SHNEYBERG, Yakov Abramovich; ZOTIKOV, V.Ye., retsenzent; KHRUSTAL', N.V., red.; KOVALENKO, V.L., tekhn. red.

[At the sources of electrical engineering; life and work of Academician V.V.Petrov, the first Russian electrical engineer] U istokov elektrotekhniki; zhizn' i deiatel'nost' pervogo russkogo elektrotekhnika akademika V.V.Petrova. Moskva, Uchpedgiz, 1963. 145 p. (MIRA 16:6)
(Petrov, Vasilii Vladimirovich, 1761-1834)
(Electric engineering)

KUDRYAVTSEV, Pavel Stepanovich; KONFEDERATOV, Ivan Yakovlevich; KHRUSTAL', N.V., red.

[History of physics and technology; manual for students of pedagogical institutes] Istoriia fiziki i tekhniki; uchebnoe posobie dlia studentov pedagogicheskikh institutov. Izd.2., perer. i dop. Moskva, Prosveshchenie, 1965. 570 p. (MIRA 18:7)

KHRUSTALEV, A.A., arkhitektor.

Precast reinforced concrete floors for multistory industrial buildings in Hungary. Biul. stroi. tekh. 14 no.2:36-39 F '56. (MLRA 10:4)
(Hungary--Precast concrete construction)
(Floors, Concrete)

KHRUSTALEV, A.A.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

The prevention of the staling of bread by adding agar-agar. A. A. Khrustalev and N. N. Muserskii. *Voprosui Pitaniya* 4, No. 5, 70-5(1935).—No stabilizing action to keep bread fresh was observed when 0.5% agar-agar was added to it. It is suggested that the only benefit derived from the agar-agar is from the traces of iodine it contains.

F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA

12

Nutritive value of the flesh of the seal. A. A. Khrustalev. *Voprosy Pitaniya* 1941, No. 2, 39-45.—The flesh of the seal is fairly high in nitrogen substances, fats and calorific value. The unpleasant flavor can be removed by a preliminary soaking in vinegar, and by adding spices and fats. Data are given on different products made from the flesh of the seal. 17 references. S. Machelson

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KHRUSTALEV, A.A.

Training food hygiene interns. Vop.pit. 14 no.6:37-39 N-D '55.
(MLRA 9:1)

1. Iz kafedrygigiyeny pitaniya I Moskovskogo ordena Lenina meditsinskogo instituta.
(FOOD,
hyg. train. of food hygienists in Russia)

KHRUSTALEV,A.A., predsedatel' sektsii pitaniya; SHARINA, Ye.G., sekretar' ~~sektsii~~

Work of the nutrition section of the Moscow branch of the All-Union Hygiene Society in 1955. Vop.pit. 15 no.4:63 Jl-Ag '56. (MIRA 9:9)
(NUTRITION)

KHRUSTALEV, A.A.; MALVINSKY, V.V.

Experiments and hygiene research in the work of F. F. Erisman on nutritional hygiene. J. Hyg. Epidem., Praha 1 no.4:504-511 1957.

1. Chair of Nutritional Hygiene, Sechenov Medical Institute, Moscow.
(NUTRITION,
hyg., contribution of F. F. Erisman)
(BIOGRAPHIES,
Erisman, F.F.)

KHRUSTALEV, A.A., professor; ALEKSANDROVA, N.N., assistent kafedry

List of dissertations on nutritional hygiene and associated problems defended from January, 1822 to May, 1956. Vop.pit. 16 no.3:81-96 My-Je '57. (MIRA 10:10)

1. Zaveduyushchiy kafedroy gigiyeny pitaniya I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova (for Khrustalev)
(NUTRITION,
bibliog. (Rus))

KHRUSTALEV, A.A., professor; SHARINA, Ye.G.

Work of the nutrition section of the Moscow Branch of the All-Union Hygiene Society during 1956. Vop.pit. 16 no.4:90-91 Jl-Ag '57. (MIRA 10:10)

1. Predsedatel' sektsii pitaniya Moskovskogo otdeleniya Vsesoyuznogo gigiyenicheskogo obshchestva (for Khrustalev). 2. Sekretar' sektsii pitaniya Moskovskogo otdeleniya Vsesoyuznogo gigiyenicheskogo obshchestva (for Sharina)
(NUTRITION)

KHRUSTALEV, A.A., prof.

Hygienic principles for planning a kitchen block. Gig. i san. 22 no.9:82-85 S '57. (MIRA 10:12)

1. Iz kafedry gigiyeny pitaniya I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova.
(HOSPITAL ADMINISTRATION
hygienic principles of isolated kitchen block)

KHRUSTALEV, A. A.

"Rationalization of nutrition of agricultural workers."

report submitted at the 13th All-Union Congress of Hygienists, Epidemologists and Infectionists, 1959.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000722410014-0"

KHRUSTALEV, A.A.; ALEKSANDROVA, N.N.; GIAZATOVA, A.F.

Feeding of miners in the mines. Vop. pit. 19 no.3:15-17 My-Je '60. (MIRA 14:3)

1. Iz kafedry gigiyeny pitaniya (zav. - prof. A.A.Khrustalev) I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova i sanitarno-epidemiologicheskoy stantsii Shchekinskogo rayona Tul'skoy oblasti.

(COAL MINERS--DISEASES AND HYGIENE) (NUTRITION)

KHRUSTALEV, A.A.

Exercise therapy in operations on the lungs. Vop. kur., fizioter. i lech. fiz. kul't. 26 no.6:544-547 N-D '61. (MIRA 15:1)

1. Iz kafedry lechebnoy fizcheskoy kul'tury (zav. - prof. V.N.Moshkov) TSentral'nogo instituta usovershenstvovaniya vrachey.
(EXERCISE THERAPY) (LUNGS—THERAPY)

MIKHIREV, P.A.; SINYUGIN, G.M.; KHRUSTALEV, A.A.

MPDR-0.12 loading and hauling machine. Gor. zhur. no.9:54-55 S '62. (MIRA 15:9)

1. Institut gornogo dela Sibirskogo otdeleniya AN SSSR (for Mikhirev). 2. Rudnik "Emel'dzhak" kombinata Aldanslyuda (for Sinyugin). 3. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy nikelevoy promyshlennosti (for Khrustalev).
(Mining machinery)

TUPOLEV, M.S., doktor arkh. prof.; POPOV, A.N., prof.; POPOV, A.A., kand. arkh. dots.; SHKINEV, A.N., inzh., dots.; KHRUSTALEV, A.A., kand. arkh. dots.; NEYSHTADT, L.I., nauchnyy red.; FEDOROVA, T.N., red. izd-va; KOROBKOVA, N.I., tekhn. red.

[Public and industrial buildings] Grazhdanskie i promyshlennye zdaniia. Pod obshchei red.M.S.Tupoleva. Moskva, Gosstroiizdat. Pt.2.[Industrial buildings] Promyshlennye zdaniia. 1963. 198 p. (MIRA 16:7)

1. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Popov, A.N.). 2. Prepodavateli Moskovskogo arkhitekturnogo instituta (for Tupolev, Popov, A.N., Popov, A.A., Shkinev, Khrustalev).

(Industrial buildings)

KHRUSTALEV, A.A. (Moskva)

Medical gumnastics for patients suffering from lung diseases and treated by surgery. Med. sestra 22 ~~no.~~10:32-36 O'63 (MIRA 16:12)

1. Iz kafedry lechebnoy fizkul'tury TSentral'nogo instituta usovershenstvovaniya vrachey.

KHRUSTALEV, A.A., kand. med. nauk

Effect of exercise therapy on the function of external respira ion following lung surgery. Trudy TSIU 66:168-175 '64. (MIRA 18:5)

KHRUSTALEV, A.A., inzh.

Logical synthesis of a three-phase automatic reclosing device.
Izv.vys.ucheb.zav.; energ. 8 no.10:16-23 O '65.

(MIRA 18:10)

1. Moskovskiy ordena Lenina energeticheskiy institut. Predstavlena kafedroy elektricheskikh stantsiy.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000722410014-0"

KHRUSTALEV, A. F.: Master Phys-Math Sci (diss) -- "A solution of some axial-symmetric problems in the theory of elasticity with mixed boundary conditions". Moscow, 1958. 5 pp (Min Higher Educ USSR, Moscow Order of Lenin and Order of Labor Red Banner State U im M. V. Lomonosov), 150 copies (KL, No 6, 1959, 125)

AUTHOR: Khrustalev, A.F. and Kogan B.I. SOV/140-58-3-31/34

TITLE: On a Boundary Value Problem for the Biharmonic Equation Occurring in Elasticity Theory (Ob odnoy granichnoy zadache dlya bigarmonicheskogo uravneniya, vstrechayushcheysya v teorii uprugosti)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy Matematika, 1958, Nr 3, pp 241-247 (USSR)

ABSTRACT: The authors consider the solution of such axialsymmetric elasticity problems for the infinite circular cylinder which lead to the determination of the stress function $\chi(r,z)$ which in the cylindrical coordinate system satisfies the biharmonic equation $\nabla^4\chi(r,z) = 0$ and the boundary conditions

$$\sigma_r = \frac{\partial}{\partial z}\left(\nu\nabla^2\chi - \frac{\partial^2\chi}{\partial r^2}\right) = 0 \quad \text{for } r=R \text{ , } 0<z<\infty$$

$$\tau_{rz} = \frac{\partial}{\partial r}\left[(1-\nu)\nabla^2\chi - \frac{\partial^2\chi}{\partial z^2}\right] = 0 \quad \text{for } r=\alpha \text{ , } -\infty<z<\infty$$

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On a Boundary Value Problem for the Biharmonic Equation Occurring in Elasticity Theory SOV/140-58-3-31/34

$$\alpha \sigma_r + \beta u = \gamma \quad \text{for } r=R, \quad -\infty < z < 0,$$

$$\text{where} \quad u = -\frac{1+\nu}{E}\frac{\partial^2 \chi}{\partial r \partial z}, \quad \alpha > 0, \ \beta > 0.$$

The solution is obtained by skillful combination of the methods of one of the authors [Ref 2] and of Al'perin [Ref 1]. There are 2 Soviet references.

ASSOCIATION: Khar'kovskiy avtomobil'no-dorozhnyy institut (Kharkov Highway Institute)

SUBMITTED: November 23, 1957

Card 2/2

KOGAN, B.I.; KHRUSTALEV, A.F. (Khar'kov)

Axisymmetric problem of the elasticity theory for a hollow cylinder. Prikl.mat. i mekh. 22 no.5:683-686 S-O '58. (MIRA 11:11)
(Elasticity)

16(1)

AUTHORS: Khrustalev, A.F., Kogan, B.I. SOV/140-59-4-22/26

TITLE: On the State of Stress of a Hollow Circular Cylinder

PERIODICAL: Izvestiya vysshik uchebnykh zavedeniy. Matematika, 1959, Nr 4 pp 178 - 183 (USSR)

ABSTRACT: The authors consider axial symmetric problems of elasticity theory of the infinite hollow circular cylinder which lead to the determination of the stress function $\varphi(r,z)$ from the biharmonic equation $\nabla^4 \varphi(r,z) = 0$ and from the boundary conditions

$$\sigma_r = 0 \quad \text{for} \quad r = r_2 \,, \; -\infty < z < \infty \;; \quad r = r_1 \,, \; 0 < z < \infty$$

$$\tau_{rz} = 0 \quad \text{for} \quad r = r_1 \,, \quad r = r_2 \,, \quad -\infty < z < \infty$$

$$\alpha \sigma_r + \beta u = \gamma \quad \text{for} \quad r = r_1 \,, \quad -\infty < z < 0$$

The solution is obtained by function-theoretical auxiliary means according to the scheme of [Ref 1,2].

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On the State of Stress of a Hollow Circular Cylinder SOV/140-59-4-22/26

The authors give three special cases (special values of α and β).

There are 2 Soviet references.

ASSOCIATION: Khar'kovskiy avtomobil'no-dorozhnyy institut (Khar'kov Automobile Roads Institute)

SUBMITTED: May 23, 1958

Card 2/2

KOGAN, B.I. (Khar'kov); KHRUSTALEV, A.F. (Khar'kov)

Stresses caused by pressing a semi-infinite thin shell on a cylinder. Izv.AN SSSR. Otd.tekh.nauk.Mekh.i mashinostr. no.5:176-177 S-O '60. (MIRA 13:9)

(Elastic plates and shells)

KHRUSTALEV, ~~A.F.~~ ; KOGAN, B.I.

Distributtion of temperature in a continuous infinite cylinder. Izv. vys. ucheb. zav. mat. no. 6:239-243 '60. (MIRA 14:1)

1. Khar'kovskiy avtomobil'no-dorozhnyy institut.
(Mathematical physics)

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C111/C222

AUTHORS: Khrustalev, A.F. and Kogan, B.I.

TITLE: On the Distribution of Temperature in a Massive Infinite Cylinder

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1960, No. 6, pp. 239 - 243

TEXT: Let one half of a massive infinite cylinder be in a medium of constant temperature, while the other half radiates the heat into the surrounding space according to Newton's law. The problem consists in the determination of a function T(r,z) which satisfies the harmonic equation in cylindrical coordinates:

(1) $$\nabla^2 T(r, z) = 0$$

and the boundary conditions

(2) $$T = T_1 \quad \text{for} \quad r = R, \; -\infty < z < 0$$

(3) $$\frac{\partial T}{\partial r} + hT = 0 \quad \text{for} \quad r = R \; , \quad 0 < z < +\infty \; ,$$

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On the Distribution of Temperature in a Massive Infinite Cylinder

where h is the coefficient of heat exchange.
The author's solution is

(16) $$T(\varrho, \lambda) = -\frac{hT_1}{2\pi i}\int_{-i\infty}^{0-;+i\infty}\frac{RJ_0(\varrho u)\Pi(u)}{u\left[hRJ_0(u) - uJ_1(u)\right]}e^{\lambda u}du$$

where

(11) $$\Pi(u) = \prod_{n=1}^{\infty}\frac{\left(1-\frac{u}{a_n}\right)}{\left(1-\frac{u}{b_n}\right)},$$

and a_n are the positive roots of the equation

(12) $$hRJ_0(u) - uJ_1(u) = 0$$

and b_n are the positive roots of the equation

(13) $$J_0(u) = 0,$$

$\lambda = \frac{z}{R}$, $\varrho = \frac{r}{R}$.

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C111/C222

On the Distribution of Temperature in a Massive Infinite Cylinder

It is stated that

$$\lim_{\lambda \to +\infty} T = 0 \; ; \quad \lim_{\lambda \to -\infty} T = T_1$$

For small $\lambda > 0$ and $\varsigma = 1$ it holds

$$T = T_1 + \frac{T_1}{2\pi i} \int_C \frac{e^{-v}}{v \prod\left(\frac{v}{\lambda}\right)} dv$$

where C consists of the imaginary axis, where the interval $(-a, a)$ of it is replaced by a semicircle of radius a .
For the density of the heat flow for small $\lambda > 0$ and $\varsigma = 1$ the authors obtain :

$$q \sim kh\, T_1 \left(1 - \frac{2\sqrt{\lambda hR}}{\sqrt{\pi}} \right) .$$

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C111/C222

On the Distribution of Temperature in a Massive Infinite Cylinder

The authors mention A.M. Danilevskiy. There is 1 figure and 1 Soviet reference.

ASSOCIATION: Khar'kovskiy avtomobil'no-dorozhnyy institut (Khar'kov Automobile and Highway Institute)

SUBMITTED: November 25, 1958

Card 4/4

KHRUSTALEV, A. F., and KOGAN, B. I.,

"Temperature Distribution in an Infinite Hollow Cylinder."

Report submitted for the Conference on Heat and Mass Transfer,
Minsk, BSSR, June 1961.

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32738
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C111/C222

AUTHORS: Khrustalev, A. F., and Vaynshteyn, F. A.

TITLE: On a boundary value problem for the bending equation of a thin plate

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, no. 4, 1961, 119-124

TEXT: The authors consider a thin infinite plate of constant width b under the influence of the vertical load $q(y/b)$. They seek the solution of the bending equation

$$\nabla^4 W = \frac{q\left(\frac{y}{b}\right)}{D} \qquad (6)$$

which satisfies the mixed boundary conditions

$$W = 0 \qquad \text{for } y=0,\ -\infty < x < +\infty, \qquad (1)$$

$$-\alpha_1 \frac{\partial W}{\partial y} = \beta_1 M(W) \qquad \text{for } y = 0,\ -\infty < x < +\infty, \qquad (2)$$

$$W = 0 \qquad \text{for } y = b,\ -\infty < x < +\infty, \qquad (3)$$

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On a boundary value problem for the ... C111/C222

$$M(W) = -D\left(\frac{\partial^2 W}{\partial x^2} + \nu \frac{\partial^2 W}{\partial x^2}\right) = M_o \qquad \text{for } y = b, \ -\infty < x < 0, \qquad (4)$$

$$\alpha_2 \frac{\partial W}{\partial y} = \beta_2 M(W) \qquad \text{for } y = b, \ 0 < x < +\infty. \qquad (5)$$

X

The arrangement

$$W = \varphi(y) + W_1 \qquad (7)$$

is made, where it shall be

$$\nabla^4 W_1 = 0 \qquad (8)$$

and it is stated that the solution has the form

Card 2/5

$$W = \frac{1}{D}\left[\frac{b^4}{6}\int_0^{\varsigma}(\varsigma - \xi)^3\, q(\xi)\, d\xi + Ab^3\varsigma^3 + Bb^2\varsigma^2 + Cb\varsigma\right] + \tag{27}$$

$$+ \frac{M_1 b^2 \delta}{2\pi i D}\int_{-i\infty}^{0-,+i\infty}\frac{\Pi(u)}{u^2}\,\frac{\Psi_0(u)}{\Psi(u)}\, e^{\lambda u} du$$

where $\varsigma = \frac{y}{b}$,

$$B = \frac{b^3\alpha_1\int_0^1(1-\xi)\left[2D\beta_2 + b\alpha_2(1-\xi) - (b\alpha_2 + 2D\beta_2)(1-\xi^2)\right]q(\xi)\,d\xi}{2(b^2\alpha_1\alpha_2 + 4Db\alpha_1\beta_2 + 4Db\alpha_2\beta_1 + 12D^2\beta_1\beta_2)},$$

$$C = \frac{2D\beta_1}{\alpha_1}B,$$

$$A = -\frac{b}{6}\int_0^1(1-\xi)^3 q(\xi)\,d\xi - \frac{B}{b} - \frac{C}{b^2},$$

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On a boundary value problem for the ...

$$M_1 = M_0 + b^2 \int_0^1 (1-\xi) q(\xi) d\xi + 6Ab + 2B, \quad \delta = \frac{b^2\alpha_1\alpha_2 + 4bD(\alpha_1\beta_2 + \alpha_2\beta_1) + 12D^2\beta_1\beta_2}{4b\alpha_1 + 12D\beta_1}$$

X

$$\Pi(u) = \prod_{n=1}^{\infty} \frac{\left(1 - \frac{u}{a_n}\right)}{\left(1 - \frac{u}{b_n}\right)},$$

a_n are the roots of the equation $\psi(u) = 0$ in the right halfplane,
b_n are the roots of the equation $\varphi(u) = 0$ in the right halfplane,

$$mb = u, \; x = \lambda b, \; B_1(u) = K(u) \frac{\alpha_1 (u \cos u - \sin u)}{u\psi(u)},$$

$$\varphi(u) = u\,(2b\alpha_1 u + 4D\beta_1 u \sin^2 u - b\alpha_1 \sin 2u),$$

$$\psi(u) = [b^2\alpha_1\alpha_2 + 2Db\,(\alpha_1\beta_2 + \alpha_2\beta_1)]\,u^2 + (4D^2\beta_1\beta_2 u^2 - b^2\alpha_1\alpha_2)\sin^2 u - Db\,(\alpha_1\beta_2 + \alpha_2\beta_1)\,u \sin 2u.$$

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On a boundary value problem for the ... C111/C222

$\Psi_0(u) = b\alpha_1(u \cos u - \sin u)\varrho u \sin \varrho u + (2D\beta_1 u \cos u + b\alpha_1 \sin u)$,

and $\lambda = \frac{x}{b}$.

Explicit expressions for $\lim_{\lambda \to \pm\infty} W$, $M(W)\Big|_{\substack{\lambda \to 0(\lambda > 0) \\ \varrho = 1}}$ and $\frac{\partial W}{\partial y}\Big|_{\substack{\lambda \to 0(\lambda > 0) \\ \varrho = 1}}$ and further similar ones are given.

There are 3 Soviet-bloc references.

ASSOCIATION: Khar'kovskiy avtomobil'no-dorozhnyy institut (Khar'kov Automobile and Highway Institute)

SUBMITTED: March 19, 1959

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Card 5/5

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28909
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B104/B112

AUTHOR: Khrustalev, A. F.

TITLE: Temperature field in an unbounded plane wall

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 11, 1961, 81-88

TEXT: The author studies the steady temperature field of an unbounded plane wall. The heat-exchange coefficient between the heat-supplying medium (constant temperature) and the wall (thickness 2b) is h_o. h is the heat-exchange coefficient between the wall and the heat-absorbing medium (temperature 0^oC). The heat distribution $T(x,y)$ to be found satisfies the Laplace equation $\partial^2T/\partial x^2 + \partial^2T/\partial y^2 = 0$ and the boundary conditions $\pm\, \partial T/\partial x + hT = 0$ for $x = \pm\, b$, $0 < y < +\infty$, $\pm\, \partial T/\partial x + h_oT = h_oT_o$ for $x = \pm\, b$, $-\infty < y < 0$. The solution of (1) is sought in the form $T_1 = Ae^{my}\cos mx$. An exact solution is obtained in the form

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$$T(\rho;\lambda) = -\frac{hbT_0}{2\pi i}\int_{-i\infty}^{0-i+i\infty}\frac{\Pi(u)}{u}\frac{\cos\rho u}{bh\cos u - u\sin u}e^{\lambda u}\,du = -\frac{hbT_0}{\pi}\int_0^{\infty}\frac{\mathrm{Im}\,[\Pi(iz)\,e^{i\lambda z}]}{z}\frac{\mathrm{ch}\,\rho z}{bh\,\mathrm{ch}\,z + z\,\mathrm{sh}\,z}dz + \frac{T_0}{2}. \tag{16}$$

where $x = \varrho b, b, y = \lambda b, u = mb,$

$\Pi(u) = \prod_{k=1}^{\infty}\frac{1-u/a_k}{1-u/b_k}$. a_k are positive roots of the equation $bh\cos u - u\cos u = 0$, and b_k are positive roots of the equation $bh_0\cos u - u\sin u = 0$. This solution is discussed. It is shown that the temperature at $\varrho = \pm 1$ and $\lambda = 0$ is a continuous function when its derivative with respect to ϱ and the heat-flow density have discontinuities at this point. Finally, $T(\varrho,\lambda)$ is derived for $h \longrightarrow h_0$:

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Temperature field in an ...

$$T(\rho;\lambda)=-\frac{bT_0(\alpha+\beta h+\alpha hb)}{2\pi i(\beta+\alpha b)}\int_{-i\infty}^{0-i+i\infty}\frac{\Pi(u)(u\beta\cos\rho u+\alpha b\sin\rho u)e^{\lambda u}du}{u[ub(\alpha+\beta h)\cos u+(h\alpha b^2-u^2\beta)\sin u]}=$$

$$=-\frac{bT_0(\alpha+\beta h+\alpha hb)}{\pi(\beta+\alpha b)}\int_0^\infty\frac{\operatorname{Im}[\Pi(iz)e^{i\lambda z}](z\beta\operatorname{ch}\rho z+\alpha b\operatorname{sh}\rho z)dz}{z[zb(\alpha+\beta h)\operatorname{ch}z+(h\alpha b^2+z^2\beta)\operatorname{sh}z]}+ \tag{31}$$

$$+\frac{(\beta+\alpha b\rho)T_0}{2(\beta+\alpha b)}$$

This solution satisfies the boundary conditions

$$\alpha T-\beta\frac{\partial T}{\partial x}=0 \quad \text{при } x=0,\quad -\infty<y<+\infty; \tag{24-26}$$

$$\frac{\partial T}{\partial x}+hT=0 \quad \text{при } x=b,\quad 0<y<+\infty;$$

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$$T = T_0 \quad \text{при } x = b, \quad -\infty < y < 0,$$

where α and β are non-negative parameters. There are 2 figures and 2 Soviet references.

SUBMITTED: April 8, 1961

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AUTHOR: Khrustalev, A. F.

TITLE: Heat transfer through a cylinder wall

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 12, 1961, 98 - 101

TEXT: The steady temperature field of a hollow cylinder of infinite length was examined under the boundary conditions

$$\alpha T - \beta \frac{\partial T}{\partial r} = 0 \text{ при } r = r_1, \ -\infty < z < \infty, \quad (1)$$

$$\frac{\partial T}{\partial r} + hT = 0 \text{ при } r = r_2, \ 0 < z < +\infty, \quad (2)$$

$$\frac{\partial T}{\partial r} + h_0 T = h_0 T_0 \text{ при } r = r_2, \ -\infty < z < 0, \quad (3).$$

h_0 = heat-transfer coefficient between the heat-emitting medium and the cylinder wall; h = heat-transfer coefficient between cylinder wall and heat-absorbing medium; r_1 and r_2 = external and the internal radii of the

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B104/B138

Heat transfer through a cylinder ...

B is then regarded as a function of the parameter m, and the integral

$$T(r;\ z) = \int_{-i\infty}^{\sigma - i + i\infty} T_1(r;\ z;\ m)\, dm, \tag{9}$$

is set up. On the basis of the foregoing and after extensive calculations the exact solution

$$T(\rho,\lambda) = -h_0 T_0 r_2 (\alpha n + \beta h - \alpha n h r_2 \ln n) \int_{-i\infty}^{\sigma - i + i\infty} \Pi(u) u^{-1} \times$$

$$\times \varphi(\rho, u) e^{\lambda u}\, du\, [2\pi i (\alpha n + \beta h_0 - \alpha n h_0 r_2 \ln n]^{-1} = -h_0 T_0 r_2 (\alpha n + \beta h -$$

$$- \alpha n h r_2 \ln n) [\pi(\alpha n + \beta h_0 - \alpha n h_0 r_2 \ln n)]^{-1} \int_0^{\infty} Im [\Pi(iy) e^{i\lambda y} y^{-1} \varphi(\rho; iy)\, dy +$$

$$+ h_0 T_0 [n \alpha r_2 (\ln \rho - \ln n) + \beta] [2(\alpha n + \beta h_0 - \alpha n h_0 r_2 \ln n)]^{-1}, \tag{18}$$

where: / где

$$\varphi(\rho;\ u) = \varphi_1^{-1}(u) [\alpha r_2 I_0(nu) + \beta u I_1(nu)] H_0^{(1)}(\rho u) - [\alpha r_2 H_0^{(1)}(nu) +$$

$$\beta u H_1^{(1)}(nu)] I_0(\rho u). \tag{19}$$

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Heat transfer through a cylinder ... S/170/61/004/012/008/011
B104/B138

is obtained. Here, $u = mr_2$, $r = r_2$, and $z = r_2$. There are 2 Soviet references.

SUBMITTED: April 3, 1961

Card 4/4

S/020/61/141/002/008/027
B104/B138

21.1000

AUTHOR: Khrustalev, A. F.

TITLE: A boundary value problem of the Laplace equation

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 2, 1961, 327-329

TEXT: The paper deals with a method for the determination of the steady temperature field of an unbounded hollow cylinder whose inner surface is coated with thermal insulation and whose outer surface exhibits the temperature $T = f(z)$ on half its length, while the second half emits heat according to Newton's law. The solution of the problem in question must satisfy the Laplace equation at the boundary conditions $\partial T/\partial r = 0$ ($r = r_1$, $-\infty < z < +\infty$), $\partial T/\partial r + hT = 0$ ($r = r_2$, $0 < z < +\infty$) and $T = f(z)$ ($r = r_2$, $-\infty < z < 0$). $f(z)$ can be, and is here, represented as a Fourier integral. The condition $T = A\cos\beta z = \frac{A}{2}(e^{i\beta z} + e^{-i\beta z})$ is chosen for T, for $r = r_2$, $-\infty < z < 0$, where A and β are real parameters. The solution of the problem discussed is found from

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A boundary value problem of the... 30698 S/020/61/141/002/008/027 B104/B138

$$T_1(\rho, \lambda) = \int_0^{\infty} \frac{[H_0^{(1)}(\rho u) J_1(nu) - J_0(\rho u) H_1^{(1)}(nu)]\, k(u)}{\varphi_1(u)} e^{\lambda u}\, du = A\varphi(\rho, \lambda, \beta), \quad (13)$$

where

$$\varphi(\rho, \lambda, \beta) = -\frac{1}{2\pi} \int_{-\infty}^{0} \left[\frac{\varphi_2(i\rho z)}{\varphi_2(iz)} \operatorname{Im}\left\{\frac{1}{\Pi(-iz)}\left[\frac{\Pi(-i\beta r_2)}{z-\beta r_2} + \frac{\Pi(i\beta r_2)}{u+\beta r_2}\right] e^{i\lambda z}\right\} - \right.$$

$$\left. - \frac{\varphi_2(i\rho\beta r_2)}{\varphi_2(i\beta r_2)}\left(\frac{1}{z-\beta r_2} + \frac{1}{z+\beta r_2}\right)\sin\lambda z\right] dz + \frac{\varphi_2(i\rho\beta r_2)}{\varphi_2(i\beta r_2)} \cos\lambda\beta r_2;$$

$$\varphi_2(i\rho z) = H_0^{(1)}(i\rho z) J_1(inz) - J_0(i\rho z) H_1^{(1)}(inz) = $$

$$= \frac{2}{\pi} [k_0(\rho z) I_1(nz) - K_1(nz) I_0(\rho z)],$$

Here $r = \rho r_2$, $z = \lambda r_2$. There are 2 Soviet references.

PRESENTED: July 17, 1961, by S. L. Sobolev, Academician

SUBMITTED: July 8, 1961

Card 2/2

KHRUSTALEV, A.F.

Boundary value problem for Poisson's equation. Izv. vys. ucheb. zav.; mat. no.1:180 '62. (MIRA 15:1)
(Boundary value problems)
(Differential equations)

37641
S/143/62/000/004/005/006
D238/D307

26.5100

AUTHOR: Khrustalev, A.F., Candidate of Physico-Mathematical Sciences

TITLE: The temperature field of an infinite solid cylinder

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Energetika, vol. 5 no. 4, 1962, 104 - 107

TEXT: For the purpose of studying the steady-state temperature field of an infinite solid cylinder with radius R, within which heat sources are distributed with a density depending only on the radius, it is assumed that the cylinder is charged to one half of its length with a heat-generating medium at a constant temperature T_0 and the other half delivering the heat to a heat-absorbing medium the temperature of which is zero. It is assumed that the heat exchange between the end surfaces of the cylinder and the surrounding medium follows Newton's law. Calling the coefficient of heat exchange between the heat-transmitting medium and the cylinder h_0 and the coefficient of heat exchange between the cylinder and the heat-absorbing medium h, the function of temperature distribution corresponding to these

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requirements takes on the form of a solution of the Poisson equation in the cylindrical system of coordinates:

$$\Delta T = \frac{\partial^2 T}{\partial r^2} + \frac{1}{r} \cdot \frac{\partial T}{\partial r} + \frac{\partial^2 T}{\partial z^2} = - \frac{Q(\frac{r}{R})}{k} \tag{1}$$

satisfying the boundary conditions:

$$\frac{\partial T}{\partial r} + hT = 0 \qquad \text{for } r = R;\ 0 < z < +\infty, \tag{2}$$

$$\frac{\partial T}{\partial r} + h_o T = h_o T_o \qquad \text{for } r = R\ -\infty < z < 0. \tag{3}$$

To solve (1) it is brought to a homogeneous form assuming

$$T = \varphi(\tfrac{r}{R}) + T_1 \tag{4}$$

requiring that $\Delta T_1 = 0$ (5). From (4) and (5), taking into account the boundedness of the solution at the axis of the cylinder, it follows that

39543
S/170/62/005/008/008/009
B104/B102

26.5100

AUTHOR: Khrustalev, A. F.

TITLE: Heat conduction of a solid cylinder

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 8, 1962, 101-105

TEXT: The stationary temperature field of an unbounded solid cylinder is studied under the boundary conditions

$$T = 0 \quad \text{при} \quad r = R, \ |z| \geqslant a; \tag{1}$$

$$\frac{\partial T}{\partial r} + hT = hf(z) \quad \text{при} \quad r = R, \ |z| < a. \tag{2}$$

where h is the heat exchange coefficient between cylinder and surrounding medium and f(z) is an even function describing the temperature of that medium. The formulation

$T(r;z) = \int_0^\infty A(m) I_0(mr) \cos mz \, dm$ satisfies the Laplace equation in

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KHRUSTALEV, A.F

ATD Nr. 988-13 12 June

KHRUSTAL'YEV, A.F.

TEMPERATURE FIELD IN AN INFINITE SHALLOW CYLINDER (USSR)

Kogan, B. I., and A. F. Khrustal'yev. Izvestiya vysshikh uchebnykh zavedeniy. Matematika, no. ~~2, 1963, 60-62.~~ S/140/63/000/002/005/013

The problem of determining the stationary temperature field in an infinite shallow cylinder is studied. The inner surface of the cylinder has a constant temperature $T = 0$; half the outer surface has a constant temperature T_1, while the other half radiates heat into the surrounding medium according to Newton's law. The problem is reduced to the solution of harmonic equations in cylindrical coordinates with corresponding boundary conditions. The method of solving these equations is presented on the basis of an auxiliary solution of the form

$$T_0(r, z, m) = e^{mz} f(r), \quad (1)$$

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L 13067-63 EWP(r)/EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3000957 S/0140/63/000/003/0162/0165

AUTHOR: Khrustalev, A. F. (Khar'kov); Vaynshteyn, F. A. (Khar'kov) 55

TITLE: A mixed problem in elasticity theory for transverse isotropic hollow cylinder 18

SOURCE: IVUZ. Matematika, no. 3, 1963, 162-165

TOPIC TAGS: elasticity, isotropic cylinder, partial differential equation

ABSTRACT: The author considers a mixed problem in elasticity theory for a transverse isotropic hollow circular cylinder 21 which reduces to the determination of the stress function X(r,z) satisfying the system in the Enclosure. The problem is solved. Orig. art. has: 23 formulas.

ASSOCIATION: none

SUBMITTED: 22Feb60 DATE ACQ: 12Jun63 ENCL: 01

SUB CODE: 00 NO REF SOV: 005 OTHER: 000

Card 1/2/

KHRUSTALEV, A.F. (Sevastopol')

Mixed problem in the theory of elasticity for a layer. Inzh. zhur. 3 no.2:391-393 '63. (MIRA 16:6)

(Elasticity)

KHRUSTALEV, A.F. (Khar'kov)

Boundary value problem for Poisson's equation. Izv. vys. ucheb. zav.; mat. no.5:129-132 '63. (MIRA 16:11)

45118

S/170/63/006/002/011/018
B102/B186

26.5100

AUTHOR: Khrustalev, A. F.

TITLE: The thermal conductivity of an infinite plane wall

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 6, no. 2, 1963, 82 - 87

TEXT: Consideration is given to a plane wall of infinite extent, one half of which is surrounded by a heat giving and the other half by a heat-absorbing medium. The temperature of the heat removing medium changes only in the axial direction $T_1 = f(x)$. The problem is to find the function $T(x,y,z)$ which has to satisfy the Laplace's equations and certain boundary conditions. If these latter are given by

$$\pm\frac{\partial T}{\partial y} + hT = 0 \quad \text{при } y = \pm b,\ |x| < \infty,\ 0 < z < +\infty; \qquad (2),$$

$$\pm\frac{\partial T}{\partial y} + h_0 T = h_0 f(x) \quad \text{при } y = \pm b,\ |x| < \infty,\ -\infty < z < 0. \qquad (3)$$

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one obtains

$$T = -\frac{bh_0}{2\pi i}\int_{-\infty}^{+\infty} a(\beta)\,A(\beta)\cos\beta x\,d\beta \times$$

$$\times \int_{-i\infty}^{0-i+i\infty} \frac{\Pi(u,\beta)\cos(\sqrt{u^2-b^2\beta^2})\,\rho\exp(uv)\,du}{u(hb\cos\sqrt{u^2-\beta^2b^2}-\sqrt{u^2-\beta^2b^2}\sin\sqrt{u^2+\beta^2b^2})} \quad (14).$$

If they are given by

$$\alpha T-\lambda\frac{\partial T}{\partial y}=0 \text{ при } y=0,\ |x|<\infty,\ |z|<\infty; \quad (15)$$

$$\frac{\partial T}{\partial y}+hT=0 \text{ при } y=b,\ |x|<\infty,\ 0<z<+\infty; \quad (16)$$

$$\frac{\partial T}{\partial y}+h_0T=h_0f(x) \text{ при } y=b,\ |x|<\infty,\ -\infty<z<0. \quad (17),$$

$$T = -\frac{bh_0}{2\pi i}\int_{-\infty}^{+\infty}\frac{\varphi_1(0,\beta)}{\varphi_2(0,\beta)}A(\beta)\cos\beta x d\beta \times$$

$$\times \int_{-i\infty}^{0-;+i\infty} [\Pi_1(u,\beta)(\lambda\sqrt{u^2-\beta^2 b^2}\cos\sqrt{u^2-\beta^2 b^2}\rho + \alpha b \sin\sqrt{u^2-\beta^2 b^2}\rho) \times \qquad (21)$$

$$\times \exp(uv)\,du\,][u\varphi_1(u,\beta)]^{-1}$$

is found. h_0 is the heat transfer coefficient for the interface between the heat giving medium and the wall while h_1 is that for the boundary surface between the wall and the heat absorbing medium.

ASSOCIATION: Sevastopol'skiy filial Odesskogo politekhnicheskogo instituta g. Sevastopol' (Sevastopol' Branch of the Odessa Polytechnic Institute Sevastopol')

SUBMITTED: April 9, 1962

L 13151-63 EWP(r)/EWT(1)/EPF(n)-2/BDS AFFTC/ASD/SSD Pu-4 EM

S/170/63/000/004/014/017

AUTHOR: Khrustalev, A. F. 61

TITLE: Nonstationary heat conduction 21 problem for a cylinder 26

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 6, no. 4, 1963, 108-110

TEXT: The author considers a nonstationary temperature field of an infinite solid cylinder under two different boundary conditions (r = R, z greater than 0; r = R, and z less than 0). In the theoretical discussion and equations, h_o = the relative factor of heat between the heat-yielding medium and a cylinder; h = the relative factor of heat exchange between the cylinder and the heat-absorbing medium; R = the cylinder's radius; A(u) = an arbitrary function of the complex variable u; and T_o and omega are constants. The author derives an exact solution in closed form.

ASSOCIATION: Filial Odesskogo politekhnicheskogo instituta (Sevastopol) (Affiliate of the Odessa Polytechnical Institute)

SUBMITTED: Jul 27, 62

Card 1/1

KHRUSTALEV, A.F.

Temperature field of a uniform half-space. Inzh.-fiz. zhur. 6 no.7: 126-127 Jl '63. (MIRA 16:9)

1. Filial Odesskogo politicheskogo instituta, Sevastopol'.
(Temperature fields)

KHRUSTALEV, A.F.

A contact problem in the theory of elasticity for bodies of limited size. Dokl. AN SSSR 151 no.5:1056-1059 Ag '63. (MIRA 16:9)

1. Sevastopol'skiy filial Odesskogo politekhnicheskogo instituta. Predstavleno akademikom A.Yu.Ishlinskim.

(Boundary value problems) (Elasticity)

KHRUSTALEV, A. F. (Sevastopol')

"On the mixed problem of elasticity for bounded bodies"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964.

ACCESSION NO: AP4018051 S/0140/64/000/001/0139/0143

AUTHOR: Khrustalev, A. F.

TITLE: An axially symmetric mixed boundary value problem in the theory of elasticity for a transversely isotropic cylinder

SOURCE: IVUZ. Matematika, no. 1, 1964, 139-143

TOPIC TAGS: mixed boundary value problem, mixed problem, transversely isotropic cylinder, elasticity, elastic cylinder

ABSTRACT: A method is suggested for determining the stress in a bounded circular transversely-isotropic cylinder with the mixed boundary conditions

$$\sigma_r = -\frac{\partial}{\partial z}\left(\frac{\partial^2\Phi}{\partial r^2} + \frac{b}{r}\frac{\partial\Phi}{\partial r} + a\frac{\partial^2\Phi}{\partial z^2}\right) = 0 \quad \text{for } r = R;\ |z| > h,$$

$$\tau_{rz} = \frac{\partial}{\partial r}\left(\frac{\partial^2\Phi}{\partial r^2} + \frac{1}{r}\frac{\partial\Phi}{\partial r} + a\frac{\partial^2\Phi}{\partial z^2}\right) = 0 \quad \text{for } r = R;\ |z| < \infty,$$

$$u_r = r(a_{12}\sigma_r + a_{11}\sigma_\theta + a_{13}\sigma_z) = f(z) \quad \text{for } r = R;\ |z| < h,$$

ACCESSION NO: AP4018051

where
$$\sigma_\theta = -\frac{\partial}{\partial z}\left(b\frac{\partial^2\Phi}{\partial r^2} + \frac{1}{r}\frac{\partial\Phi}{\partial r} + a\frac{\partial^2\Phi}{\partial z^2}\right),$$
$$\sigma_z = -\frac{\partial}{\partial z}\left(c\frac{\partial^2\Phi}{\partial r^2} + \frac{c}{r}\frac{\partial\Phi}{\partial r} + a\frac{\partial^2\Phi}{\partial z^2}\right).$$

The problem involves the solution of the equation
$$\Delta_1^2\Delta_2^2\Phi(r;\ z) = 0$$
$$\left(\Delta_i^2 = \frac{\partial^2}{\partial r^2} + \frac{1}{r}\frac{\partial}{\partial r} + \frac{1}{S_i^2}\frac{\partial^2}{\partial z^2},\ i = 1,\ 2\right)$$

subject to the above conditions where the terminology is that of S. G. Lekhnitskiy (Teoriya uprugosti anizotropnogo tela, GITTL, M.-L., 1950). A general solution of the differential equation is given. In order to satisfy the boundary conditions, certain unknown functions must be determined. This leads to a pair of integral equations. By using the results of N.N. Lebedev and Ya. S. Uflyand (Osesimmetrichnaya kontaktnaya zadacha dlya uprugogo sloya, PMM, t. 22, vy*p. 3, 1958), the problem is reduced to finding the solution $\varphi(t)$ of a Fredholm integral equation of the second kind. The following formula involving $\varphi(t)$ is then obtained

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ACCESSION NO: AP4018051

for the distribution of normal stress:

$$\sigma_y = \frac{\varphi(h)}{\sqrt{h^2 - x^2}} - \int_x^h \frac{\varphi'(t)\,dt}{\sqrt{t^2 - x^2}}$$

Orig. art. has: 36 equations.

ASSOCIATION: none

SUBMITTED: 11Oct61 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: MM NO REF SOV: 003 OTHER: 001

Card 3/3

KHRUSTALEV, A.F. (Sevastopol')

A mixed problem in the theory of elasticity for a plane parallel layer. Inzh.zhur. 4 no.3:553-556 '64. (MIRA 17:10)

KHRUSTALEV, A.F.

Steady-state problem in the heat conduction theory for a plane-parallel layer. Inzh.-fiz. zhur. 7 no.8:47-50 Ag '64. (MIRA 17:10)

1. Filial Odesskogo politekhnicheskogo instituta, Sevastopol'.

KHRUSTALEV, A.F. (Sevastopol')

Contact problem of thermoelasticity for a semispace. Inzh.zhur. 5 no.1:180-183 '65. (MIRA 18:4

KHRUSTALEV, A-N.

RYZHIKOV, A.S., kandidat meditsinskikh nauk; KHRUSTALEV, A.N., doktor meditsinskikh nauk, zaveduyushchiy; KALASHNIKOVA, M.M., glavnyy vrach.

Treatment of patients with enlarged veins of the lower extremities. Sov. med. 17 no.6:33-34 Je '53. (MLRA 6:6)

1. Khirurgicheskoye otdeleniye Kolpinskoy bol'nitsy Leningrada (for Ryshikov and Khrustalev). 2. Kolpinskaya bol'nitsa Leningrada (for Kalashnikova).
(Veins--Diseases)

KHRUSTALEV, A.S.

Method for calculating reticulocytes. Lab.delo 2 no.4:27 Jl-Ag '56.
(BLOOD CELLS) (MLRA 9:10)

KHRUSTALEV, A.V.

AUTHORS: Margulis, U.Ya., Khrustalev, A.V. 89-10-17/36

TITLE: Computation and Measuring of the γ-Field of a Plane Source (Raschet i izmereniye γ-polya ot ploskogo istochnika)

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 1o, pp. 338-341 (USSR)

ABSTRACT: The equations for the calculation of the dose of a plane source are derived theoretically and herefrom the isodose curves are formed. Further, measuring of the dose on a quasi-plane source (11 adjoining, active rods of a length of 1 m) are described with 418 mC. As the quintessence of all delibmations it is shown that an apparatus with a source consisting of 2 parallel plates with a distance of 25,44 cm and a total activity of Q = 1ooo milligram - radium equivalent possesses an efficiency of 35,616 kg, where in the center of both plates there is a dose of 0,21 r/min. If, however, an apparatus is used for which an equivalent, cylindrical source of equal strength is used (ϕ:25,44 cm, length 1oo cm), then only an efficiency of 16,18 kg exists, where, however, in the center of the source, there is a dose of o,291 r/min. There are 7 figures.

SUBMITTED: October 26, 1956
AVAILABLE: Library of Congress

Card 1/1

KHRUSTALEV, B. A.

Dissertation: "Investigation of Heat Exchange by Radiation in a High Efficiency Boiler-Furnace." Cand Tech Sci, Power Engineering Inst imeni G. M. Krzhizhanovskiy, Acad Sci USSR, 20 May 54. Vechernyaya Moskva, Moscow, 11 May 54.

SO: SUM 284, 26 Nov 1954

KHRUSTALEV, B.A.

AID P - 2392

Subject : USSR/Engineering

Card 1/1 Pub. 110-a - 6/15

Authors : Filimonov, S. S., Khrustalev, B. A. and Kolchenogova, I.P., Kand. Tech. Sci. [redacted]

Title : Research on heat transfer in boiler furnaces

Periodical : Teploenergetika, 7, 30-33, Jl 1955

Abstract : Tests made on heat transfer in specially-built furnaces are described. A comparison is made with standard equipment. According to the results reported, convective heat transfer is desirable for furnaces of small dimensions. The standard design of the boiler unit appears to be unsatisfactory for some types of furnaces. Four diagrams. Seven Russian references, 1949-1954.

Institution: Power Institute of the Academy of Science, USSR

Submitted : No date

KHRUSTALEV, B.A.

KONAKOV, P.K., doktor tekhnicheskikh nauk; FILIMONOV, S.S., kandidat tekhnicheskikh nauk; KHRUSTALEV, B.A., kandidat tekhnicheskikh nauk.

Calculation of heat exchange in boiler furnaces [with summary in English]. Teploenergetika 4 no.8:48-53 Ag '57. (MLRA 10:9)

1. Energeticheskiy institut Akademii nauk SSSR.
(Boilers) (Heat--Transmission)

KHRUSTALEV, B.A.

AUTHOR: KONAKOV, P.K., FILIMONOV, S.S., KHRUSTALEV, B.A. PA - 3562

TITLE: On the Calculation of Radiative Heat Exchange in a Cooled Combustion Chamber. (K rashetu luchistogo teploobmena v okhlazhdayemykh kamerakh goreniya, Russian)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 5, pp 1066 - 1075 (U.S.S.R.)

ABSTRACT: A scheme for the heat exchange process in combustion chambers is suggested, which makes it possible to determine the required radiation temperature T_S and to calculate the radiation heat exchange. It is assumed that near the heat absorbing surfaces there is a layer of the medium which is in equilibrium with radiation, the molecular temperature of the medium and the radiation temperature being equal to each other. It is assumed that on the way from the balanced layer to the wall radiation is not in interaction with the medium, i.e. there is a transfer of radiation energy by effusinn. It is therefore assumed that the temperature of this layer is equal to the T_S on the heat-absorbing surface. The temperature of the balanced layer adjusts itself in accordance with an interaction between the medium and the radiation in the core of the flow. The molecular-kinetic temperature of the balanced layer is determined by means of a field analysis of the molecular temperatures of the ignition chamber. Thus, the balanced layer dicides the ignition chamber into two zones: one that is close against the

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PA - 3562

On the Calculation of Radiative Heat Exchange in a Cooled Combustion Chamber.

wall and comprises the domain from the heat absorbing surface to the balanced layer. The second zone, the medium core, comprises the rest of the space. The existence of a radiation equilibrium near the heat absorbing surfaces is proved theoretically and experimentally. The thickness of the balanced layer is measured in millimeters. On the basis of what has been said it is possible to determine the radiation temperature on the heat-absorbing surface and to calculate the radiative heat exchange in the combustion chamber. (With 10 illustrations and 9 Slavic references)

ASSOCIATION: Institute for Energetics "G.M.KRZHIZHANOVSKIY", Moscow
PRESENTED BY:
SUBMITTED: 17.7.1956
AVAILABLE: Library of Congress

Card 2/2

KHRUSTALEV, B.A.

24(E) BOOK EXPLOITATION

Akademiya nauk SSSR. Energeticheskiy institut imeni G. M. Krzhizhanovskiy

Teploenergetika, vyp. 1 (Heat Power Engineering, Nr 1) Moscow, Izd-vo AN SSSR, 1959. 143 p. Errata slip inserted. No. of copies printed not given.

Ed. of Publishing House: V. A. Kotov; Tech. Ed.: Yu. V. Rylina; Editorial Board: V. A. Baum, Doctor of Technical Sciences, Professor (Resp. Ed.); G. Ye. Kholodovskiy, Doctor of Technical Sciences; N. I. Yushchenkova, Candidate of Technical Sciences; Z. L. Miropol'skiy, Candidate of Technical Sciences (Secretary); and S. G. Poyarkov, Candidate of Technical Sciences.

PURPOSE: This work is intended for scientists and engineers working in the field of steam boilers.

COVERAGE: This is a collection of 9 articles on the circulation of water and water-vapor mixture in boilers, bubbling processes, pulsation of pressure, temperature fields in combustion chambers, radiation heat transfer between gray bodies, and the solution of nonlinear problems of mathematical physics. There is also an article describing processes occuring in the steam boiler of a solar heat energy station. References appear at the end of each article. were conducted at thermohydroelectric laboratories in cooperation with Heat and Electric Power Plant (TETs) No. 9.

Bartolomey, G. G., Ya. G. Vinokur, V. A. Kolokoltsov, and V. I. Petukhov. Experimental Investigation of Vapor and Gas Contents in a Bubbling Process 40

It was found that the distribution of volume vapor content and air content along the elevation of the bubbling volume at insignificant reduced velocities of vapor or air, and at low boiler water salt content, remains qualitatively the same under various pressures and characteristics of the perforated plate. An increase in the weight level at atmospheric pressure results in a decrease of vapor content. An increase in the reduced velocity of steam when the water is of low salt content increases the volume vapor content.

Semenov, N. I. Pulsations of Pressure in the Flow of Gas-Liquid Mixtures in Pipes 46

The article describes experiments in pressure pulsation in four 14 m long pipes of different diameters-25.8, 47.4, 74.7 and 99.8 mm. The flow velocity changed from 0.2 to 5m/sec. The gas content changed from 0.05 to 0.95. Graphical representation of experimental results are given.

Miropol'skiy, Z. L., and R. L. Shneyerova. Investigation of a Flow of Vapor Water Mixture in Pipes by γ Radiation 53

In this article the authors describe problems in determining the average values of steam volume contents φ av. in pipes and in conduits of rectangular cross section. The results obtained are also valid for conduits of arbitrary geometrical shapes. Diagrams and graphs are given.

Khrustalev, B. A. and S. S. Filimonov. Temperature Fields in Combustion Chambers 62

Three kinds of furnace heating chambers were investigated. Experimental data show that under condition of approximate self-modeling temperature fields these chambers perform according to load. It is stated that the approximate independence of dimensionless temperature fields from the load occurs in various combustion chambers which differ from each other according to geometric characteristics and the type of combustion processes.

Shchegolev, D. M. Steam Boiler of a Solar Heat Energy Station 70

The author presents data on the performance of steam boilers operating on solar heat energy. General diagrams of a boiler and tables of principal characteristic are given.

Surinov, Yu. A. Investigation of Radiation Heat Transfer in Systems of Gray Bodies 79

The author develops a theory of radiation and radiation heat transfer. The equations appearing in this article permit a theoretical-probability interpretation. The article is divided into two parts: 1) Solution of a mixed problem on radiation heat exchange in a system of gray bodies in a diathermic medium, and 2) Solution of a mixed problem of radiation heat

KHRUSTALEV, B.A.

24(8) PHASE I BOOK EXPLOITATION SOV/3501

Akademiya nauk SSSR. Energeticheskiy institut

Voprosy teploobmena (Heat-Exchange Problems) Moscow, 1959. 237 p. Errata slip inserted. 2,800 copies printed.

Resp. Ed.: M.A. Mikheyev, Academician; Ed. of Publishing House: G.B. Gorshkov; Tech. Ed.: I.F. Kuz'min.

PURPOSE: This collection of articles is intended for scientific workers, engineers, and postgraduate students specializing in thermodynamics.

COVERAGE: The collection reviews problems of heat transfer and explores possibilities of intensifying heat exchange. The heat exchange theory is outlined, and Russian scientists who contributed to its development are mentioned. Thermophysical properties of some molten metals and alloys are analyzed, and methods used to determine them presented. Equipment used for measuring thermal conductivity, heat capacity, and kinetic viscosity of these metals are discussed. Results of experimental study of the intensified heat exchange for a water flow in an annular channel are analyzed and the instruments used along with the pilot plant for studying convection heat exchange in contacting nonmiscible fluids are described. Instruments and equipment used for determining the linear expansion of metals, the consumption of a liquid, and the absorption capacity of a surface are also described and illustrated. A number of equations for solving various thermodynamic problems are presented. Each article is accompanied by references, the majority of which are Soviet.

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KHRUSTALEV, B.A.; FILIMONOV, S.S.

Temperature field in combustion chambers. Teploenergetika [Energ. inst.] no.1:62-70 '59. (MIRA 13:2)
(Thermodynamics) (Furnaces)

KHRUSTALEV, B. A.

PHASE I BOOK EXPLOITATION SOV/4396

Akademiya nauk SSSR. Energeticheskiy institut

Konvektivnyy i luchistyy teploobmen (Convection and Radiation Heat Exchange) Moscow, Izd-vo AN SSSR, 1960. 254 p. Errata slip inserted. 3,200 copies printed.

Ed.: M.A. Mikheyev, Academician; Ed. of Publishing House: G.B. Gorshkov; Tech. Ed.: V.V. Brusgul'.

PURPOSE: The book is intended for scientists and engineers working in various branches of science and industry concerned with thermodynamics and heat transfer problems.

COVERAGE: The book consists of 19 original articles on various problems in thermodynamics. The following subjects are discussed: mechanism of heat transfer processes, intensification of heat exchange, determination of thermophysical properties of operating media, heat transfer in supersonic flow of gas, and combustion chambers and nuclear reactors. Theory and experimental techniques are described. Each article describes the conditions of the experiment and tables of the experimental data obtained are given. The data may be used for calculations of heat transfer and heat exchangers, always taking account of

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AVAILABLE: Library of Congress

KONAKOV, Petr Kuz'mich, prof., doktor tekhn.nauk; FILIMONOV, Sergey Sergeyevich, kand.tekhn.nauk; KHRUSTALEV, Boris Aleksandrovich, kand.tekhn.nauk; ARNOL'D, L.V., prof., retsenzent; LAKHANIN, V.V., prof., doktor tekhn.nauk, nauchnyy red.; SHLENNIKOVA, Z.V., red.izd-va; BODROVA, V.A., tekhn.red.

[Heat exchange in the combustion chambers of steam boilers] Teploobmen v kamerakh sgoraniia parovykh kotlov. Moskva, Izd-vo "Rechnoi transport," 1960. 269 p. (MIRA 13:5)
(Boilers) (Furnaces)

S/057/60/030/06/15/023
B012/B064 81594

24.5500

AUTHORS: Filimonov, S. S., Khrustalev, B. A., Adrianov, V. N.

TITLE: On the Theoretical Principles of the Method of the Two Radiometers 19

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 6, pp. 690-698

TEXT: V. S. Kocho (Ref. 1) introduced a method for the separate measurement of the radiation flow and the convective flow (method of two radiometers). This was used in the investigation of the heat exchange in the Siemens-Martin furnaces (Ref. 1) and in the combustion chambers (Refs. 2, 3). In the present paper this method is analyzed. The heat absorption at the relevant place of heating is measured simultaneously by means of two radiometers with different degrees of blackening A_1, A_2, of the heat-absorbing elements. The formulas (1) and (2) are written down for the calculation of the heating flow. It is assumed that the density $E_{incident}$ of the incident radiation is equal for both radiometers. Furthermore, it is assumed that

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the convective flows for both radiometers are equal and = q_k. Formula (5) is derived for $E_{incident}$ and (6) for q_k which are commonly used in calculations. The constancy of $E_{incident}$ is maintained if the measuring surface of the radiometer is considerably smaller than the over-all surface of the heat exchanger. In order to prove the accuracy of the assumption of the mutual independence of the convective and the radiation current the experimental investigation described herein was carried out. This was done by means of 3 radiometers. This proof was based on the idea that, if the assumption was right, any pair of radiometers would yield the same results as the other two pairs. The investigation showed that the hypothesis of the mutual independence of the radiation flow and the convective flow in the medium boundary layer in the combustion chambers is in practice maintained with sufficient accuracy. The experiments have shown that by the method of two radiometers and by fulfilling the conditions

$\frac{A_2}{A_1} \leqslant 0.2$ and $\frac{F_{radiometer}}{F_{heating-}} \ll 1$ satisfactory results were obtained.

On the Theoretical Principles of the Method of the Two Radiometers S/057/60/030/06/15/023 B012/B064 81594

This should also be considered in the production of the radiometers. In the present paper also a mathematical analysis of the accuracy of formulas (5) and (6) was carried out on the basis of the error theory. The two methods applicable in this case are given. On the basis of this analysis formulas (10), (11), (12), and (13) were derived. With these formulas all the extreme relative errors in the required quantities can be calculated in dependence of all the factors influencing such quantities. The analysis showed that the errors $\delta_{E_{incident}}$ and δ_{q_k} diminish with decreasing ratio $\frac{A_2}{A_1}$. This was confirmed by the results obtained from the experimental investigation. There are 8 figures and 4 Soviet references.

SUBMITTED: November 18, 1957

Card 3/3

KHRUSTALEV, B. A., and FILIMONOV, S. S.

"Evaluation of Local Heat Transfer and Hydraulic Resistance at Turbulent Flow of Water in Tubes with Different Inlets."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

S/124/61/000/011/027/046
D237/D305

AUTHORS: Filimonov, S.S., Khrustalev, B.A., and Adrianov, V.N.

TITLE: Measuring convective and radiant components of a complex heat transfer by two radiometers

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 11, 1961, 95, abstract 11B630 (Sb. Konvektiv, i luchistyy teploobmen, M., AN SSSR, 1960, 133 - 144)

TEXT: The method of separate measurements of radiant and convective streams proposed by V.S. Kocho (Stal', 1950, No. 3) depends on simultaneous measurement of heat intensity on the given point of the surface by two radiometers, whose heat absorbing elements have different coefficients of absorption, assuming radiant and convective streams on the surface of the meters, are independent of each other. The results are given of an experimental check (by means of three radiometers) of applicability of the method in various combustion chambers. [Abstractor's note: Complete translation].

Card 1/1

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S/124/61/000/012/025/038
D237/D304

26.5200

AUTHORS: Filimonov, S. S., and Khrustalev, B. A.

TITLE: On calculating heat transfer and hydraulic drag in the laminar flow of fluid in tubes

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 12, 1961, 95, abstract 12B655 (V sb. Konvektivn. i luchistyy teploobmen. M., AN SSSR, 1960, 221-232)

TEXT: The method of processing experimental data is given, allowing the calculations of local and mean characteristics of heat transfer and hydraulic resistance in laminar flow of fluids in tubes heated in a constant flow of heat under the condition of simultaneous development of thermal and hydrodynamic boundary layers. It is shown that the dependence of the Nusselt No. on Gretz criterion,

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$$N_{fx} = f\,(Gz')$$

$$\left(N = \frac{qd}{(t_{wx} - t_{fx})\, h_{fx}}, \quad Gz' = \frac{x/d}{P'_f} \right), \tag{1}$$

does not fully reflect the influence of all parameters on the mode of development, as the spread over the layer of experimental points depends on the magnitude of thermal flow q on the temperature of the fluid on entering the experimental region. The author succeeded in representing the experimental data by

$$N_{fx} \left(\frac{P_{wx}}{P_{fx}} \right)^{1/3} = 4.36 + 0.36\, X^{-1/2} \times 10^{-18X}, \tag{2}$$

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D237/D304

On calculating heat...

which enables the calculation of the wall temperature at any point of the tube under the condition of constant thermal flow with simultaneous formation of thermal and hydrodynamic boundary layers. Graphs of $N_{fx} (P_{wx} / P_{fx})^{1/3}$ v. X are given for the experimental data of various authors. A formula is proposed for the determination of the region of thermal stability, and a graph is given of the mean Nusselt No. N v. mean value of the criterium X. Experimental data on hydraulic resistance for the front part of the tube $\left((x/d)\, R_f^{1} \leq 0.065\right)$ are satisfactorily described by

$$\frac{\zeta_x R'_f}{(P_{wx}/P_{fx})^{1/3}} = 64 + 3.2 \left(\frac{x/d}{R'_f}\right)^{-0.56} 10^{-14.6} \frac{x/d}{R'_f} \qquad (3)$$

Card 3/4

ACCESSION NR: AP4000397 S/0294/63/001/001/0017/0023

AUTHORS: Khrustalev, B. A.; Kolchenogova, I. P.; Rakov, A. M.

TITLE: Spectral radiation coefficients for tantalum, molybdenum and niobium

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 1, 1963, 17-23

TOPIC TAGS: temperature measurement, optical pyrometry, tantalum, molybdenum, niobium, radiation, radiative heat transfer, high temperature, radiation coefficient, radiation spectrum

ABSTRACT: The purpose of the investigation was to determine, for purposes of optical pyrometry, the emission coefficients of the materials, which were determined for the effective wavelength 0.65 micron corresponding to the spectral region accommodated by the KS-filter and the human eye. The radiation coefficients were determined over a wide range of temperatures for different surface conditions of the investigated material. The average measurement accuracy was 14.6% near 1000C and 5% near 2000C. The mean square deviation

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ACCESSION NR: AP4000397

of the experimental points from their averaging curves was 3.2, 6.2, and 6.1% for tantalum, molybdenum, and niobium, respectively, and is in good coordination with the maximum relative error. The orig. art. has: 4 figures and 2 tables.

ASSOCIATION: Energeticheskiy institut im. G. M. Krzhizhanovskogo (Power Engineering Institute)

SUBMITTED: 17May63 DATE ACQ: 13Dec63 ENCL: 01

SUB CODE: AS NO REF SOV: 004 OTHER: 010

Card 2/3

KHRUSTALEV, B. A.; RAKOV, A. M.; DMITRIYEV, A. A.; KOLCHENOGOVA, I. P.

"Investigation of radiation coefficients of heat-resistant materials."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

G. M. Krzhizhanovskiy Power Inst.

L 07558-67 EWT(1)/EWP(m) WW/GD

ACC NR: AT6029316 SOURCE CODE: UR/0000/66/000/000/0134/0150

AUTHOR: Adrianov, V. N.; Khrustalev, B. A.; Kolchenogova, I. P.

54
B+1

ORG: none

TITLE: Radiative-convective heat transfer of a high temperature flow of gas in a channel

SOURCE: Moscow. Energeticheskiy institut. Teploobmen v elementakh energeticheskikh ustanovok (Heat exchange in power installation units). Moscow, Izd-vo Nauka, 1966, 134-150

TOPIC TAGS: radiative heat transfer, convective heat transfer, gas flow

ABSTRACT: The article is devoted to a combined theoretical and experimental treatment of the problem of complex heat transfer between a high temperature gas flow and the cold surface of a channel. The theoretical analysis arrives at a method for determining the quantities which enter into the dimensionless relationship describing the process. For the experimental investigation, a special apparatus was built to study radiative-convective heat transfer during the movement of the products of the combustion of a gaseous fuel in cylindrical channels. The article gives a diagram of the experimental apparatus. Four series of experiments were carried out in channels of different diameters. The experimental results are exhibited in extended tables. On

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the basis of the experimental data, the following relationship was arrived at:

$$\theta = \exp\{-A\varphi[1 + (1-\varphi)^{0,1}(16,3\mathrm{Re}_{\omega}^{0,18} - 70)K_{p\omega}^{0,02}]\}. \qquad (22)$$

Here θ is the dimensionless temperature of the gases; ψ is a temperature simplex; K_{pw} is the radiation criterion. Orig. art. has: 24 formulas, 5 figures and 2 tables.

SUB CODE: 20/ 21/ SUBM DATE: 05Apr66/ ORIG REF: 019/ OTH REF: 003

Card 2/2 nst

BELINSKAYA, A.V.; BOGUSLAVSKAYA, S.A.; DUBIN, A.S.; PRUSSAK, O.V.; STARTSEV, V.I.; DAVIDOVICH, Ya.I., doktor yurid.nauk, red.; KHRUSTALEV, B.F., red.; SHILOV, L.A., red.; VODOLAGINA, S.D., tekhn.red.

[Socialist competition in Leningrad enterprises during the years of the first five-year plan, 1928-1932] Sotsialisticheskoe sorevnovanie na predpriiatiiakh Leningrada v gody pervoi piatiletki, 1928-1932 gg.; sbornik dokumentov i materialov. Pod red. IA.I.Davidovicha. Leningrad, Izd-vo Lening.univ., 1961. 343 p. (MIRA 14:4)

1. Leningrad. Gosudarstvennyy arkhiv Oktyabr'skoy revolyutsii i sotsialisticheskogo stroitel'stva.
(Leningrad--Socialist competition)

YEGOROV, Yu.V.; LYUBIMOV, A.S.; KHRUSTALEV, B.N.

Radiocolloids in sorption systems. Part 3: Effect of hydrogen ion concentration. Radiokhimiia 7 no.4:386-394 '65. (MIRA 18:8)

PUSHKAREV, V.V.; KHRUSTALEV, B.N.; YEGOROV, Yu.V.

Possibility of estimating the size of a solvated ion radius by measuring sorption equilibrium. Radiokhimiia 7 no.4: 400-405 '65. (MIRA 18:8)

L 09067-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6023914 SOURCE CODE: UR/0363/66/002/007/1200/1205

AUTHOR: Kharakhorin, F. F.; Aksenov, V. V.; Gambarova, D. A.; Khrustalev, B. P.; Kul'bich, R. K.

ORG: none

TITLE: On the mechanism of change of the conduction sign during heat treatment of n-InSb /Paper presented at the All-Union Conference on Diffusion in Semiconductors held in Leningrad on 2 December 1964/

SOURCE: AN SSSR. Izv. Neorg materialy, v. 2, no. 7, 1966, 1200-1205

TOPIC TAGS: indium compound, antimonide, semiconductor conductivity

ABSTRACT: An attempt was made to identify the impurities in InSb on the basis of their characteristic emissions and half-lives following heat treatment of InSb in quartz ampoules activated by a flux of slow neutrons (0.9-2.4 x 10^{13} n/cm^2 sec) in an atomic pile. It was shown by the gamma-spectroscopic method that the radioactive impurities Na^{24}, Cu^{64} and Si^{31} migrated from the neutron-activated quartz into n-InSb. The experimental data indicate that the chief cause of the change of the conduction sign during heat treatment of n-InSb is the diffusion of copper. It was shown that vacuum annealing of the ampoules prior to the activation decreases the activity of the N-InSb samples by a factor of 20 to 60. Authors thank L. A. Bovina, M. F. Poluboyarinova and V. G. Vinogradova for their assistance. Orig. art. has: 6 figures and 2 tables.

SUB CODE: 20/ SUBM DATE: 27Oct65/ ORIG REF: 009/ OTH REF: 001

Card 1/1 nst UDC: 546.682'86:532.31133

ZYRIN, G., inzh.; YEFIMENKOV, R., inzh.; KHRUSTALEV, G., inzh.

"IUnost'" television receiver. Radio no.1:21-25 Ja '66. (MIRA 19:1)

SOV/105-58-7-12/32

AUTHOR: Khrustalev, I. K., Candidate of Technical Sciences

TITLE: New Wiring Diagrams for Starting- and Regulating Rheostats of Asynchronous Motors (Novyye skhemy soyedineniya pusko-regulirovochnykh soprotivleniy asinkhronnykh dvigateley)

PERIODICAL: Elektrichestvo, 1958, Nr 7, pp. 55 - 56 (USSR)

ABSTRACT: At present a method of connecting the relays of magnetic rotor stations with which a successive disconnecting and connecting of the resistance-steps in the motor-rotor-circuit takes place, is used in circuits of the relays contactor equipment of asynchronous motors. - The relatively small number of operational stages of the resistance leads to a deterioration of the starting- and retarding properties of the motor and to a decrease of uniformity when regulating their velocity, as well as to the formation of inadmissible dynamic overloads. These faults can be removed by parallel- or parallel-series connection of the contactors of the magnetic rotor stations. A 6-step rheostat of metal was calculated and completed in the Coal Field of Karaganda. A great

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SOV/105-58-7-12/32

New Wiring Diagrams for Starting- and Regulating Rheostats of Asynchronous Motors

number of mechanical rheostat-characteristics of the motor can be obtained by means of such metal rheostats which are connected according to the wiring diagram given here. The safety of motor-control can in this manner be increased. There are 3 figures and 1 table.

ASSOCIATION: Sibirskiy metallurgicheskiy institut (Siberia Institute of Metallurgy)

SUBMITTED: July 9, 1957

1. Variables resistors--Wiring diagrams 2. Induction motors --Design

Card 2/2