"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Nowacki, W.; and Olesiak, Z. The stability of a cylindrical shell with ribs. Rozprawy Inż. 4 (1956), 3-22. (Polish. Russian and English summaries) [illegible]

The [illegible] compressed [illegible] shell [illegible] Moscow [illegible] authors [illegible] transverse ribs [illegible] The [illegible] achieved by [illegible] condition of the equal [illegible] leads to the system of equations whose determinant must be equal to zero. This gives the buckling condition. The case of the four freely supported edges is easier and can be solved in a rigorous way. The case of one edge [illegible] and three edges freely supported is [illegible] The general theory is applied [illegible] (in some simple cases one or two transverse ribs only), a shell with [illegible] ribs uniformly distributed load and [illegible] acting only on the ribs. The latter case [illegible] The case of a shell with [illegible] an orthotropic [illegible]

M. Z. [illegible] (Brno) [illegible]

Phys
Mech
Math

2

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

Nowacki, W.

SOME PROBLEMS OF STRUCTURAL ANALYSIS OF PLATES WITH MIXED BOUNDARY CONDITIONS. W. Nowacki and S. Kaliski. [illegible] Acad. Polonaise Sci (Warsaw). No. 4 1956 [illegible] 235 Analysis of plates with [illegible] boundary conditions [illegible] port and the [illegible] plate [illegible] outside the plate region. The solution is reduced to a system of Fredholm integral equations of the second kind which in certain particular cases become Fredholm equations of the first kind.

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NOWACKI, W.

CIRCULAR PLATE ...

ITS PERIPHERY ...

... Warsaw ... of forward ...

obtained by using a ...

the first kind

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

1034. Nowacki, W. Thermal stresses in cylindrical shells (in Polish) [illegible]

A general [illegible] caused by a nonuniform [illegible] is obtained from [illegible] Green's function appearing [illegible] a simply supported shell from [illegible] double trigonometrical series. If all the edges of the shell are clamped, it undergoes no radial displacement due to temperature rise. On the basis of the above, author solves a series of problems concerning shells with different (also discontinuous) boundary conditions, the final states of stress and strain being obtained by superposition of two parts, the first pertaining to a clamped shell subjected to the influence of temperature and the second to a simply supported shell loaded at the edges with moments of types corresponding to the type of support.

In the case of simple support or clamping along all edges of the shell, the solution is obtained [illegible] involving, in general, simple infinite sums.

In the case of continuous boundary conditions, the problem reduces to the [illegible] integral equation of the first kind. Equations [illegible] rectangular plates subjected to the action [illegible] fields, constitute particular cases of the results obtained.

[illegible]

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

Nowacki, W.

1052. Nowacki, W., Assemblage stresses in plates (in Polish). Arch. Mech. stos. 8, 2, 215–232, 1956.

A plate deformed before placing it on supports lying in the same plane is the subject of this paper. The initial deformation, originating during the production of the plate, is free from any internal stresses. Such a plate can be put on the supports only when external force is used. This causes so-called assemblage stresses. The general method of computation of these stresses is given.

The solution of the problem is based on the integral expression obtained from the equation of virtual work. The expression having a form of a surface integral is represented by using Green's transformation [illegible] a surface integral [illegible] of a sum [illegible] sphere [illegible] with [illegible] first kind. Examples of application of the [illegible] assemblage stresses concern rectangular plates with various initial deformations.

Z. Kaczkowski, Poland

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, WITOLD

2-4E4C, 4628

Nowacki, Witold; and Oleslak, Zbigniew. The problem of a circular plate partially clamped and partially simply supported along the circumference. Arch. Mech. Stos. 8 (1956), 233–255. (Polish. Russian and English summaries)

The authors consider a general problem of forced vibrations of a circular plate subject to a periodic load normal to the plane of the plate and a steady compression load, g, in the middle plane of the plate. For mixed boundary conditions (circumference partly simply supported partly fixed) the authors assume the superposition of deflections originated from uniform boundary conditions (totally simply supported or totally fixed). The total deflection is sought in the form of an integral. This transforms the original partial differential equation for the total deflection into an integral Fredholm equation of the first kind. The kernel of this equation is found in terms of Bessel functions and the Fredholm equation is solved by representing the integral in form of a sum. This gives a finite system of linear nonhomogeneous algebraic equations. Particular cases treated are: forced vibrations 1/2

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

Nowacki, Witold; Olesiak, Zbigniew. 4 2-4E4C; 4E2

(g=0), fundamental frequency of vibrations (g=0), combined bending and compression, buckling and bending. The problem can be generalized to a plate clamped along r arc segments on the circumference and simply supported along the remaining arcs. The authors present also a rigorous solution of the Fredholm equation leading to an infinite system of algebraic equations.

M. Z. Krzywoblocki (Urbana, Ill.).

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

2482. Kaliski, S., and Nowacki, W., Some problems of structural analysis of plates with mixed boundary conditions, *Arch. Mech. stos.* 8, 4, 413–448, 1956.

Authors discuss the problem of deflection of isotropic plates with relatively general assumptions concerning the support along the periphery and inside the region of the plate. Discontinuous elastic or rigid supports or clamps, and the presence of elastic foundations in certain regions of the plate are considered, assuming linear characteristics of these supports, clamps, and foundations. The general case is reduced to a system of Fredholm integral equations of the first or second kind, depending on whether rigid or elastic clamping is considered. The equations obtained express conditions of the geometrical compatibility for segments and regions, in which the type of support differs from the basic system (usually a simply supported plate).

Representation of the sought values in the form of orthogonal series enables reducing the systems of integral equations of the first kind obtained to infinite systems of algebraic equations. These enable, in certain cases, the solution in an explicit form. Authors solve systems of equations of the second kind by using the iteration method, the error being discussed and appraised. The theory is illustrated by a series of examples concerning rectangular plates one edge of which is partially simply supported, partially clamped or free; systems of rectangular plates in contact along edges; plates with slits, linear and surface supports, etc. Finally,

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Kaliski, S., and Nowacki, W.

authors discuss the physical interpretation of the general relation between the Fredholm equations of the first and second kind, which can be reduced to the passage to a certain limit.

M. Sokolowski, Poland

2/2 B MT

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[illegible] function and the deflection surface are presented by means of a double trigonometrical series. The problem is thus reduced to the solution of an infinite system of homogeneous linear equations, which are identical to the system obtained by means of Ritz-Timoshenko energy method. The principal determinant of the system set equal to zero leads to an equation the roots of which are the critical values of the load.

The buckling condition for a cylindrical shell, clamped along all or some of the edges, and a shell reinforced with a rib is derived in the same way.

Z. Kaczkowski, Poland

Nowacki, W.

2

State of Stress in an Infinite and Semi-Infinite Elastic Space Due to an Instantaneous Source of Heat. W. Nowacki. Bul. Acad. Polonaise Sci. (Warsaw), No. 2, 1957, pp. 77-86.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, WITOLD

STAN NAPRĘŻENIA W TARCZACH WYWOŁANY DZIAŁANIEM ŹRÓDEŁ CIEPŁA. Witold Nowacki. Arch. Budowy Maszyn. No. 2, 1957, pp. 121-154. In Polish with summaries in English and Russian.

Theoretical determination of the components of the thermal stress condition in an infinitely long strip of plate with one heat [illegible], an infinitely long strip of plate with identical heat sources evenly spaced, a semi-infinite strip of plate with one heat source, and a rectangular plate with one heat source.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

NOVATS'KIY, V. (Varshava).

State of stress in infinite and semi-infinite elastic spaces due to the action of an instantaneous heat source [with summary in English]. Prykl.mekh. 3 no.2:121-130 '57. (MLRA 10:9)

1. Institut mekhaniki Pol'skoy Akademii nauk.
(Strains and stresses) (Heat--Transmission)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, WITOLD

STAN NAPREŻEŃ WYWOŁANY W PRZESTRZENI SPRĘŻYSTEJ DZIAŁANIEM CHWILOWEGO ŹRÓDŁA CIEPŁA. Witold Nowacki. Arch. Budowy Maszyn, No. 3, 1957, pp. 285-305. In Polish, with summaries in English and Russian. Analysis of the stress state in an elastic space and half-space due to the action of an instantaneous source of heat, and of the stress state in an inelastic half-space caused by a concentrated instantaneous heat source. The latter problem is solved by the method of reflections.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, WITOLD

A DYNAMICAL PROBLEM OF THERMOELAS-
TICITY. Witold Nowacki. Arch. Mech. Stoso-
nej, No. 3, 1957, pp. 325-334 Analysis of the
problem in which an instantaneous source of heat
acts in an infinite elastic space of initial tempera-
ture $T = 0$. The action of this source will result in
a temperature and stress field in the elastic space.
Assuming that the thermal and elastic properties of
the medium are constants, independent of the coor-
dinates and the temperature, the action of the in-
stantaneous source will provoke dynamic effects.
In the displacement equations of the theory of elas-
ticity the inertia terms are taken into account. The
problem is characterized by spherical symmetry,
the temperature and stress being dependent on the
distance R from the source and the time t.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

Nowacki, W.

Distr: 4F1/4E3d

A Boundary Problem of Heat Conduction. W. Nowacki. Arch. Mech. Stos. 1957 ... Consideration of an elastic body with a steady concentrated heat source. The integral equations are reduced to a system of linear algebraic equations and solved in an approximate manner.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

Nowacki, Witold

Distr: 4F1

A PLANE DISTORTION PROBLEM. Witold Nowacki. Arch. Mech. Stosowanej, No. 4, 1957, pp. 417-438. Theoretical investigation of a simply connected thin plate free from stresses at the edges, assuming a given strain state in the region Γ of the plate and zero strain components outside that region. The strain and stress components are determined for given initial deformations, using Green functions for generalized displacement equations and the generalized Airy equation. The method is illustrated by means of three examples: an infinite plate, a semi-infinite plate, and a plate strip.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, WITOLD

Nowacki, Witold. A steady-state three-dimensional thermo-elastic problem. Rozprawy Inz. 5 (1957), 489–497. (Polish. Russian and English summaries) 2

The thermal stresses within the elastic half-space subject to a given arbitrary temperature distribution over a finite region of the free surface are determined by using the Green's function for the heat-transfer problem of an infinitely small heat source within the surface, from which the temperature solution for the finite region is obtained by integration. ' ıtroducing this integral into the potential equation for th thermo-elastic displacement function and removing the resulting non-zero stress components on the surface by superimposing a second solution fulfilling the free boundary condition derived from a Galerkin function, the solution of the general problem is obtained. *A. M. Freudenthal* (New York, N.Y.).

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, WITOLD

Nowacki, Witold. A quasi-steady state three-dimensional thermo-elastic problem. Rozprawy Inż. 5 (1957), 499–509. (Polish. Russian and English summaries) 2

The thermal stresses in the elastic half-space, resulting from a heat-source within the free surface moving with constant velocity, are determined by removing the time-effect with the aid of a coordinate system moving with the source, using the well-known thermal solutions for the stationary heat source and integrating the equation of the thermo-elastic displacement potential for those solutions with the aid of Fourier integrals. The resulting non-zero stress components on the free surface are removed by super-position of a solution of the biharmonic equation with the aid of a Galerkin function. *A. M. Freudenthal.*

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

Nowacki, Witold

Distr: 4E3d

Nowacki, Witold. The state of stress in an elastic space due to a source of heat varying with time in a harmonic manner. Rozprawy Inż. 5 (1957), 511–521. (Polish. Russian and English summaries)

The thermal stresses in the infinite elastic continuum due to a heat-source of harmonically varying strength are determined by solving the equation of the thermo-elastic displacement potential for the known temperature fields of a concentrated, a linear and a plane heat-source, neglecting the effects of inertia. *A. M. Freudenthal.*

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

Nowacki, W.

798. Nowacki, W., State of stress in an infinite and semi-infinite elastic space due to an instantaneous source of heat, Bull. Acad. Polonaise Sci, Cl. IV 5, 2, 77-86, 1957.

Employing the so-called thermoelastic potential, author presents the solution of the first of the two title problems in Cartesian and spherical coordinates.

For the semi-infinite space whose surface is free of stress and is kept at zero temperature, the solution for the thermoelastic potential has to be supplemented by the appropriate Love displacement function. The latter appears in the form of a double Fourier integral.

The case of zero displacements on the surface of the half-space is treated in a similar way.

The results represent Green's function for the thermal stress distribution in the infinite and semi-infinite elastic body. In the latter case they are probably too complicated to be of practical value.

H. Parkus, Austria

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI W.

POLAND/Atomic and Molecular Physics - Heat D-4

Abs Jour : Ref Zhur - Fizika, No 5, 1958, No 10433

Author : Nowacki, W.
Inst : Institute of Basic Technical Problems, Polish Academy of Sciences, Poland

Title : A Boundary Problem of Heat Conduction

Orig Pub : Bull. Acad. polon. sci., 1957, Cl. 4, 5, No 4, 205-212, XIX

Abstract : The author determines the field of the temperature in an elastic body, inside of which is located a source of heat and on one region of the surface Γ_c there exists a temperature $T > 0$, while remaining regions Γ_a, Γ_b are such that $T = 0$. The boundary of condition for Γ_c is $\partial T/\partial n = 0$, consequently Γ_c is thermally insulated. Simple examples are given to explain the method of determination.

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NOWACKI, WITHOLD

THE STRESSES IN A THIN PLATE DUE TO A NUCLEUS OF THERMOELASTIC STRAIN. Witold Nowacki. Arch. Mech. Stosowanej (Warsaw), No. 9, 1957, pp. 89-106. Theoretical investigation to determine the stresses due to discontinuous, concentrated thermal action resulting in a thin plate (treated as a two-dimensional problem) with free edges, when the temperature in the surface element $d\Omega$ is T and that of the remaining region is zero. From the solution of this problem the stresses are obtained as functions of the considered point (x, y) and the point (ξ, η) where the nucleus of thermoelastic strain acts. In this way the influence surfaces for the stresses (i.e., the Green's functions of the problem) are found. Consideration is given to the case of an infinite strip, a semi-infinite strip, and an elastic, semi-infinite plate.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Distr: 4E1/4E2f

Nowacki, Witold; and Sokolowski, Marek. Certain stability problems of rectangular plates. Arch. Mech. Stos. 9 (1957), 109–124. (Polish and Russian summaries)

Rectangular isotropic plates simply supported on two opposite edges and having different boundary conditions along the two remaining edges are considered, the stresses being in general functions of x, y. It is simplest to explain their method by taking a particular case.

A plate simply supported at $x=0$, a, and clamped at $y=0$, b is regarded as portion of an infinite strip simply supported at $x=0$, a, subject to periodic stresses (with period b) and to additional forces $r(x)$ and $\bar{r}(x)$ perpendicular to the plate and acting along the segments $y=\pm ib/2$ ($i=0, 1, 2, \cdots$). The value of these additional forces is chosen so as to make the deflection w of the plate vanish along their line of action.

The differential equation of this problem is converted to an integro-differential equation by means of Green's function for the biharmonic equation. Substituting a double Fourier series for w yields finally an infinite system of linear equations which can be treated by the familiar method of segments.

As examples several problems already solved by other methods are treated.

The method is obviously of great generality.

R. C. T. Smith (Armidale).

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, WITOLD

1-F\W

Nowacki, Witold. A three-dimensional thermoelastic problem with discontinuous boundary conditions. Arch. Mech. Stos. 9 (1957) [illegible] summaries)

The stationary state of stress is analyzed in the elastic halfspace with prescribed constant temperature over a circle of given radius within the free boundary plane the rest of this plane being thermally insulated. The complete solution is obtained by superimposing upon a particular solution of the well-known potential equation for the thermo-elastic strain function a solution of the biharmonic equation for the isothermal stress function which ensures the stress free boundary.

A. M. Freudenthal (New York, N.Y.).

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W

Nowacki, Witold. A plane distortion problem. Arch. Mech. Stos. 9 (1957), 417–438. (Polish and Russian summaries)

This paper deals with a simply connected thin isotropic plate, free from edge stress, under a given state of initial strain over a region of the plate. The strain and stress throughout the plate are determined. The results involve the Green's functions for the plate, which have been determined in the case of (i) an infinite plate, (ii) a semi-infinite plate, and (iii) a plate strip. *R. M. Morris.*

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W

"Two steady-state thermoelastic problems."

p. 579 (Archiwum Mechaniki Stosowanej, Vol, 9, No. 5, 1957, Warsaw, Poland)

Monthly Index of East European Accessions (EEAI) LC, Vol, 8, no. 1, Jan 59

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, Witold

The long-run plan for the development of Polish science in the years 1961-75 and the Five-Year Plan for scientific research. (EEAI 9:6)
Review Pol Academy 4 no.3:1-15 '59.

1. Read at the general Assembly of the Polish Academy of Sciences on Feb. 24, 1959.
(Poland-- Science)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

S/124/62/000/001/040/046
D237/D304

24.5200

AUTHORS: Nowacki, Witold, and Sokołowski, Marek

TITLE: Propagation of thermoelastic waves in plates

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 1, 1962, 13, abstract 1V85 (Arch. mech. stosowanej, 1959, 11, no. 6, 715-727) (in English)

TEXT: The problem formulated is solved by Biot equations (M. A. Biot, J. Appl. Phys., 1956, 27, 3). The following boundary conditions are assumed on the surfaces of the plate, which are free from surface stresses: (1) constant temperature, and (2) ideal thermal isolation. Some simplifying assumptions are made, allowing numerical solution to be reached. Mode of distribution of elastic waves is investigated for two limiting cases, namely that of a very thick and very thin plate (as compared with the wavelength). Interdependence of the heat conductivity and motion equations is shown in two ways: on the one hand, phase

Card 1/2

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Propagation of... S/124/62/000/001/040/046
D237/D304

velocity of the wave motion increases; on the other hand, the solutions for displacements contain terms expressing the appearance of dispersion. /Abstracter's note: Complete translation./

Card 2/2

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOVATSKIY, Vitol'd [Nowacki, W.] (Varshava)

Certain spatial problems in thermoelasticity. Prikl. mat. i mekh. 23 no.3:456-467 My-Je '59. (MIRA 12:5)
(Elasticity)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

Nowacki, W.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

201. A. Ia. Mikhailov (Moscow): An experimental study of the load carrying capacity of thin-walled nickel tubes subjected to various combinations of tension, torsion, and internal pressure.

202. S. G. Mikhlin (Leningrad): Variational methods in the theory of elasticity.

203. A. A. Movchan (Moscow): The stability of motions of solids — Lagrange's theorem for solids and its inversion.

204. A. A. Movchan (Moscow): Axisymmetric hypersonic flutter of a circular cylindrical shell.

205. N. F. Morozov (Leningrad): On the uniqueness of the solution of the problem of large deflections of a circular plate under rotationally symmetric loading.

206. O. M. Mukhadze (Tbilisi): The determination of the deformation of trusses without diagonals.

207. Kh. M. Mushtari, I. G. Teregulov (Kazan): A theory of moderately thick plates and shells.

208. A. G. Nazarov (Erevan): Some problems in the theory of seismic stability.

209. U. K. Nigul (Tallin): Vibrations of an elastic circular cylindrical shell under concentrated impact loading.

210. U. K. Nigul (Tallin): More accurate equations of motion for circular cylindrical shells.

211. V. A. Nikishin (Leningrad): Approximate treatment of cylindrical shells under concentrated loads.

212. S. N. Nikiforov (Moscow): Redistribution of reactions at the edge of a simply supported rectangular plate under gradually increasing loading.

213. W. Nowacki (Warsaw): Some dynamical problems of thermoelasticity.

214. B. E. Pobedria (Moscow): Investigation of the viscous behavior of elastic, visco-plastic materials in vibrations.

215. Ia. L. Nudel'man, I. A. Kleiner (Odessa): Problems of the non-linear theory of elasticity.

216. I. F. Obraztsov (Moscow): An application of Vlasov's variational method to the design of [illegible] structures.

217. K. I. Ogurtsov (Leningrad): Complete computation of a wave field in homogeneous elastic media with parallel plane boundaries.

218. H. Okubo (Nagoya): The method of electroplating and its applications.

219. W. Olszak (Warsaw): Two-dimensional problems in the theory of plasticity of non-homogeneous and anisotropic media.

220. V. S. Osipov (Moscow): The state of stress in a deformed curved bar.

221. V. Ia. Pavilainen (Leningrad): A membrane theory for a toroidal shell.

222. V. P. Pavlov (Moscow): Creep, elastic properties and anisotropy of plastic lubricants.

223. O. V. Pal'chinskii (Kharkov): A practical method of designing reinforced concrete structures with reference to creep.

224. Ia. G. Panovko (Riga): The problem of structural damping.

225. P. I. Perlin (Moscow): An approximate method for solving elastic-plastic problems.

226. V. L. Perlin, L. A. Shofman (Moscow): Application of the theory of rigid, plastic solids to problems of metal forming.

227. A. S. Polenkin (Kiev): On the axisymmetric problem of the theory of elasticity.

228. D. B. Pelekhin (Moscow): A method for studying the plane field of relative volume strains in solids.

229. G. Ia. Popov (Novosibirsk): The application of some new methods of the theory of integral equations to the solution of contact problems of the theory of elasticity.

230. V. A. Postnov (Leningrad): Free and forced vibrations of frames taking into account shear deformations and energy dissipation.

231. V.N. Poturaev (Dnepropetrovsk): Investigation and calculation of internal friction in elastic members of vibrating machines.

232. W. Prager (Providence): An elementary discussion of definitions of stress rate.

233. N. I. Prigorovskii (Moscow): Photoelastic investigation of stresses in three-dimensional layered models.

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PHASE I BOOK EXPLOITATION POL/3853

Nowacki, Witold

Zagadnienia termosprężystości (Problems in Thermoelasticity) Warszawa, Państwowe wyd-wo naukowe, 1960. 394 p. (Series: Biblioteka mechaniki stosowanej) Errata slip inserted. 1,150 copies printed.

Sponsoring Agency: Polska Akademia Nauk. Instytut Podstawowych Problemów Techniki.

Editorial Board: Tadeusz Iwiński, Józef Ignaczak, Józef Janiczek.

PURPOSE: This book is intended for engineers, technicians, and students of technical schools of higher education.

COVERAGE: The book is a result of the author's scientific work in thermoelasticity. It presents a methodical account of thermal stresses in homogeneous elastic and viscous elastic bodies. The study is made under conditions of infinitely small displacements. Equations of displacement and temperature field are treated as a combined set of differential equations.

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GROSZKOWSKI, Janusz; NOWACKI, Witold

Some experiences from work on national plans of scientific research. Review Pol Academy 5 no.3/4:1-18 Jl-D '60.

(Science) (Research)

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28256
P/006/60/008/003/008/009
D265/D305

24.4200 1327 2607

AUTHOR: Nowacki, Witold

TITLE: Steady-state stresses in an orthotropic cylinder and plate

PERIODICAL: Rozprawy inżynierskie, v. 8, no. 3, 1960, 567-579

TEXT: In the first part of the paper conditions are established in which the state of stress in an orthotropic cylinder in a steady-state sourceless temperature field is confined to one component only, namely, the stress in the direction of the cylinder axis - (x_3). Quoting the known statement by N. Ya. Muskhelishvili (Ref. 1: Nekotoryye osnovnyye zadachi matematicheskoy teorii uprugosti, Moskva-Leningrad [Some Basic Problems of the Mathematical Theory of Elasticity, Moscow-Leningrad] 1949, 159), that the steady temperature field in an isotropic cylinder produces only one stress which is different from zero which acts along the axis of the cylinder, provided that the linear sources of heat, i.e. parallel to cylinder axis are absent, the author verifies this statement for an ortho-

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Steady-state stresses...

tropic cylinder and finds the conditions for which such a stress prevails. Starting from the general set of equations for elastic strains and making use of Airy's, Green's and Dirac's functions, the mathematical considerations described in this paper lead to the conclusion that such a stress does exist in an orthotropic cylinder only in the direction of X_3 axis, all other stresses being zero. This stress equals $-E_3 \alpha_3 T$ where suffix 3 refers to X_3 axis, E - Young modulus, α - coefficient of thermal conductivity, and T - temperature. When analyzing the isotropic case, the absence of the source of heat in the cylinder produces only one stress, namely, that acting along the x_3-axis and equal to $-E \alpha T$. In the second part of the paper, a thin orthotropic plate is considered under a steady-state linear temperature field (in the direction of the X_3-axis). By considering the equations for the elastic strains, the conductivity of the plate's material and the heat transfer between the plate and the surroundings (applying Newton's law), the mathematical analysis is performed making use of Airy's and Green's functions, for which particular cases are consi-

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Steady-state stresses...

dered and the conditions are established under which all the stress and strain components vanish in a sourceless temperature field. The author refers to the work of B. M. Mayzel' (Ref. 3: Temperaturnaya zadacha teorii uprugosti [Temperature Problems of the Theory of Elasticity], Kiyev, 1951) for proof of the theory of isotropic plates. There are 3 Soviet-bloc references.

ASSOCIATION: Zakład mechaniki ośrodków ciągłych IPPT, PAN (Institute of Continuous Mechanical Media, IPPT, PAS)

SUBMITTED: April 8, 1960

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, Witold, prof.dr.inz.

To celebrate professor Witold Wierzbicki's 70th birthday. Przegl techn 81 no.6:21-22 F '60.

1. Zastepca Sekretarza Naukowego Polskiej Akademii Nauk, Warszawa

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

P/002/61/000/001/001/007
D001/D101

AUTHOR: Nowacki, Witold, Full member of the Polish Academy of Sciences

TITLE: Research program of Polish Academy of Sciences branches for 1961 and 1961-1965

PERIODICAL: Nauka Polska, no. 1, 1961, 8-12

TEXT: The report is extracted from an outline of the research program for all branches of the Academy for 1961 and 1961-1965, and describes the activity program of the Wydział III (Department III) which deals with mathematics, physics, chemistry, geology and geography and the Wydział IV (Department IV) which deals with various branches of engineering. The article, as a whole, is the reprint of a paper read by the author at the General Meeting of Academy Members on December 10, 1960. Sciences represented in Department III of PAS form the theoretical basis of development in engineering and economy. In order to cope with current problems, Department III of PAS established separate institutes or sections for all pertinent fields of

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D001/D101

Research program...

science except geodesy which has not yet been grouped into a section of its own. Most of these subordinate institutions except Zakład Astronomii (Section of Astronomy) and Zakład Nauk Geologicznych (Section of Geological Sciences) are central posts comprising the full scope of problems in the particular branch of science. However, they are not capable of tackling all forthcoming problems by themselves and, because of the shortage of scientifically trained personnel, equipment and facilities, must closely cooperate with respective university chairs and industrial institutes. The shortage of scientists is particularly noticeable in physics, geophysics and in certain branches of chemistry. In general, all scientific branches of the III-rd Department are satisfactorily equipped with basic instruments, but some special apparatuses are still in short supply. Lack of proper housing is also acute in some instances. In the next five years, the Instytut Chemii Fizycznej (Institute of Physical Chemistry) will be accommodated in a new building and the first pavilions will be built for the Instytut Fizyki (Institute of Physics). The transfer of Zakład Syntezy Organicznej (Organic Synthesis Section) into

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a new building is under consideration; construction of the geophysical center in Belsk is nearing completion. The Section of Astronomy will receive in 1961 a Schmidt camera 60 cm in diameter. The research program of Department IV, Technical Sciences, can be divided into two groups. The first one includes electronics, metallurgy and metal science, acoustics, nondestructive material testing, rock formation mechanics, automation, flow machines, chemical engineering, hydraulic engineering, electrical engineering and application of isotopes in technology. The second group includes fundamental research in the field of theoretical mechanics of deformable bodies, which includes the theories of elasticity and plasticity, rheology, strength of materials; further, hydraulics, pneumatics, acoustics and the theory of magnetic field, including its application in radio, electronics and electro-acoustics. Contrary to other departments of PAS, this one does not yet have a full-fledged system of posts for tackling all research that is of fundamental importance in engineering, and the development of such a system to concentrate among others on automation, chemical engineering, mining, metallurgy, machine

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D001/D101

Research program...

construction and civil engineering will be the principal task of Department IV for the next few years. As a top priority scheme, Instytut Automatyki (Institute of Automation) will be established in 1961 by expanding the present Zakład Automatyki (Automation Section). Extension of the Zakład Mechaniki Górotworu (Section of Rock Formation Mechanics) and Zakład Metali (Section of Metals) into the Instytut Podstaw Górnictwa i Hutnictwa (Institute of Mining and Metallurgy) will follow at a later date. A highly important task will be the extension of Zakład Inżynierii i Aparatury Chemicznej (Section of Chemical Engineering and Chemical Aparatuses) which is difficult to accomplish because of an acute shortage of properly trained scientists. The needs of the national economy call for two more institutes: Instytut Podstaw Budowy Maszyn (Institute of Machine Construction Principles) and the Instytut Podstaw Inżynierii Budowlanej (Institute of Civil Engineering Principles). The new organizational system is now under discussion. It seems that the largest of all institutes of the IVth Department, the Instytut Podstawowych Problemów Techniki (Institute of Fundamental Problems of Engineering) will

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be the backbone of the future organization, linking a group of present and future instituteslike Instytut Fizyki Technicznej (Institute of Technical Physics), Instytut Mechaniki Stosowanej (Institute of Applied Mechanics), Institute of Automation and several other already mentioned sections. The principal task of all institutes and sections will be the training of young scientists. During the past eight years, sections and branches of Departments III and IV of the PAS greatly contributed to the development of several disciplines of science like mathematics, theoretical and experimental physics, electronics, physical chemistry and electrical engineering.

ASSOCIATION: Polska Akademia Nauk (Polish Academy of Sciences).

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NOWACKI, Witold

Research plans, Polish Academy of Sciences agencies 1961 and 1961-1965. Review Pol Academy 6 no.1:1-16 Ja-Mr '61.

(Polish Academy of Sciences) (Poland—Research)

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

On the treatment of the two-dimensional coupled thermoelastic problems in terms of stresses. Bul Ac Pol tech 9 no.3:155-161 '61.

1. Department of Mechanics of Continuous Media, Institute of Fundamental Technical Problems, Polish Academy of Sciences.

(Elasticity) (Strains and stresses)

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

S/124/63/000/001/051/080
D234/D308

AUTHOR: Nowacki, W.

TITLE: Some problems with rectangular plates

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 1, 1963, 24, abstract 1V163 (Bull. Acad. polon. sci. Sér. sci. techn., 1961, v. 9, no. 4, 247-256 (Eng.: summary in Rus.))

TEXT: The author considers the problems of free and forced vibrations and stability of rectangular plates. He begins by constructing two systems of orthogonal functions satisfying the equation

$$(\nabla^4 - \lambda^4)\, f\,(x,y) = 0 \qquad (1)$$

given in a rectangular domain with sides a and b. The first system of functions satisfies the boundary conditions

$$f(x,0) = f(x,b) = \nabla^2(x,0) = \nabla^2 f(x,b) = 0 \qquad (2)$$

$$f(0,y) = f(a,y) = \frac{\partial f(a,y)}{\partial x} = \nabla^2 f(0,y) = 0 \qquad (3)$$

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Some problems with rectangular plates S/124/63/000/001/051/080 D234/D308

In constructing the second system the origin of coordinates is transferred to the point (a/2, 0) and the boundary conditions

$$f(a/2,y) = f(-a/2,y) = \frac{\partial f(a/2,y)}{\partial x} = \frac{\partial f(-a/2,y)}{\partial x} = 0 \quad (4)$$

are satisfied. With the aid of these two systems the author solves the problems of forced vibrations of a plate freely supported along the edges x = 0, y = 0, and y = b, and clamped along the edge x = a, as well as that of a plate clamped along the edges x = ± a/2 and freely supported along the edges y = 0, y = b. He also constructs a solution for the case when the plate is additionally supported along the line x = . He considers an infinite strip loaded along the lines y = ± 2bk, k = 1,2,3, which made it possible to construct a solution for an infinite strip reinforced by rigid ribs along these lines. The solution of the problem of natural vibrations is obtained if one puts q = 0 for the disturbing force. If the frequency of the disturbing force ω = 0 one obtains the solution of the problem of stability.

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Application of difference equations in structural mechanics. Bul Ac Pol tech 9 no.4:257-262 '61. (EEAI 10:9/10)

1. Department of Mechanics of Continuous Media, Institute of Fundamental Technical Problems, Polish Academy of Sciences.

(Mechanics, Applied) (Difference equations)

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

43153
S/124/62/000/008/020/030
I054/I254

AUTHOR: Nowacki, W.

TITLE: The three-dimensional dynamic problem of thermoelasticity

PERIODICAL: Referativnyy zhurnal, Mekhanika, Svodnyy tom. no. 8V, 1962, 18, abstract 8V 125 (Bull. Acad. polon. sci. Ser. sci. techn. 9, 1961, 419-426, [English])

TEXT: Dynamic equations are studied for an elastic body, including the temperature induced stresses. The considered system of equations is of the form: $(\lambda + \mu)$ grad div $\vec{u} + \mu\Delta\vec{u} - \gamma$ grad T $= \rho \frac{\partial^2 \vec{u}}{\partial t^2}$ (*) T = T (x,y,z,t) is the temperature; γ is constant. The position $\vec{u}$ is split into two components $\vec{u} = \vec{u}_0 + \vec{u}'$, where $\vec{u}^\circ$ = grad Φ and appears as a partial solution of the equation (*) at T = 0. Since the values of T satisfy the heat transfer equation, the author derives the following equation for Φ:

$$\left(\Delta - \frac{1}{a^2}\frac{\partial^2}{\partial t^2}\right)\left(\Delta - \frac{1}{\kappa}\frac{\partial}{\partial t}\right)\Phi = R, \quad a = \sqrt{\frac{\lambda + 2\mu}{\rho}},$$

where R is a certain function, proportional to the density of the heat source,

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I054/I254

The three-dimensional...

distributed inside the elastic body and λ is proportional to the thermal conductivity. Formulae are derived for $\vec{u}'$, representing a "dynamic" analogue of the known formulae derived by B.G. Galerkin for a radius vector in a static case. A planar problem is also considered. At the end of the paper some examples are given.

[Abstracter's note: Complete translation.]

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29461
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D248/D302

24.4200 1191, 1327, 2607

AUTHOR: Nowacki, Witold (Warsaw)

TITLE: Applying difference equations in the theory of plates (I)

PERIODICAL: Archiwum mechaniki stosowanej, v. 13, no. 4, 1961, 479-509

TEXT: The paper presents a departure from the work of N. J. Nielsen, H. Marcus and P. M. Varvak (Ref. 3: Razvitiye i pritozheniye metoda setok k raschetu plastinok, 1, 2, Izd. AN UkrSSR, Kiyyev, 1949, 1952) who replaced the derivatives in the differential equation of the theory of plates by difference quotients and solved the resulting partial difference equation by Gaussian or iteration methods. The solution of E. Egervary (Ref. 6: On Hypermatrices whose Blocks are Commutable in Pairs and their Application in Lattice Dynamics, Hung. Acta Sci. Math., Vol. XV, 3-4 15 (1954), Inst. Bolyaian, Univ. Szeged) by matrix methods is referred to. The present paper solves the partial difference equation by the X

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D248/D302

Applying difference equations ...

method of finite differences, and presents a solution of the differential equation of plate deflection by means of a double finite series for both forced and free vibration, simultaneous bending and compression, and buckling. The author states that his solution methods may be applied to problems of plates loaded in their planes and a number of static and quasi-static space problems. He indicates that Part II of his paper will be devoted to plate problems with mixed boundary conditions, and the application of double Fourier transformation to the difference equation. In particular, solutions are found for free and forced vibration of a rectangular plate under various loadings. The general amplitude equation for a plate is rewritten with difference quotients and a solution is sought in the form of a double finite series containing known eigen functions. The following examples of application of the double series method are given: (1) A load q_{xy} and an immovable support at a point, (2) a load q_{xy} and a load $Ry\delta_{x\xi}$ acting along the line $x = \xi$, (3) a load q_{xy}, a load $Ry\delta_{x\xi}$ along

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Applying difference equations ...

$x = \xi$ and a load $Qx\delta$ $y\eta$ along $y = \eta$, (4) a plate simply supported on the contour stiffened by means of a rib along $x = \xi$, (5) a plate simply supported on the entire contour and having a support along a segment of the line $x = \xi$, (6) a plate clamped along x = 0 and simply supported at the remaining edges, and (7) a plate clamped at various points of the edge x = 0 and simply supported elsewhere. In the case of combined bending and compression, a difference equation is obtained from the general differential equation in ∇^4. Solutions are found by (a) a double finite sum method with eigen functions, (b) a double series method which assumes a complete set or orthonormal functions and (c) by a Green function. In the case of buckling similar solutions are proposed. Consideration is given to applying simple finite series to the deflection of a plate strip, making use of a Fourier integral transformation devised by I. Babuska (Ref. 9: The Fourier Transform in the Theory of Difference Equations and its Applications, Arch. Mech. Stos., 4, 11 (1959)), for difference equations. In particular, a rectangular plate supported on two opposite edges is studied for the

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D248/D302

Applying difference equations ...

static case. The author states that there is no obstacle to generalization to forced vibration and simultaneous bending and compression. Finally, difference-differential equations are used with mixed boundary conditions to describe the deflection of a plate. There are 5 figures and 11 references: 7 Soviet-bloc and 4 non-Soviet-bloc.

ASSOCIATION: Department of Mechanics of Continuous Media, IBTP Polish Academy of Sciences, Warsaw

SUBMITTED: March 6, 1961

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31129
P/033/61/013/005/006/006
D265/D302

10 3000 1327 2607 2301

AUTHOR: Ignaczak, Józef, and Nowacki, Witold (Warsaw)

TITLE: Transversal vibrations of a plate, produced by heating

PERIODICAL: Archiwum mechaniki stosowanej, v. 13, no. 5, 1961, 651-667

TEXT: In this paper equations are derived for the harmonic forced vibrations of a plate thermally excited by the density of the three-dimensional temperature field moment acting along the plate thickness. The longitudinal vibrations are assumed to be independent of the flexural vibrations. Starting from the heat equation

$$\nabla^2 T - \frac{1}{\varkappa}\dot{T} = 0, \quad \nabla^2 = \partial_1^2 + \partial_2^2 + \partial_3^2 \qquad (1.11)$$

in 3 dimensions coupled and not coupled with the deformation field, the basic equation is given for an infinite plate on elastic forma-

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Transversal vibrations of ...

mations with a prescribed heat flow across the bounding surfaces harmonically varying in time

$$\left[(\partial_1^2 + \partial_2^2)^2 - \beta^2 + k\right]W + (1+v)\alpha_t(\partial_1^2 + \partial_2^2)\theta = 0 \quad (1.22)$$

and

$$(\partial_1^2 + \partial_2^2 + \partial_3^2)U - i\eta U = 0, \quad \beta^2 = \frac{\omega^2 \rho h}{N}, \quad \eta = \frac{\omega}{\varkappa} \quad (1.23)$$

The problem is also considered for the vibration of a rectangular plate simply supported, or simply supported on the contour and having an additional support inside the plate region along the line parallel to the edge and for the plate of which one end is clamped and the other is simply supported. The thermal vibrations are also considered for a circular plate. An approximate solution is provided for the above problems, consisting in the assumption that

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Transversal vibrations of ...

the moment density of a three-dimensional temperature field may be replaced by the temperature difference between the upper and the lower surface of the plate per unit thickness. The coupled thermoelastic problem is solved making use of this assumption. There are 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: B.A. Boley, A. D. Barber, Dynamic response of Beams and Plates to Rapid Heating, J. Appl. Mech. 3, 24)1957); M. A. Biot, Thermoelasticity and Irreversible Thermodynamics, J. Appl. Phys. 3, 27 (1956), 240-253; I. N. Sneddon, S. D. Berry, The Classical Theory of Elasticity in Encyclopedia of Physics, vol. 6, Springer, Berlin, 1958.

ASSOCIATION: Department of Mechanics of Continual Media IBTP, Polish Academy of Sciences

SUBMITTED: May 3, 1961

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APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

PHASE I BOOK EXPLOITATION SOV/6096

Novatskiy, Vitol'd

Voprosy termouprugosti (Problems in Thermoelasticity). Moscow, Izd-vo AN SSSR, 1962. 363 p. Errata slip inserted. 3,500 copies printed.

Translated from the Polish.

Sponsoring Agency: Akademiya nauk SSSR.

Resp. Ed.: V. I. Danilovskaya; Ed. of Publishing House: G. B. Gorshkov; Tech. Ed.: G. S. Simkina.

PURPOSE: This book is intended for scientific personnel, engineers, aspirants, and senior students.

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APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

Problems in Thermoelasticity SOV/6096

COVERAGE: This monograph contains scientific results obtained by the author in the course of several recent years. Considered are temperature stresses generated in homogeneous perfectly elastic and visco-elastic solids, with the displacements assumed to be infinitely small and the constants of the material to be independent of the temperature. The solution of most problems of thermoelasticity is presented as the superposition of two solutions, one of which has the character of a thermoelastic potential and the other contains components of Galerkin's vector of displacements. In some cases other methods, e.g. Maysel's method, have also been used. Green's functions have been applied in the analysis of thermal stresses caused by internal heat sources. Three-dimensional and two-dimensional problems, both stationary and nonstationary, are examined. The dynamic problems of thermoelasticity, concerning states of stress caused by nonuniform temperature fields produced in solids by rapid heating and cooling processes are also investigated. For this Russian translation the author substantially revised the first chapter and made considerable changes in the fifth chapter (in the section concerning shells) and in the seventh (in the section on the propagation of visco-elastic waves). The author thanks V. I. Danilovskaya,

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Doctor of Physical and Mathematical Sciences. There are 147 references: 44 Soviet, 75 English, 23 German, 3 French, 1 Czech, and 1 Spanish.

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NOWACKI, Witold

Links between science and life. Review Pol Academy 7 no.2: 15-20 Ap/Jl '62.

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44363
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A060/A000

AUTHOR: Kaliski, S., Nowacki, W.

TITLE: Excitation of mechanical-electromagnetic waves induced by thermal shock

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1962, 68, abstract 12B306 (Bull. Acad. polon. sci. Sér. sci. techn., 1962, v. 10, no. 1, 25 - 33, English; summary in Russian)

TEXT: An elastic half-space is located in an initially homogeneous magnetic field, parallel to the boundary of the half-space with vacuum. At the instant t = 0 the boundary face is abruptly heated to the temperature T_0 which is then held constant. As a result there arise temperature, mechanical and electromagnetic oscillations. The mathematical problem reduces to the simultaneous integration of the equation of electrodynamics of a slowly moving medium, of the theory of elasticity, and of heat conduction. A number of simplifying assumptions is made, and it is the homogeneous linearized problem which is considered. The solution is obtained in explicit form with the aid of the Laplace transform.

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APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

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Excitation of mechanical-electromagnetic waves... S/044/62/000/012/024/049
A060/A000

In the elastic medium there arise a mechanical and an electromagnetic wave, in the vacuum an electromagnetic shock wave is radiated.

O. I. Panich

[Abstracter's note: Complete translation]

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, Witold

Connections between science and life. Nauka polska 10 no.2:19-30 '62.

1. Czlonek rzeczywisty Polskiej Akademii Nauk, Warszawa

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

16 4500

S/044/63/000/001/020/053
A060/A000

AUTHOR: Nowacki, W.

TITLE: Formulation of a boundary problem of the theory of elasticity with mixed boundary conditions

PERIODICAL: Referativnyy zhurnal, Matematika, no. 1, 1963, 60, abstract 1B281 (Bull. Acad. polon. sci. Sér. sci. techn., 1962, v. 10, no. 2, 71 - 78, English; summary in Russian)

TEXT: On the basis of the mutuality theorem for displacements, a method is proposed for reducing boundary problems of the theory of elasticity with mixed boundary conditions to a system of Fredholm integral equations of the first order.

O. I. Panich

[Abstracter's note: Complete translation]

Card 1/1

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Formulation of a boundary problem of the theory of elasticity with mixed boundary conditions. Bul Ac Pol tech 10 no.2:[91]-[98] '62.

1. Department of Mechanics of Contimuous Media, Institute of Fundamental Technical Problems, Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, Witold

Development trends in thermoelasticity. Rozpr ins PAN 10 no.3:411-430 '62.

1. Zaklad Mechaniki Osrodkow Ciaglych, Instytut Podstawowych Problemow Techniki, Polska Akademia Nauk, Warszawa.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

KALISKI, S.; NOWACKI, W.

Combined elastic and electromagnetic waves produced by thermal shock in the case of a medium of finite electric conductivity. Bul Ac Pol tech 10 no.4:[213]-[233] '62.

1. Department of Mechanics of Continuous Media, Institute of Fundamental Technical Problems, Polish Academy of Sciences, Warsaw. Presented by W.Nowacki.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Two-dimensional problem of magnetothermoelasticity. Pt.1.
Bul Ac Pol tech 10 no.12:689-697 '62

1. Department of Mechanics of Continuous Media, Institute of Fundamental Technical Problems, Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.K.

Propagation and reflection of a plane stress wave from a deformable support in an elastic-visco-plastic strain-hardening body. Proceed vibr 5 no.4:297-318 '64.

1. Department of Vibrations of the Institute of Basic Technical Problems of the Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Some dynamic problems of thermoe asticity. Pt. 2. Proceed vibr probl 5 no.4:249-262 '64.

1. Department of Mechanics of Continuous Media of the Institute of Basic Technical Problems of the Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Mixed boundary-value problems of elastodynamics. Proceed vibr probl 5 no.3:161-177 '64.

1. Department of Mechanics of Continuous Media of the Institute of Basic Technical Problems of the Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

The plane problem of magnetothermoelasticity. Pt.2. Bul Ac Pol tech 11 no.1:1-8 '63.

1. Department of Mechanics of Continuous Media, Institute of Fundamental Technical Problems, Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI W.

Mixed boundary problems in heat conduction. Bul Ac Pol tech 12 no. 2:125-132 '64

1. Department of Mechanics of Continuous Media, Institute of Fundamental Technical Problems, Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Mixed boundary problems of elastodynamics. Bul Ac Pol tech 12 no. 3:195-201 '64.

1. Department of Mechanics of Continuous Media. Institute of Basic Technical Problems, Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Green functions for the thermoelastic medium. Pt.2. Bul Ac Pol Techn 12 no.9:651-658 '64.

1. Department of Mechanics of Continuous Media of the Institute of Basic Technical Problems of the Polish Academy of Sciences, Warsaw. Submitted June 17, 1964.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W.

Mixed boundary value problems of thermoelasticity. Bul Ac Pol tech 12 no.11:799-805 '64.

1. Department of Mechanics of Continuous Media of the Institute of Basic Technical Problems of the Polish Academy of Sciences, Warsaw. Submitted July 28, 1964.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOVATSKIY, V. [Nowacki, W.] (Varshava)

Two-dimensional problem of magnetothermoelasticity. Prikl. mekh. 1 no.6:1-7 '65. (MIRA 18:7)

1. Institut osnovnykh problem tekhniki Pol'skoy Akademii nauk.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

L 63846-65 EWT(1)/EPA(s)-2/EEC(k)-2/T/EEC(b)-2 IJP(c) GG

ACCESSION NR: AP5016898 PO/0097/65/006/001/0003/0012

AUTHOR: Nowacki, W. (Warsaw)

TITLE: A reciprocity theorem for coupled mechanical and thermoelectric fields in piezoelectric crystals

SOURCE: Proceedings of vibration problems, v. 6, no. 1, 1965, 3-12

TOPIC TAGS: piezoelectric theory, reciprocity theorem, thermoelectric field, piezoelectric crystal

ABSTRACT: The equations governing small vibrations of piezoelectric crystals derived by R. D. Mindlin (On the equations of motion of piezoelectric crystals, Problems of Continuum Mechanics, Philadelphia 1961) are used to derive a reciprocity theorem, and several conclusions derived from this theorem are discussed. The coupled problem consists of determining the stresses $\sigma_{ij}(x,t)$ and strains $\varepsilon_{ij}(x,t)$ of the $C^{(1)}$ class, the displacements $u_i(x,t)$, the temperature $\theta(x,t)$, and the electric potential $\phi(x,t)$ of the $C^{(2)}$ class (where $x = (x_1, x_2, x_3)$ = geometric coordinate, t = time). The derivation is based on the equation of motion, the generalized heat equation, and the equation of a quasistationary

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ACCESSION NR: AP5016898

electric field, supplemented by 6 boundary conditions, 4 initial conditions (homogeneous), 5 constitutive equations, and the stress-strain relations. The motion is assumed to be produced by mass forces X_i, a heat source Q, electric charges χ, and the quantities appearing in the boundary conditions (surface load R_i, temperature ϑ, potential ϕ). To obtain the reciprocity theorem, two sets of causes and effects are considered after the above equations are transformed by the one-sided Laplace transformation. After inverse Laplace transformation the reciprocity theorem is presented in the form of the sum of a double integrals (over time and space or surface) equal to zero. For an infinite body, equations are derived for determining the displacements, temperatures (inside the body), and electric potential for a known distribution of mass forces, heat sources, and electric charges and for prescribed surface conditions. Equations are also derived for finding u_j, θ, Φ, for given values U_i, ϑ, and ϕ on the boundary. These represent a generalization of the known Green's theorem of electrostatics. An alternate set of equations gives u_i, θ, Φ for prescribed load R_i, heat flow k, and electric surface load d. Orig. art. has: 38 formulas.

ASSOCIATION: Department of Mechanics of Continuous Media, IBTP, Polish Academy of Sciences

Card 2/3

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

L 63846-65

ACCESSION NR: AP5016898

SUBMITTED: 06Aug64 ENCL: 00 SUB CODE: EM

NO REF SOV: 000 OTHER: 003

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

L 3688-66 EWT(d)/EWP(w) EM

ACCESSION NR: AP5025666 PO/0095/65/013/005/0305/0312

AUTHOR: Nowacki, W.

26
25
B

TITLE: Two-dimensional problem of magnetothermoelasticity. III

SOURCE: Polska akademia nauk. Bulletin. Serie des sciences techniques, v. 13, no. 5, 1965, 305-312

26

TOPIC TAGS: elasticity, thermoelasticity, magnetothermoelasticity, elastic wave, thermoelastic wave, magnetothermoelastic wave, magnetocaloric effect

ABSTRACT: In this installment, the author analyzes the dynamic problem of the propagation of plane magnetothermoelastic waves in a medium with finite conductivity. The wave motion generated by body forces and heat sources which are assumed to be uniform in the direction of a constant magnetic field within the medium, are treated as composed of thermal and electromagnetic fields conjugated with longitudinal and transverse components, respectively, of the strain wave. The analysis, under certain simplifying assumptions, leads to the conclusion that the transverse wave suffers no attenuation and no disperison, while the longitudinal part is subject to both. An approximate equation for the longitudinal wave, deduced under certain simplifying assumptions and applying the perturbation method, was obtained. Orig. art. has: 39 formulas. [FP]

Card 1/2

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

L 3688-66

ACCESSION NR: AP5025666

ASSOCIATION: Zaklad mechaniki osrodkow ciaglych, Instytut podstawowych problemow techniki, PAN (Department of Mechanics of Continuous Media, Institute of Fundamental Technical Problems, PAN)

SUBMITTED: 00 ENCL: 00 SUB CODE: AS, ME

NO REF SOV: 000 OTHER: 005 ATD PRESS: 4118

Card 2/2

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

L 38748-66 EWP(m) RM/WW

ACC NR: AP6017946 SOURCE CODE: PO/0097/65/006/003/0279/0293

AUTHOR: Nowacki, W. K. (Warsaw)

ORG: Department of Vibrations, IBTP, Polish Academy of Sciences

TITLE: Thermal shock on the boundary of a spherical cavity in an elastic, viscous, plastic space

SOURCE: Proceedings of vibration problems, v. 6, no. 3, 1965, 279-293

TOPIC TAGS: thermal shock, wave propagation, motion equation, linear equation, plastic deformation, SHOCK WAVE MOTION, ELASTIC DEFORMATION, SPHERIC SHELL STRUCTURE

ABSTRACT: A solution is presented for the problem of the propagation of spherical waves produced by a thermal shock on the boundary of a spherical cavity in infinite, elastic, viscous, plastic bodies, taking the strain rate and strain hardening into consideration. The solution is carried out in a phase plane, and is based on the method of propagation of plastic waves produced by mechanical loads. A linear equation of heat conductivity is assumed which can be solved independently of other equations. The physical constants are assumed to be independent of temperatures $T \ll 300C$. The existence of a strong discontinuity wave in the two regions of plastic deformation compression and expansions has been proven. Due to very simple combinations of the equation of thermal conductivity with that of motion, the solution

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ACC NR: AP6017946

in the Cauchy region is reduced to a computation of the integral of the temperature derivative in this region. A very simple solution has also been obtained in the Darboux region. It has been proven that the dynamic effects of a thermal shock die out after a considerable lapse of time. Orig. art. has: 62 formulas and 4 figures. [Based on author's abstract] [AM]

SUB CODE: 20/ SUBM DATE: 10Mar65/ ORIG REF: 007/ OTH REF: 004

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

L 45193-66 EWP(w) IJP(c) EM

ACC NR: AP6027424 SOURCE CODE: PO/0095/66/014/006/0513/0516

50
B

AUTHOR: Zorski, H.; Nowacki, W.

ORG: Department of Mechanics of Continuous Media, Institute of Fundamental Technical Problems, Polish Academy of Sciences (Zaklad mechaniki osrodkov cialych, institut podstawowych problemow techniki, PAN)

TITLE: Conservation principles for defects in an elastic continuum

SOURCE: Polska akademia nauk. Bulletin. Serie des sciences techniques, v. 14, no. 6, 1966, 513-516

TOPIC TAGS: elasticity, aerodynamic moment, crystal effect, elastic stress, material deformation, integral equation

ABSTRACT: Equations have been derived for the conservation of momentum and angular momentum for a system of defects (dislocation and crack) in an elastic field based on the integral identity of the linear theory of elasticity. The conservation equations obtained are linear with respect to displacement, deformation, and

Card 1/2

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

L 45193-66

ACC NR: AP6027424

stress. The paper was presented by W. Nowacki. Orig. art. has: 1 figure and 13 formulas. [Based on authors' abstract] [NT]

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001/

Card 2/2

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, Wojciech Krzysztof; WOROSZYL, Stanislaw

Vibrations of compound beams with nonlinear effects in the joints. Rozpr inz PAN 11 no.2:361-375 '63.

1. Zaklad Mechaniki Osrodkow Ciaglych, Instytut Podstawowych Problemow Techniki, Polska Akademia Nauk, Warszawa.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

KALISKI, S.; NOWACKI, W. K.; WLODARCZYK, E.

Propagation and reflection of a spherical wave in an elastic-viscoplastic strain hardening body. Prcceed vibr probl 5 no. 1: 31-56 '64.

1. Department of Vibrations, Institute of Basic Technical Problems, Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACKI, W. (Warsaw)

"Mixed boundary conditions in the theory of elasticity".

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

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACZEK, W.

A contribution on the planning of constructions on elastic semi-space; an extension of Zhemotchkin's method. Tr. from the Czech. p. 57.

INZYNIERIA I BUDOWNICTWO. (Naczelna Organizacja Techniczna i Polski Zwiazek Inzynierow i Technikow Budowlanych) Warszawa, Poland. Vol. 16, no. 2, Feb. 1959.

Monthly list of East European Accessions Index, (EEAI), LC, Vol. 8, no. 6, June 1959
uncla.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACZEK, Wladyslaw

Problems of fixed and variable costs in sea navigation. Gosp morska no.4:47-80 '60.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACZEK, Wladyslaw, doc. hab.

Principles of dividing costs into fixed and variable costs in the field of maritime shipping. Tech gosp morska 12 no.10:292-293 O '62.

1. Wyzsza Szkola Ekonomiczna, Sopot.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACZKIEWICZ, L.

NOWACZKIEWICZ, L. Breeding the oxygenless bacteria of pectin fermentation. Biuletyn Wlok. Lyk. p. 4.

Vol. 10, no. 6, June, 1956
PRZEMYSL SPOZYWCZY
TECHNOLOGY
Warsaw, Poland

So. East Accession Vol. 6, no. 2, Feb. 1957

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NOWACZKIEWICZ, L.; GONCZARYK-MOZOLEWSKA, H.; LUBIENSKA, B.

Methodological researches on the quantitative determination of microorganisms in the retting liquid. Biuletyn Wlok, Lyk. p. 3.

PRZEGLAD WLOKIENNICZY. (Stowarzyszenie Inzynierow i Technikow Przemyslu Slokienniczego) Lodz, Poland. Vol. 12, no. 1, Jan. 1958.

Monthly List of East European Accessions (EEAI) LC. Vol. 8, no. 7, July 1959.

Uncl.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

MIETKIEWSKI, Eugeniusz; NOWACZKIEWICZ, Urszula

On the effect of hypothermia on the level of blood sugar during histamine and anaphylactic shocks in cats. Acta physiol.polon. 11 no.3:385-394 My-Je '60.

1. Z Zakladu Fizjologii Pomorskiej A.M. w Szczecinie Kierownik: prof. dr E.Mietkiewski.

(ALLERGY exper)
(BLOOD SUGAR)
(HISTAMINE pharmacol)
(HYPOTHERMIA INDUCED exper)
(SHOCK exper)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACZYK, Czeslaw

Forest communities of the Zielonka near Poznan. Experiment Forest District. Prace nauk roln i lesn 17 no.2:213-271 '64.

1. Department of Forest Botany, Higher School of Agriculture, Poznan.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACZYK, H.

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Lechowski S., Nowaczyk H. Routine Testing of Value Arresters. Eksploatacyjne badanie odgromnikow zaworowych. Energetyka. No. 6, 1952, pp. 285-290, 4 tabs.

Tests were carried out at the Electrical Laboratory of the ZEOZ (Western District Power Administration) Overcurrent Insulation Service to determine, for Siemens, AEG, Szpotanski and ASEA type arresters in use, the static and surge voltage, together with leakage current at a constant voltage. Ten per cent of the arresters examined revealed that values ascertained by measuring deviated from rated value and had to be disqualified. The article contains a report on the test results and on the nature of the damage discovered in the arrester. The authors deal with the repairs affected, resulting in 70 per cent of the defective arresters being restored to full service capacity. Attention is drawn to the necessity for periodical examination of arresters, as a means towards ensuring the safety of the appropriate equipment. In spite of the view expressed by certain firms of arrester manufacturers to the effect that there is not need for the arresters to be examined or even dismantled while they are in

(over)

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service, examination of such arresters is undoubtedly imperative.

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"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACZYK, Henryk, inz.; GRZYBOWSKI, Stanislaw, mgr., inz.

Preparation of a cable line for a breakdown location; Ist article of the series: location of breakdowns in electric power cable lines. Energetyka przem 10 no.4:139-142 Ap '62.

1. Zaklady Energetyczne Okregu Zachodniego (for Nowaczyk).
2. Politechnika Poznanska (for Grzybowski).

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"

"APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8

NOWACZYK, Henryk, inz.; GRZYBOWSKI, Stanislaw, mgr.inz.

Burning out weakened cable insulation. Pt. 2. Energetyka przem 10 no.6:204-207 Je '62.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001237610012-8"