u|_0 + \sup_{P_1, P_2 \in Q} \frac{|u(P_1) - u(P_2)|}{d(P_1, P_2)^\alpha}, \quad 0 < \alpha < 1, \qquad (2.21)$$

$$|u|_{1+\alpha} = |u|_\alpha + \sum_{i=1}^{n} \left| \frac{\partial u}{\partial x_i} \right|_\alpha, \qquad (2.22)$$

$$|u|_{2+\alpha} = |u|_{1+\alpha} + \sum_{i=1}^{n} \left| \frac{\partial u}{\partial x_i} \right|_{1+\alpha} + \left| \frac{\partial u}{\partial t} \right|_\alpha. \qquad (2.23)$$

In §3 there are given apriori estimations for the solutions of quasilinear parabolic equations. Let u(t, x) be the solution of the equation:

$$\frac{\partial u}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i} \left( a_{ij}(t, x, u) \frac{\partial u}{\partial x_j} \right) + \sum_{i=1}^{n} b_i(t, x, u, u_x) \frac{\partial u}{\partial x_i} + c(t, x, u, u_x), \quad u_x = (u_{x_1}, \ldots, u_{x_n}). \tag{3.1}$$

in the cylinder $Q \{\Omega \times (0, T)\}$ which corresponds to the boundary condition

$$u|_{\Gamma} = \Psi|_{\Gamma}, \tag{3.3}$$

$\Psi(t, x)$ being defined in $\overline{Q}$ and $|\Psi| \leq M_0$.

The following conditions be satisfied:

A. For $(t, x) \in \overline{Q}$ and arbitrary u let $c_u(t,x,u,0) \leq c_0$, $|c(t,x,0,0)| \leq c_1$

B. For $(t, x) \in \overline{Q}$ and arbitrary u let $a_{ij} = a_{ji}$ and

$$\mu_1(|u|) \sum_{i=1}^{n} \xi_i^2 \leq \sum_{i,j=1}^{n} a_{ij}(t, x, u) \xi_i \xi_j \leq \mu_2(|u|) \sum_{i=1}^{n} \xi_i^2,$$



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$\mu_1$ being a non-increasing and $\mu_2$ being a non-decreasing positive function.

C. For $(t, x) \in \overline{Q}$, $|u| \leqslant \overline{M} = \max\left\{M_o e^{\gamma T}, \frac{c_1 e^{\gamma T}}{\gamma - c_o}\right\}$, where $\gamma > c_o$ and arbitrary $u_{x_k}$ be $|b_i| \leqslant B_o(|\text{grad}_x u| + 1)$, $|(b_i)_{x_k}| + |(b_i)_u| \leqslant B_1(|\text{grad}_x u| + 1)$, $|(b_i)_{u_{x_k}}| \leqslant B_2$, $|c| + |c_{x_k}| + |c_u| + |c_{u_{x_k}}| \leqslant N$.

Under these suppositions one proves six lemmata, e. g.

Lemma 2: There exists an $M_1$ such that

$$|u(t, x) - \varphi(t, x)| \leqslant M_1 t$$

Relying on these lemmata one proves:

Theorem 10: The $b_i$ in (3.1) are supposed to satisfy instead of C the more strict condition:

D. For $(t, x) \in \overline{Q}$, $|u| \leqslant \overline{M}$ and arbitrary $u_{x_k}$ holds:

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$|b_i| < [\lambda(p) + \varkappa](p + 1)$, where $p = |\mathrm{grad}_x u|$, $[\lambda(p) + \varkappa](p + 1)$, being a positive increasing function for $p \geqslant 0$, $\lambda(p)$ being bounded, $\lim\limits_{p \to +\infty} \lambda(p) = 0$, and $0 \leqslant \varkappa < M$;

$|(b_i)_{x_k}| + |(b_i)_u| \leqslant B_1(p + 1)$; $|(b_i)_{u_{x_k}}| \leqslant B_2$; $|c| + |c_{x_k}| + |c_u| + |c_{u_{x_k}}| \leqslant N$.

Then in $\bar{Q}$ holds:

$$|\mathrm{grad}_x u| \leqslant M_{15}. \qquad (3.13)$$

The function f is said to belong to the class $C_{q+\alpha}$ in the domain G, with respect to certain arguments, if f and all its derivatives with respect to these arguments up to the q-th order are bounded in G, satisfying in G the Hölder condition with the exponent $\alpha$ with respect to all arguments.

Theorem 11: Let $u(t, x) \in C^{2+\nu}$ be the solution of (3.1), (3.3) in the cylinder $Q\{\Omega \times (0, T)\}$; let $\Omega \in A^{2+\nu}$ and the coefficients of (3.1)

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satisfying the conditions A, B, D. In every finite part of the domain $\{(t, x) \in \overline{Q}, |u| \leq \overline{M}, -\infty < u_{x_i} < +\infty\}$ be the coefficients $a_{ij} \in C_{2+\nu}$ with respect to $x_k$ and u, the function c and $b_i \in C_{1+\nu}$ with respect to $x_k$, u, $u_{x_k}$; let $\Psi \in C^{2+\nu}$. Then in $\overline{Q}$ holds apriori:

$$|u|_{2+\nu} \leqslant M, \tag{3.19}$$

where M = const is determined by the data of the problems (3.1),(3.3). $\Omega \in A^{2+\alpha}$ means that the boundary of $\Omega$ may be cut up into a finite number of pieces with the equations $x_i = h(x_1, \ldots, x_{i-1}, x_{i+1}, \ldots x_n)$, where $h \in C^{2+\alpha}$.

Let $u(t, x) \in C^{2+\nu}$ be in the layer $H\{0 \leqslant t \leqslant T\}$ and let

$$u(0, x) = \Psi_0(x), \quad -\infty < x_i < \infty ; \tag{3.20}$$

be the solution of the Cauchy problem for (3.1); if then the coefficients of (3.1) satisfy the conditions A, B, D, belong to the same

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classes as in theorem 11, and if $\psi_0 \in C^{2+\nu}$ in H, then $|u|_{2+\nu} \leq k$, k only depending on the data of the problems (3.1), (3.20). (Theorem 12)

Relying on the apriori estimations of §3, the authors prove in §4: Theorem 13: Under the suppositions of theorem 11 with respect to the coefficients of (3.1) and to the boundary of $\Omega$ in the cylinder $Q\{\Omega \times (0, T)\}$ there exists in $\overline{Q}$ a unique solution $u(t, x) \in C^{2+\nu}$ of the problers (3.1), (3.3), if $\psi(t, x) \in C^{2+\nu}$ in $\overline{Q}$, and if on the boundary of the lower base of Q the following condition is satisfied:

$$\frac{\partial \psi}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i} \left(a_{ij}(t, x, \psi) \frac{\partial \psi}{\partial x_j}\right) + \sum_{i=1}^{n} b_i(t, x, \psi, \psi_x) \frac{\partial \psi}{\partial x_i} +$$

$$+ c(t, x, \psi, \psi_x).$$

Theorem 14: Under the suppositions of theorem 12 with respect to the coefficients of (3.1) in the layer $H\{0 \leq t \leq T\}$ there exists in H a unique solution $u(t, x) \in C^{2+\nu}$ of the problem (3.1), (3.20), if $\psi_0(x) \in C^{2+\nu}$ in H.

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In §5 the parabolic equation

$$\frac{\partial u}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i} \left(a_{ij}(t, x, u) \frac{\partial u}{\partial x_j}\right) + \sum_{i=1}^{n} \frac{\partial b_i(t,x,u)}{\partial x_i} + a(t,x,u), \qquad (5.1)$$

is considered. A function u(t, x), bounded in Q is called a generalised solution of the first boundary value problem

$$u\big|_S = 0, \quad u(0, x) = u_0(x), \quad |u_0(x)| \leq M \qquad (5.2)$$

in Q for (5.1), if

1.) u(t, x) satisfies the Hölder condition inside of $\overline{Q}$

2.) u(t, x) possesses generalised derivatives $\frac{\partial u}{\partial x_i}$ in Q, which are square summable.

3.) for every smooth F(t, x), where $F\big|_S = 0$, $F\big|_{t=T} = 0$, the identity

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$$\iint_Q \Big[ u \frac{\partial F}{\partial t} + \sum_{i,j=1}^{n} u \frac{\partial}{\partial x_j}\Big(a_{ij}(t,x,u)\frac{\partial F}{\partial x_i}\Big) - \sum_{i=1}^{n} b_i(t,x,u)\frac{\partial F}{\partial x_i}$$

$$+ a(t,x,u)F\Big] dx\, dt + \int_\Omega u_0(x) F(0,x)\, dx = 0 \qquad (5.3)$$

is satisfied.

4.) "u(t, x) takes the value zero on S in the mean".

Let the $a_{ij}$ be continuous in $R_N\{(t, x)\in \overline{Q}, |u|\leqslant N\}$, possessing bounded derivatives with respect to x and u for every N; let $b_i$, $(b_i)_{x_i}$ and a be bounded in $R_N$, satisfying the Lipschitz condition with respect to u; for $a_{ij}$ let the condition B of §3 be satisfied.

Then:

Theorem 15: The generalised solution of (5.1), (5.2) is unique.

If (5.1) is written in the following form:

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$$\frac{\partial u}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i}\left(a_{ij}(t, x, u)\frac{\partial u}{\partial x_j}\right) + \sum_{i=1}^{n} \frac{\partial b_i(t,x,u)}{\partial u}\frac{\partial u}{\partial x_i} + \sum_{i=1}^{n}(b_i)_{x_i} + a(t, x, u) \qquad (5.11)$$

supposing

$$\left(\sum_{i=1}^{n}(b_i)_{x_i} + a\right)_u \leqslant c_0. \qquad (5.12)$$

then holds

Theorem 16: The generalised solution of (5.1), (5.2) exists and is limit (for $\tau \to 0$) of the sequence $u^{\tau}(t, x)$, $0 < \tau \leqslant 1$. The function $u^{\tau}$ is defined in $\overline{Q}$ as a solution of

$$\frac{\partial u^{\tau}}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i}\left[a_{ij}^{\tau}(t, x, u^{\tau}(t-\tau, x))\frac{\partial u^{\tau}}{\partial x_j}\right] + \sum_{i=1}^{n} B_i^{\tau}(t, x, u^{\tau}(t-\tau, x))\frac{\partial u^{\tau}}{\partial x_i} + c^{\tau}(t, x, u^{\tau}(t-\tau, x))u^{\tau} + f^{\tau}(t, x) \qquad (5.13)$$

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with the conditions $u^{\tau}\big|_S = 0$, $u^{\tau}(t, x) = u_0^{\tau}(x)$ for $-\tau \leqslant t \leqslant 0$, where $a_{ij}^{\tau}$, $B_i^{\tau}$, $c^{\tau}$, $f^{\tau}$ are bounded functions, uniformly smooth in $\tau$, converging in $R_N$ in the mean to $a_{ij}$, $\frac{\partial b_i}{\partial u}$, c, f, where $c(t, x, u)u + f(t, x) = \sum_{i=1}^{n} (b_i)_{x_i} + a$; $u_0^{\tau}$ are functions finite in $\Omega$, being uniformly bounded with respect to $\tau$; $u_0^{\tau} \to u_0(x)$ for $\tau \to 0$ in the mean, $f^{\tau} = 0$ on the boundary of $\Omega$; $c^{\tau} \leqslant c_0$.

Adjoining the existence and uniqueness of a generalised solution of the Cauchy problem for (5.1) in $H\{0 \leqslant t \leqslant T, -\infty < x_i < \infty\}$ with the conditions:

$$u(0, x) = u_0(x), \quad |u_0(x)| \leqslant M \text{ in } E_n\{-\infty < x_i < +\infty\} \qquad (5.16)$$

is proved, where $u_0(x)$ is square-summable in the whole $E_n$.

§6 contains:

Theorem 19: Let u(x) be in $\Omega$ the solution of the elliptic equation

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Quasilinear parabolic equations...

$$\sum_{i,j=1}^{n} \frac{\partial}{\partial x_i} (a_{ij}(x, u) \frac{\partial u}{\partial x_j}) + b(x, u, u_x) = 0 \qquad (6.2)$$

satisfying on the boundary S of

$$u\Big|_S = \Psi\Big|_S . \qquad (6.3)$$

Let $|u| \leqslant \widetilde{M}$; $\Psi(x) \in C^{2+\nu}$, $\Omega \in A^{2+\nu}$. For $x \in \overline{\Omega}$ and $|u| \leqslant \widetilde{M}$ let

a) $a_{ij} = a_{ji}$; $\mu_1 \sum_{i=1}^{n} \xi_i^2 \leqslant \sum_{i,j=1}^{n} a_{ij} \xi_i \xi_j \leqslant \mu_2 \sum_{i=1}^{n} \xi_i^2$ ; $0 < \mu_1 \leqslant \mu_2$

b) $|b| \leqslant [\lambda(p) + \varkappa](p^2 + 1)$, where $p = |\text{grad } u|$, $[\lambda(p) + \varkappa]p$ is a positive increasing function for $p \geqslant 0$, $\lambda(p)$ bounded, $\lim_{p \to \infty} \lambda(p) = 0$, $0 \leqslant \varkappa < \widetilde{M}$ with $\widetilde{M}_1$ defined by the data of the problem (6.2),(6.3) and $\widetilde{M}$; $|b_{x_k}| + |b_u| \leqslant B_0(p^2 + 1)$; $|b_{u_{x_k}}| \leqslant B_1(p + 1)$.

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Quasilinear parabolic equations...

c.) in every finite part of the domain $\{x \in \overline{\Omega}, |u| \leq M, -\infty < u_{x_i} < +\infty\}$ holds $a_{ij} \in C_{2+\nu}$ with respect to x and u, $b \in C_{1+\nu}$ in x, u, $u_{x_i}$.

Then in $\Omega$ the apriori estimation holds:

$$|u|_{2+\nu} \leq M, \qquad (6.4)$$

where M is determined by the data of the problem (6.2), (6.3).

Theorem 20 states that under the suppositions of theorem 19 there exists a solution of (6.2), (6.3), in case there exists an apriori estimation, uniform with respect to k, $0 \leq k \leq 1$, of the absolute values of the solutions of the equation family

$$\sum_{i,j=1}^{n} \frac{\partial}{\partial x_i} \left(a_{ij}(x, ku) \frac{\partial u}{\partial x_j}\right) + b(x, ku, ku_x) = 0$$

with the conditions (6.3).

The author mentions S. N. Bernshteyn, A. V. Grekov, A. F. Filippov,

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S/042/61/016/005/002/005
C111/C444

Quasilinear parabolic equations...

Yu. A. Dubinskiy, S. L. Sobolev,

There are 24 Soviet-bloc and 18 non-Soviet-bloc references. The four most recent references to English-language publications read as follows: A. Friedman, On quasi-linear parabolic equations of the second order II, Journ. Math. and Mech. 9, no. 4 (1960), 539 - 556; A. Friedman, Boundary estimates for second order parabolic equations and their applications, Journ. Math. and Mech. 7, no. 5 (1958), 771 - 791; A. Friedman, Mildly non-linear parabolic equations with application to flow of gases through porous media, Arch. Ration. Mech. and Analysis 5, no. 3 (1960), 138 - 248; I. Nash, Continuity of solutions of parabolic and elliptic equations, Amer. Journ. Math. 80, no. 4 (1958), 931 - 954; perevod: Matematika 4, no. 1 (1960), 31 - 52.

SUBMITTED: May 4, 1961

Card 16/16

LAPUK, B.B.; KRUZHKOV, S.N.

Determination of the ultimate recovery from water-free wells and ultimate pressure decline in gas wells with bottom waters. Azerb. nefti. khoz. 40 no. 3:22-25 Mr '61. (MIRA 14:5)
(Gas, Natural)

S/020/61/138/005/002/025
C111/C222

16,3900 25303

AUTHOR: Kruzhkov, S.N.

TITLE: A priori estimation of solutions of linear parabolic equations and of those of boundary value problems for a certain class of quasilinear parabolic equations

PERIODICAL: Akademiya nauk SSSR. Doklady, v.138, no.5, 1961, 1005-1008

TEXT: The author generalizes a result due to J.Nash (Ref.1: Am.J.Math., 80, no.4 (1958)) on the continuity of the solutions of parabolic equations. The obtained a priori estimation of the modulus of continuity of the solutions of

$$\frac{\partial u}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i}\left(a_{ij}(t,x)\frac{\partial u}{\partial x_j}\right) + \sum_{i=1}^{n} b_i(t,x)\frac{\partial u}{\partial x_i} + f(t,x), \quad x=(x_1,\ldots,x_n) \qquad (1)$$

is used in order to prove the existence of the solution of the first boundary value problem and the Cauchy problem for certain quasilinear parabolic equations. The proof of the existence theorems is carried out according to the scheme of O.A.Oleynik (Ref.2: DAN, 138, no.1 (1961)). Let the coefficients of (1) be sufficiently smooth, $a_{ij} = a_{ji}$, furthermore be satisfied:

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$$\mu_1 \sum_{i=1}^{n} \xi_i^2 \leq \sum_{i,j=1}^{n} a_{ij} \xi_i \xi_j \leq \mu_2 \sum_{i=1}^{n} \xi_i^2, \quad 0 < \mu_1 \leq \mu_2; \tag{2}$$

$$|b_i| \leq B, \quad i=1,\dots,n; \quad |f| \leq N.$$

Let $\Omega$ denote a region in the space $(x_1,\dots,x_n)$; let $\Omega^\delta \subset \Omega$ be the greatest region for which its distance from the boundary of $\Omega$ equals $\delta$. Let $Q^\delta$ be the cylinder $\{\Omega^\delta \times [0,T]\}$; let the constants $A, \alpha, \beta$ depend only on $\mu_1, \mu_2$ and n.

Theorem 1: Let $u(x,t)$ be the solution of (1) in the cylinder $Q\{\Omega \times [0,T]\}$; $|u| \leq M$. Then for $(t_1,x_1), (t_2,x_2) \in Q^\delta$, $0 < t_1 \leq t_2$, $0 < \delta \leq 1$ there holds the inequality

$$|u(t_2,x_2)-u(t_1,x_1)| \leq A \max\left[\frac{M+N}{\delta^\alpha}, (M+N)B^\alpha, \frac{M}{\min(\sqrt{t_1},1)}\right] |x_2-x_1|^\alpha +$$
$$+ A \max\left[\frac{M+N}{\delta^{2\beta}}, (M+N)B^{2\beta}, \frac{M}{\min(\sqrt{t_1},1)}\right] (t_2-t_1)^\beta \tag{3}$$

for a certain $\alpha \in (0, \frac{1}{2}]$, $\beta \in (0, \frac{1}{4}]$.

Theorem 2: Let $\bar{Q}$ be a cylinder $\{\bar{\Omega} \times [0,T]\}$ the base $\bar{\Omega}$ of which has a three times continuously differentiable boundary; let s be the lateral area of $\bar{Q}$. In $\bar{Q}$ let be given the function $\varphi(t,x) \in C^{2+\nu}$, $|\varphi(t,x)| \leq M_0$. Then in $\bar{Q}$ there exists a unique solution u(t,x) of the problem

$$\frac{\partial u}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i}\left((a_{ij}(t,x,u)\frac{\partial u}{\partial x_j}\right) + \sum_{i=1}^{n} b_i(t,x,u,u_x)\frac{\partial u}{\partial x_i} + c(t,x,u,u_x), \tag{10}$$

$$u_x = (u_{x_1}, \ldots, u_{x_n});$$

$$u|_S = \varphi(t,x)|_S, \quad u(0,x) = \varphi(0,x) \tag{11}$$

if the following conditions are satisfied:

1) For $(t,x) \in \bar{Q}$ and arbitrary $u, u_x$ it holds $b_i \in C^{1+\nu}$, $c \in C^{1+\nu}$ (locally), $c_u \leq c_0$, $|c(t,x,0,0)| \leq c_1$.

2) For $(t,x) \in \bar{Q}$, $|u| \leq M(M_0, c_0, c_1, T)$ it holds $a_{ij} = a_{ji}$, $a_{ij} \in C^{2+\nu}$,

$$\mu_1 \sum_{i=1}^{n} \xi_i^2 \leq \sum_{i,j=1}^{n} a_{ij}\xi_i\xi_j \leq \mu_2 \sum_{i=1}^{n} \xi_i^2.$$

3) For $(t,x) \in \bar{Q}$, $|u| \leq M$, $|\mathrm{grad}_x u| \geq P_0 \geq 1$ it holds $|b_i| \leq B_0 |\mathrm{grad}_x u|^{\gamma}$, $0 \leq \gamma < 1$; $|(b_i)_{x_k}| + |(b_i)_u| \leq B_1 |\mathrm{grad}_x u|$, $|(b_i)_{u_{x_k}}| \leq B_2$, $|c_{x_k}| + |c_u| + |c| + |c_{u_{x_k}}| \leq N$, and on the boundary of the base of $\bar{Q}$ it is satisfied:

$$\frac{\partial \varphi}{\partial t} = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i}\left(a_{ij}(t,x,\varphi)\frac{\partial}{\partial x_j}\right) + \sum_{i=1}^{n} b_i(t,x,\varphi,\varphi_x)\frac{\partial \varphi}{\partial x_i} + c(t,x,\varphi,\varphi_x).$$

The solution $u(t,x)$ has first and second derivatives with respect to $x_k$ and first derivatives with respect to t which satisfy the Hölder condition in $\bar{Q}$.

The author thanks O.A.Oleynik for advices. There are 3 Soviet-bloc and 2 non-Soviet-bloc references. The reference to the English-language publication reads as follows: J.Nash, Am.J.Math., 80, no.4 (1958).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im.M.V.Lomonosova (Moscow State University im.M.V.Lomonosov)

PRESENTED: February 2, 1961, by I.G.Petrovskiy, Academician
SUBMITTED: February 1, 1961

KRUZHKOV, S.N.

Some properties of solutions to elliptic equations. Dokl. AN SSSR 150 no.3:470-473 My '63. (MIRA 16:6)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova. Predstavleno akademikom L.S. Pontryaginym.
(Differential equations)

L 13003-63 EWT(d)/FCC(w)/BDS AFFTC IJP(C)
ACCESSION NR: AP3001390 S/0020/63/150/004/0748/0751

52
51

AUTHOR: Kruzhkov, S. N.

TITLE: Apriori evaluations of generalized second order solutions of elliptic and parabolic equations 16

SOURCE: AN SSSR. Doklady, v. 150, no. 4, 1963, 748-751

TOPIC TAGS: second order equation solutions, elliptic equations, parabolic equations, Liouville-type theorem

ABSTRACT: The evaluation of the maximum modulus, the continuity modulus and the Liouville-type theorem were established for solutions of elliptic and parabolic equations of the form

$$Lu = \sum_{i,j=1}^{n} \frac{\partial}{\partial x_i}\left(a_{ij}(x)\frac{\partial u}{\partial x_j}\right) + \sum_{i=1}^{n} b_i(x)\frac{\partial u}{\partial x_i} + c(x)u + f(x) = 0. \quad (1)$$

$$\sum_{i,j=1}^{n} \frac{\partial}{\partial x_i}\left(a_{ij}(t,x)\frac{\partial u}{\partial x_j}\right) + \sum_{i=1}^{n} b_i(t,x)\frac{\partial u}{\partial x_i} + c(t,x)u + f(t,x) = \frac{\partial u}{\partial t}; \quad (2)$$

$$x = (x_1, \ldots, x_n); \| a = \| a_{ij} \|, \quad \lambda^{-1}|\xi|^2 \leq (\xi, a\xi), \quad |a_{ij}| \leq \lambda. \quad (3)$$

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L 13008-63
ACCESSION NR: AP3001390

Author proves two theorems for elliptic-type equations. Two similar theorems were proven for parabolic-type equations. Orig. art. has: 7 formulas.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 27Dec62 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 003 OTHER: 007

Card 2/2

ACCESSION NR: AP4039010 S/0055/64/000/003/0003/0014

AUTHORS: Kruzhkov, S. N.; Kuptsov, L. P.

TITLE: Harnack's inequality for solutions of second order elliptic differential equations

SOURCE: Moscow. Universitet. Vestnik. Seriya 1. Matematika, mekhanika, no. 3, 1964, 3-14

TOPIC TAGS: Harnack inequality, second order equation, elliptic equation, nonnegative generalized solution, measurable function

ABSTRACT: Let

$$\xi=(\xi_1,\ldots,\xi_n),\ |\xi|^2=\xi_1^2+\ldots+\xi_n^2$$

be a real vector, and the coefficients $a_{ij}(x)$ be measurable functions. The Harnack inequality has been established by Yu. Moser for nonnegative generalized solutions of elliptic equations of the form

$$Lu=\sum_{i,j=1}^{n}\frac{\partial}{\partial x_i}\left[a_{ij}(x)\frac{\partial u}{\partial x_j}\right]=0, \quad (1)$$

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ACCESSION NR: AP4039010

where

$$a = \|a_{ij}\| = a', \ \frac{1}{\lambda}|\xi|^2 < (\xi, a\xi) < \lambda|\xi|^2 \quad (2)$$

The authors extend a Harnack type inequality and a generalization of it to the solution of a general second order equation

$$Lu + (b(x), u_x) + c(x)u + f(x) = 0, \quad (3)$$

where

$$b(x) = (b_1(x), b_2(x), \ldots, b_n(x)), \ u_x = \operatorname{grad} u(x), \ (b, u_x) = \sum_{i=1}^{n} b_i(x) u_{x_i}(x). (4)$$

The theorems were established by both authors for various assumptions on $b_i(x)$, $c(x)$, $f(x)$; the proof is based on a method of Moser. Orig. art. has: 24 formulas.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet, kafedra differentsial'ny*kh uravneniy (Moscow State University, Department of Differential Equations)

SUBMITTED: 19Mar63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: MA NO REF SOV: 004 OTHER: 006

Card 2/2

KRUZHKOV, S.N.

Generalized solutions to nonlinear equations of the first order and some problems for quasi-linear parabolic equations. Vest. Mosk. un. Ser. 1: Mat., mekh. 19 no.6:65-74 N-D '64.

(MIRA 18:2)

1. Kafedra differentsial'nykh uravneniy Moskovskogo universiteta.

Apriori estimations and some properties ... elliptic ... parabolic equations

Matematicheskiy sbornik v. 65 no. 4 1964

TAGS: elliptic equation, parabolic equation ... continu- ... regularity problem

The paper establishes apriori estim... some ... features of the generalized s... equations ... order. The method sugge... Elliptic and Parabolic Differe... al ... Mechanics ... developed. The apriori estima... ... are established ...

...SION NR AP5002206

... the ... inequality of Harnack ... paper were ... DAN SSSR 150 ...

...ATION None

SUBMITTED: 15Aug63 ENCL: 00 SUB CODE: MA

NR REF SOV: 015 OTHER: 014

Card 2/2

ACCESSION NR: AP4030774 S/0020/64/155/004/0743/0746

AUTHOR: Kruzhkov, S. N.

TITLE: The Cauchy Problem in the large for non-linear equations and for some quasi-linear first-order systems in several variables

SOURCE: AN SSSR. Doklady*, v. 155, no. 4, 1964, 743-746

TOPIC TAGS: partial differential equation, Cauchy problem, parabolic equation, boundary value problem

ABSTRACT: Given the Cauchy Problem

$$u_t + f(t, x, u, u_x) = 0, \qquad (1)$$

where $x = (x_1, \ldots, x_n)$, $u_x = \text{grad}_x\, u$, $u_t = \frac{\partial u}{\partial t}$

with the initial condition $u(0, x) = u_0(x)$ (2)

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ACCESSION NR: AP4030774

(For the sake of simplicity, it is assumed in the discussion that f depends only on $u_x$.) The hypotheses are that f is of class $C^2$, $f(0) = 0$, and for any unit real vector $\xi_1, \ldots, \xi_n$,

$$0 < \lambda(u_x) < \sum_{i,j=1}^{n} f_{ij}(u_x)\,\xi_i\xi_j, \quad f_i = \frac{\partial f}{\partial u_{x_i}}, \quad f_{ij} = \frac{\partial^2 f}{\partial u_{x_i}\partial u_{x_j}}. \qquad (3)$$

for some continuous $\lambda(u_x)$; $u_0(x)$ is assumed to be bounded and to satisfy a Lipschitz condition with respect to all its arguments, in the whole space, with constant $K_0 \geq 0$. Let L(K) be the class of functions $u(t,x)$, defined in the half-space $\{t \geq 0\}$, and such that $|u| < K$ and

$$|u(t + \Delta t, x + \Delta x) - u(t, x)| < K(|\Delta t| + |\Delta x|), \; \Delta t > 0.$$

for $\Delta t \geq 0$. Then a function u L(K) is said to be a generalized solution of Problem (1) - (3) if u(t,x) satisfies equation (1) almost everywhere in $\{t \geq 0\}$, $u(0,x) = u_0(x)$, and for any vector $l = (l_1, \ldots, l_n)$,

$$\frac{\Delta_l u}{|l|^2} = \frac{u(t, x+l) - 2u(t, x) + u(t, x-l)}{|l|^2} < \frac{C}{t}, \quad C = \text{const}. \qquad (7)$$

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ACCESSION NR: AP4030774

The author proves that such a generalized solution exists and is unique. In the existence proof, the solution is obtained as the limit, for $\varepsilon \to 0$, of the solution $(u^{\varepsilon}(t,x)$ of the Cauchy problem for the equation

$$u_t + f(u_x) = \varepsilon \Delta u \tag{4}$$

with initial condition (2). Another result is that the generalized solution u(t,x) of Problem (1) - (3) approaches $f = \inf u_0(x)$ as $t \to \infty$, uniformly for x in any compact region of $E_n(x)$. A similar definition of generalized solution is given for the Cauchy Problem for the quasi-linear system.

$$\frac{\partial v_i}{\partial t} + \frac{\partial}{\partial x_i} f(v_1, \ldots, v_n) = 0, \quad i = 1, \ldots, n, \tag{5}$$

with initial conditions

$$v_i(0, x) = v_i^0(x) \in L_\infty(E_n(x)), \tag{6}$$

where the vector $v^0 = (v_1^0, \ldots, v_n^0)$ satisfies the condition "curl $v^0 = 0$" in the weak sense that

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ACCESSION NR: AP4030774

$$\int (\omega_{x_i} v_i^0 - \omega_{x_i} v_i^0)\, dx = 0$$

for any smooth finite function v(x). Again such a solution exists and is unique, and may be obtained as the limit, as $\varepsilon \longrightarrow 0$, of the solution of the corresponding Cauchy problem for the system

$$\frac{\partial v_i}{\partial t} + \frac{\partial}{\partial x_i} f(v_1, \ldots, v_n) = \varepsilon \Delta v_i \; (i = 1, \ldots, n)$$

(The case n = 1 was considered by the author in two earlier papers.) Orig. art. has: 10 equations.

ASSOCIATION: Moskovskiy gosudarstvenny*y universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 29Nov63 DATE ACQ: 30Apr64 ENCL: 00

SUB CODE: MA NO REF SOV: 005 OTHER: 001

Card 4/4

ACC NR: AP7009571 SOURCE CODE: UR/0039/67/072/001/0108/0134

AUTHOR: Kruzhkov, S. N. (Moscow)

ORG: none

TITLE: Generalized solutions of first-order nonlinear equations with many independent variables. II

SOURCE: Matematicheskiy sbornik, v. 72, no. 1, 1967, 108-134

TOPIC TAGS: Cauchy problem, nonlinear equation, linear operator, Lipschitz condition

SUB CODE: 12

ABSTRACT: This article is a continuation of a paper by the author appearing in Vol 70(112) (1966), pp 394-415 of the same journal. In Part II the author studies the equation

$$u_t + f(u_x) = 0, \quad (1)$$

$$x = (x_1, \ldots, x_n), \quad u_t = \frac{\partial u}{\partial t}, \quad u_x = \left(\frac{\partial u}{\partial x_1}, \ldots, \frac{\partial u}{\partial x_n}\right).$$

In Section 1 theorems reminiscent of the well-known Liouville theorem for elliptic and parabolic equations are formulated for the generalization of solutions to equation (1). In Section 2 the author proves a theorem for 1st-order linear operators which is used to obtain, in explicit form, a generalized solution of the Cauchy problem for equation (1), with the initial condition

$$u(0, x) = u_0(x), \quad (2)$$

where $u_0(x)$ satisfies the Lipschitz condition. In Section 3 a solution is obtained for problem (1), (2), with the discontinuous initial function $u_0(x)$.

UDC: 517.944 0930 1098

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ACC NR: AP7009571

Its existence and uniqueness are proven and certain properties of the solution are studied. In Section 4 results obtained in Part I of this paper aid in establishing existence and uniqueness theorems for the generalized solution of the Cauchy problem for the quasi-linear system

$$\frac{\partial v_i}{\partial t}+\frac{\partial f(v_1,\ldots,v_n)}{\partial x_i}=0 \quad (i=1,2,\ldots,n),$$

$$v_i(0,x)=v_i^0(x).$$

Orig. art. has: 50 formulas. [JPRS: 40,100]

Card 2/2

KRUZHKOV, V. A.

"Investigation of Dynamic Phenomena in the Traction Member of a Mine Scraper-Conveyor." Thesis for degree of Cand. Technical Sci. Sub 19 May 49, Moscow Mining Inst imeni I. V. Stalin.

Summary 82, 18 Dec 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1949. From Vechernyaya Moskva, Jan-Dec. 1949.

SPIVAKOVSKIY, A. O., KRUZHKOV, V. A.

Mining Machinery

Use of tensionmetric methods in examing mine conveyors, Nauch. trudy Mosk. gor. inst., No. 8, 1950.

9. Monthly List of Russian Accessions, Library of Congress, October 1952 1953, Uncl.

KRUZHKOV, V.A., kandidat tekhnicheskikh nauk.

Computing the dynamic stresses in conveyers equipped with chain traction. Vest.mash. 33 no.10:11-18 O '53. (MLRA 6:10)
(Conveying machinery)

USSR/ Engineering - Safety devices

Card 1/1 Pub. 128 - 4/38

Authors : Kruzhkov, V. A.

Title : The design analysis of the load limiting device for mobile derrick cranes

Periodical : Vest. mash. 9, 20-25, Sep 1954

Abstract : Since safety regulations prescribe a device which limits the load to that safely handled by the overhang with a fixed counterweight, measure were considered that would limit the load in the rear upright member of the crane frame which remains constant whatever the overhang. This property (load in the upright member) permits the design of a simple load-limiting device, essentially a balance measuring the load in the upright member of the crane. Calculations of the load limit are given, together with a kinematic diagram of a weighing mechanism. Three USSR references (1948-1954). Tables; graphs; diagrams.

Institution: .....

Submitted: .....

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R000826820004-1"

KRUZHKOV, V.A., kandidat tekhnicheskikh nauk.

Boom lift stopping device and load lifting capacity of truck cranes.
Mekh.stroi. 11 no.6:22-27 Je '54. (MLRA 7:6)
(Cranes, derricks, etc.)

KRUZHKOV V. A.

VESTNIK MASHINOSTROYENIYA, (ENGINEERING JOURNAL)
Vol 35, No. 7, July, 1955

On the existence of dynamic loads in the chains of conveyor installations. Report on the visualization and causes of impact and fluctuating loads, using strain gauges and oscillographic recording contains critical comments on the views expressed in a paper by V. A. Kruzhkov on the same subject (same journal, 1953, No. 10). 3
By I. G. Shtokman, V. A. Murzin and S. A. Poluyanskyi ... 16

KRUZHKOV, V.A., kandidat tekhnicheskikh nauk.

Calculating basic parameters of a vibration-churn drill. Gor. zhur. no.9:38-41 S '57. (MIRA 10:9)

(Boring machinery)

KRUZHKOV, [redacted]didat tekhnicheskikh nauk.

Unloading loose materials by scooping from trucks. Stroi.i dor.mashinostr. 2 no.7:15-18 Jl '57. (MIRA 10:7)
(Conveying machinery)

KRUZHKOV, V.A., kand. tekhn. nauk.

Testing the new D-388 and T-157 tractor-loaders. Stroi. i dor. mashinostr. 2 no.11:9-11 N '57. (MIRA 11:1)
(Tractors--Testing) (Shoveling machines)

KRUZHKOV, V.A., kand.tekhn.nauk

Designs of foreign machines for unloading loose materials from railroad cars without unloading devices. Stroi. i dor.mashinostr. 4 no.2:35-37 F '59. (MIRA 12:2)
(Railroads--Freight cars)

KRUZHKOV, V.A., dots.; SHEVYAKOV, N.N., dots., red.

[Designing of parts and mechanisms for hoisting and conveying machinery] Raschety detalei i mekhanizmov pod"emno-transportnykh mashin. Pod red. N.N.Sheviakova. Moskva, Mosk. in-t stali, 1960. 74 p. (MIRA 14:10)
(Hoisting machinery) (Conveying machinery)

KRUZHKOV, V. A.

Kruzhkov, V. A. "Invagination and dysentery," Trudy VI Vsesoyuz. s'yezda det. vrachey, posvyashch. pamyati prof. Filatova, Moscow, 1948, p. 469-70

SO: U-3264, 10 April 1953, (Letopis 'nykh Statey, No. 3, 1949 [illegible], V. A.

Surgery: a textbook for feldsher school. Izd. 5. ispr. i dop. Moskva, Medgiz 1949. 542 p. At head of title: A. N. Velikoretskii i V. A. Kruzhkov.

DILIGENSKAYA, L.A., kandidat meditsinskikh nauk; DOMBROVSKAYA, Yu.F., chlen-korrespondent Akademii meditsinskikh nauk, zaveduyushchaya kafedroy detskikh bolezney; KRUZHKOV, V.A., dotsent, glavnyy vrach.

Characteristic of cardiovascular disorders in scarlet fever. Pediatriia no.2:14-16 Mr-Ap '53. (MLRA 6:5)

1. Infektsionnoye otdeleniye kafedry detskikh bolezney I Moskovskogo ordena Lenina meditsinskogo instituta na baze detskoy bol'nitsy imeni I.V. Rusakova (for Dombrovskaya). 2. Detskaya bol'nitsa imeni I.V. Rusakova (for Kruzhkov). 3. Akademiya meditsinskikh nauk (for Dombrovskaya).
(Scarlatina) (Cardiovascular system--Diseases)

OMBRADOS, V.F.; KRUZHKOV, V.A., zasluzhennyy vrach RSFSR, glavnyy vrach; DOBROKHOTOVA, A.I., professor, chlen-korrespondent Akademii meditsinskikh nauk SSSR, nauchnyy rukovoditel'.

Treatment of toxic dyspepsia with synthomycetin and chloromycetin. Pediatriia no.4:54-57 Jl-Ag '53. (MLRA 6:9)

1. Detskaya bol'nitsa im. Rusakova. 2. Akademiya meditsinskikh nauk SSSR (for Dobrokhotova). (Dyspepsia) (Antibiotics)

KRUZHKOV, V.A.

Review of A.N.Leshchenko's book "Work practice of nurses in the Filatov Children's Hospital." Med.sestra no.2:31 F '54. (MLRA 7:1)
(Nurses and nursing) (Leshchenko, A.N.)

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R000826820004-1"

KRUZHKOV, V. A.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (*Sovetskaya Kultura*, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

| Name | Title of Work | Nominated by |
|---|---|---|
| OGNEV, [illegible]. V.<br>METAL[illegible]KOV, [illegible]. N.<br>KRUPACHEV, I. F.<br>KRUZHKOV, V. A. | "Blood Supply to the Cerebral Cortex Under Normal and Pathological Conditions" | Institute of Experimental Pathology and Cancer Therapy, Academy of Medical Sciences USSR |

SO: W-30604, 7 July 1954

VELIKORETSKIY, Abram Nikolayevich; KRUZHKOV, Viktor Alekseyevich; KAPLAN, A.V., redaktor; GLUKHOYEDOVA, G.A., tekhnicheskiy redaktor

[Surgery] Khirurgiia. Izd. 7-oe, ispr. i dop. Moskva, Gos. izd-vo med. lit-ry, 1956. 491 p. (MLRA 9:11)
(SURGERY)

[illegible]

ARUTYUNOV, V.Ya., prof.; BERKOVICH, I.M., doktor med.nauk; BUNIN, K.V., prof. VELIKORETSKIY, A.N., prof.; GAMBURG, R.L., doktor med.nauk; GLASKO, N.M.; ZVYAGINTSEVA, S.G., doktor med.nauk; IVENSKAYA, A.M., kand.med. nauk; KALUGINA, A.N, kand.med.nauk; KAMINSKAYA-PAVLOVA, Z.A., prof. KVATER, Ye.I., prof.; KOLESN'KO, A.B., prof.; KOSSYURA, M.B., kand. med.nauk; KRAVETS, N.M., doktor med.nauk; KRISTMAN, V.I., kand.med. nauk; KRUZHKOV, V.A., dotsent; LIKHACHEV, A.G., prof.; LUKOMSKIY, I.G., prof.; MASHKOVSKIY, M.D., prof.; ROZENTAL', A.S., prof.; SENNYSKIY, M.Ya. [deceased], prof.; TURETSKIY, M.Ya., kand.med.nauk; KHESIN, Ye.Ye., dotsent; EMDINA, Kh.L., kand.med.nauk; SHA. NOV, A.N., prof.; red.; BONDAR', Z.A., red.; ZAKHAROVA, A.I., tekhn.red.

[Medical handbook for feldshers] Meditsinskii spravochnik dlia fel'dsherov. Izd. 6-oe, perer. i dop. Moskva, Gos. izd-vo med. lit-ry, 1957. 899 p. (MIRA 10:12)
(MEDICINE--HANDBOOKS, MANUALS, ETC.)

KRUZHKOV, V.A., dots. zasluzhennyy vrach RSFSR

Some data on the activity of Moscow Rusakov Municipal Clinical Pediatric Hospital No.2 from 1917-1956. Pediatriia no.10:81-90 O '57. (MIRA 11:2)

1. Iz detskoy gorodskoy klinicheskoy bol'nitsy No.2 imeni I.V. Rusakova (glavnyy vrach - zasluzhennyy vrach RSFSR dotsent V.A. Kruzhkov)
(MOSCOW--CHILDREN--HOSPITALS AND ASYLUMS)

VELIKORETSKIY, Abram Nikolayevich; KHUZHKOV, V.A.

[Surgery] Khirurgiia. Izd.8, stereotipnoe. Leningrad, Medgiz, 1958. 514 p. (MIRA 12:6)
(SURGERY)

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R000826820004-1"

KRUZHKOV, V.A. (Moskva)

"Chronic diseases of the joints" by E.V.Sergel'. Reviewed by V.A.Krushkov. Med. sestra 20 no.1:59 Ja '61. (MIRA 14:3)
(JOINTS—DISEASES) (SERGEL', E.V.)

ACC NR: AP6027298 SOURCE CODE: UR/0133/66/000/008/0748/0751

AUTHOR: Svistunova, T. V.; Doronin, V. M.; Kruzhkov, V. I.; Topilin, V. V.; Dzugutov, M. Ya.; Vinogradov, Yu. V.; Chermenskaya, N. F.; Kordonov, B. A.

ORG: "Elektrostal'" Plant (Zavod "Elektrostal'"); TsNIIChM

TITLE: Corrosion resistant nickel-based alloys

SOURCE: Stal', no. 8, 1966, 748-751

TOPIC TAGS: corrosion resistant alloy, intergranular corrosion, nickel base alloy, fatigue strength

ABSTRACT: The authors study and compare corrosion resistance of various types of nickel-based alloys. The welded joints of these alloys are subject to intercrystalline corrosion in aggressive media. Methods are discussed for eliminating this phenomenon. Among these methods are heat treatment of the welded joints, reduction of carbon and iron content in the alloys and the introduction of carbide-forming elements. It was found that intercrystalline corrosion could be eliminated by alloying N70M27 alloy with 1.4-1.7% vanadium. This eliminates intercrystalline corrosion in welded joints up to 6 mm thick without requiring heat treatment. The new alloy is designated EP496. It was also found that intercrystalline corrosion could be eliminated in chromium-nickel-molybdenum alloys by reducing their carbon-silicon and iron content. The new

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ACC NR: AP6027298

alloy is designated EP567. Both of these new alloys have a fatigue limit of 5-7 kg/mm² at 1200°C which is 3-4 times higher than that of Kh18N9T steel. A new process is developed for melting and pressure working these alloys to satisfactory deformability. EP496 and EP567 alloys are melted in open induction furnaces with 500 and 1000 kg capacity. The ingots are worked on snagging machines until all defects are removed from their surfaces. Both alloys are difficult to machine, nevertheless, they can be roughed with much less difficulty than Kh18N10T steel. Deformation temperatures for both alloys are given. Both of these alloys have excellent corrosion resistance in hydrochloric and sulfuric acids at various temperatures and concentrations. The welded seams of these alloys are not subject to intercrystalline corrosion and therefore can be recommended for welded sheet structures and tubes used in the chemical and petroleum industries. Orig. art. has: 6 figures, 2 tables.

SUB CODE: 11/ SUBM DATE: None/ ORIG REF: 003/ OTH REF: 005

PICHUGIN, B.M.; SABEL'NIKOV, L.V.; BODRIN, V.V.; SOLODKIN, R.G.; KRUZHKOV, V.I.; SEROVA, L.V.; LYUBSKIY, M.S.; PUCHIK, Ye.P. [deceased]; KAMENSKIY, N.N.; YASHCHENKO, G.I.; GERCHIKOVA, I.N.; FEDOROV, B.A.; KARAVAYEV, A.P.; VINOGRADOV, V.M., red.; SHLENSKAYA, V.A., red.izd-va; VOLKOVA, Ye.D., tekhn.red.

[Commercial policy of European capitalist countries] Torgovo-politicheskii rezhim evropeiskikh kapitalisticheskikh stran. Moskva, Vneshtorgizdat, 1960. 234 p. (MIRA 14:2)

1. Moscow. Nauchno-issledovatel'skiy kon"yunkturnyy institut. (Europe, Western--Foreign trade regulation)

OGANOV, P.I., inzh.; LYUBIN, B.Sh., inzh.; KATSENELENBOGEN, B.V., inzh.; KRUZHKOV, V.N., inzh.

Experience in the modernization of Shukhov-type boilers operating on liquid fuel. Prom. energ. 17 no.3:18-23 Mr '62. (MIRA 15:2)
(Boilers)

[illegible]

O [illegible] I[illegible]ANII [illegible] V.I. LE[illegible]A (BY V.[illegible]. KRUZHKOV I G.[illegible]. [illegible]. [illegible], IZ[illegible]-VO Z[illegible] , 1952. 47 P. (V[illegible] [illegible] PO RAS[illegible] [illegible] P[illegible] I NAUC[illegible] Z[illegible]. 1952, S[illegible] I, [illegible]. 41)

[illegible]

.[illegible]32739

[illegible] POLITICHESKI[illegible] I FILOSO[illegible] VZGLYADY [illegible] N.A. [illegible]. [illegible]KVA, IZD-VO ZNANIYE, 1952. 31 P. (VSESOYUZNOYE [illegible] PO RASPROSTRANENIYU POLITICHESKIKH I NAUCHNYKH ZNANIY. 1952, SERIYA [illegible], NO. 68)

IOVCHUK, M.T., red.; KRUZHKOV, V.S.; PRUDENSKIY, G.A.; RUTKEVICH, M.N., prof.; IGITKHANYAN, M.Kh., kand.filosof.nauk; KOGAN, L.N., kand.filosof.nauk; ASHEKO, L., red.; CHEREMNYKH, I., mladshiy red.; ULANOVA, L., tekhn.red.

[Development of the cultural and technological level ." the Soviet working class] Pod"em kul'turno-tekhnicheskogo urovnia sovetskogo rabochego klassa. Moskva, Izd-vo sotsial'no-ekon. lit-ry, 1961. 550 p. (MIRA 14:6)

1. Chleny-korrespondenty AN SSSR (for Iovchuk, Kruzhkov, Prudenskiy).
(Labor and laboring classes)

KRUZHKOVA, O.S.

Thyrotoxic crisis. Sov.med. 23 no.8:50-53 Ag '59. (MIRA 12:12)

1. Iz kafedry endikronologii (zav. - zasluzhennyy deyatel' nauki prof. N.A. Shereshevskiy) TSentral'nogo instituta usovershenstvovaniya vrachey (dir. - prof. V.P. Lebedeva) na baze bol'nitsy imeni Botkina (glavnyy vrach - prof. A.N. Shabanov).
(HYPERTHYROIDISM compl.)

KRUZhKOVA, G. V., Cand Med Sci -- (diss) "Data on the Study of the Genesis of Death during so-called Lightning-like Asphyxia, (Experimental Research)," Moscow, 1960, 12 pp, 250 copies (Central Institute of For the Advanced Training of Doctors) (KL, 48/60, 115)

KRUZHKOVA, I.V.

Pollination of wheat plants with a pollen mixture. Trudy Inst. gen. no. 30:180-186 '63.

Supplementary pollination of winter wheat with winter rye pollen. Ibid.:278-282 (MIRA 17:1)

GLUSHCHENKO, I.Ye.; KRUZHKOVA, I.V.; SEMENOV, O.G.; BUKINA, V.A.

Objectives of selection work in the non-Chernozem zone. Izv. AN SSSR. Ser. biol. no.5:769-778 S-O '64. (MIRA 17:9)

1. Institute of Genetics of the U.S.S.R. Academy of Sciences, Moscow.

KRUZHKOVA, I.V.

Some data on the effect of additional pollination with foreign pollen on the vitality of wheat progeny. Trudy Inst. gen. no.29: 428-431 '62. (MIRA 16:7)

(Wheat) (Fertilization of plants)

TOPORNINA, N.A.; KRUZHKOVA, I.V.

Phasic development of some winter wheats. Trudy Inst. gen. no. 27:75-84 '60. (MIRA 13:12)
(Wheat) (Growth (Plants))

KRUZHKOVA, R.V., kand. ekon. nauk.

Collective competition in enterprises of the food industry.
Trudy MTIPP no.7:259-275 '57. (MIRA 10:12)
(Food industry)

DONSKOV, Vasiliy Yefimovich, prof.; ZUYEVA, Raisa Vasil'yevna, kand. ekon. nauk; KRUZHKOVA, Raisa Vasil'yevna, kand. ekon. nauk; MESHKOV, Yuriy Konstantinovich, kand. ekon. nauk; PONOMAREVA, Irina Andreyevna, kand. ekon.nauk; KHINKIS, Lev Akimovich, st. prepodavatel'; SHAMIN, Andrey Nikolayevich, st. prepodavatel'; KAMENITSER, S.Ye., doktor ekon. nauk, prof., retsenzent; SHVARTS, V.M., inzh.-ekon., retsenzent; FUKS, V.K., red.; PECHENKINA, O.P., tekhn. red.

[Production organization and planning in food industry enterprises] Organizatsiia i planirovanie proizvodstva na predpriiatiiakh pishchevoi promyshlennosti. [By] V.E.Donskov i dr. Moskva, Pishchepromizdat, 1963. 454 p. (MIRA 17:2)

DONSKOV, Vasiliy Yefimovich, dotsent, kand.ekon.nauk; ZUYEVA, Raisa Vasil'yevna, kand.ekon.nauk; KHUZHKOVA, Raisa Vasil'yevna, kand.ekon.nauk; MESHKOV, Yuriy Konstantinovich, dotsent, kand.ekon.nauk; MOISEYEV, Petr Nikitich, dotsent, kand.ekon.nauk; PONOMAREVA, Irina Andreyevna, kand. ekon.nauk; KHINKIS, Lev Akimovich, starshiy prepodavatel'; KAMENITSER, S.Ye., kand.ekon.nauk, retsenzent; nauchnyy red.; BULGAKOV, G.V., kand. ekon.nauk, retsenzent; SHVARTS, V.M., inzh.ekonomist, retsenzent; PRITYKINA, L.A., red.; SOKOLOVA, I.A., tekhn.red.

[Production organization and planning in food industry enterprises] Organizatsiia i planirovanie proizvodstva na predpriiatiiakh pishchevoi promyshlennosti. Moskva, Pishchepromizdat, 1959. 605 p. (MIRA 12:9)
(Food industry)

BELEVICH, V.V.; SHVETSOVA, V.F.; ZHITYAYKINA, N.F.; BYKADOROV, I.S.; IVANOV, G.I., kand.sel'skokhoz.nauk; GERMANISHVILI, V.Sh., kand.geogr.nauk, retsenzent; SOKOLOV, I.F., retsenzent; KALMYKOVA, V.V., retsenzent; LYUBOMUDROVA, S.V., retsenzent; KRUZHKOVA, T.S., retsenzent; BOYKOVA, K.G., retsenzent; NOVSKIY, V.A., otv.red.; VLASOVA, Yu.V., red.; SERGEYEV, A.N., tekhn.red.

[Agroclimatic manual for the Maritime Territory] Agroklimaticheskii spravochnik po Primorskomu kraiu. Leningrad, Gidrometeor.izd-vo, 1960. 129 p. (MIRA 14:4)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye gidrometeorologicheskoy slushby. Primorskoye upravleniye. 2. Vladivostokskaya gidrometeorologicheskaya observatoriya (for Belevich, Shvetsova, Zhityaykina, Bykadorov). 3. Dal'nevostochnyy nauchno-issledovatel'skiy gidrometeorologicheskiy institut (for Germanishvili, Sokolov, Kalmykova, Lyubomudrova, Kruzhkova, Boykova).
(Maritime Territory--Crops and climate)

KHUZHKOVA, T.S.; SEMENOVA, G.A.

Graphs for calculating atmospheric temperature and precipitation of various probability degrees for the Maritime Territory. Trudy Dal'nevost. NIGMI no.12:111-127 '61. (MIRA 14:12)
(Maritime Territory--Meteorology--Charts, diagrams, etc.)

ACC NR: AP6036106 (A, N) SOURCE CODE: UR/0365/66/002/006/0628/0635

AUTHOR: Knyazhova, V. M.; Sumakova, I. S.; Kolotyrkin, Ya. M.; Kruzhkovskaya, A. A.

ORG: Physicochomical Scientific Research Institute im. L. Ya. Karpov (Nauchno-issledovatel'skiy fiziko-khimicheskiy institut)

TITLE: Anodic behavior of chrome-nickel steels stabilized with titanium

SOURCE: Zashchita metallov, v. 2, no. 6, 1966, 628-635

TOPIC TAGS: chromium steel alloy, nickel containing alloy, titanium, electrochemistry

ABSTRACT: The experiments were carried out on samples of Type Kh18N9T steel in a 1 N solution of sulfuric acid. at 70°, in an atmosphere of argon. In general, the polarization curves were taken for freshly purified samples which had not been subjected to previous cathode activation. In addition to the electrochemical measurements, the solutions were analyzed colorimetrically for Fe, Cr, and Ti, after the samples had been held at the given voltages. The sensitivity of the determinations was, respectively, $5 \times 10^{-7}$, $5 \times 10^{-8}$, and $2 \times 10^{-7}$ grams/ml. It was concluded from the experimental data that titanium carbide, regardless of existing literature indications, cannot be recommended as an electrochemically stable anode. It follows also from the results of the present investigation that in the determination of the steady state anode potential curves, it is not necessary to take into account the

UDC: 669.15-194:669.24'27:541.138.2

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ACC NR: AP6036106

change in the state of the surface of the steel, and in particular its chemical composition, as a function of the duration of the experiment. The electrochemical instability of titanium carbide is evidently one reason why steels stabilized with titanium have a lower corrosion resistance in oxidizing media, and an increased tendency toward pitting, in comparison to steels which do not contain titanium. "We acknowledge our deep indebtedness to M. A. Voneneyeva for help in carrying out this work." Orig. art. has: 6 figures and 2 tables.

SUB CODE: 11, 20, 07/ SUBM DATE: 09Apr66/ ORIG REF: 013/ OTH REF: 006

Card 2/2

KRUZHMAN, Georgiy Iosifovich; VOLAROVICH, M.P., prof., doktor fiz.-mat.nauk, red.; KOLOTUSHKIN, V.I., red.; LARIONOV, G.Ye., tekhn. red.

[Theoretical principles of the production of granulated peat fuel to be used as a source of power, gas, and chemicals] Teoreticheskie osnovy i protsess polucheniia melkokuskovogo torfianogo topliva dlia energogazokhimicheskogo ispol'zovaniia. Pod red. M.P.Volarovich. Moskva, Gos.energ.izd-vo, 1961. 303 p. (MIRA 15:1)

(Peat)

ZAKATALOV, A., inzh. (Volgograd); KRUZHNOV, D., tokar'; FROLOVA, M., inzh. po tekhnike bezopasnosti; LEBEDEV, N., mashinist; GAYNA, A.; GUSEV, M.

Editor's mail. Okhr.truda i sots.strakh. 5 no.11:16,23 N '62. (MIRA 15:12)

1. Upravleniye stroitel'stva Volgogradskogo soveta narodnogo khozyaystva (for Zakatalov). 2. Predsedatel' komissii okhrany trudy Nikopol'skogo Yuzhno-trubnogo zavoda (for Kruzhnov). 3. Nachal'nik planovogo otdela Gorbunovskoy fabriki, g. Khot'kovo, Moskovskoy obl. (for Frolova). 4. Energotsekh Voronezhskogo shinnogo zavoda (for Lebedev). 5. Predsedatel' oblastnogo komiteta professional'nogo soyuza rabochikh stroitel'stva i promyshlennosti stroymaterialov g. Kiyev (for Gayna). 6. Sekretar' Yaroslavskogo oblastnogo komiteta professional'nogo soyuza rabochikh elektrostantsiy i elektropromyshlennosti (for Gusev).

(Industrial hygiene)

FADEYEV, A.A.; KRUZHINOVA, Z.S.

Testing the mechanical strength of phonograph records. Plast.massy no.4:74-75 '64. (MIRA 17:4)

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R000826820004-1"

KRUZIC, S.

"Preparing travel documents of vehicles."

p. 938 (Vojno-Tehnicki Glasnik) Vol. 5, no. 12, Dec. 1957
Belgrade, Yugoslavia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4, April 1958

KRUZICEVIC, Milan, inz. (Zagreb)

Industrialization of housing in France. Gradevinar 15 no.10: 383-391 O'63.

KRUZICEVIC, Milan, inz. (Zagreb)

Industrialization of house building in France. Gradevinar 15 no.3:81-84 Mr '63.

KRUZICEVIC, Milan, inz. (Zagreb)

Industrialization of housing in France. Gradevinar 14 no.5:146-152 My '62.

KRUZIK, J.

"Control of a Loeffler-type boiler for 180 tons per hour by means of the Schoppe Faesor System."

ENERGETIKA, Praha, Czechoslovakia, Vol. 8, no. 8, August 1958

Monthly List of East European Accessions Index (EEAI), Library of Congress, Vol. 8, No. 8, August 1959

Unclassified