KASHKAROV, R.B.; KARANDIKA, L.S.

Experience in the study of the autumn and winter activities of gerbils Meriones erythourus Gray and their fleas in the region of the Bozdag mountain ridge (Azerbaijan A.S.S.R.). Med. parazit. i parazit. bol. 33 no.2:233-234 Mr-Ap '64. (MIRA 18:1)

1. Nauchno-issledovatel'skiy protivochumnyy institut Kavkaza i Zakavkaz'ya Ministerstva zdravookhraneniya SSSR (direktor V.I.Ter-Vartanov), Stavropol'.

KOSMINSKIY, R.B.

Feeding habits and reproduction of the fleas of house mice under natural and experimental conditions. Zool. zhur. 44 no.9: 1372-1375 '65. (MIRA 18:10)

1. Protivochumnyy institut Kavkaza i Zakavkaz'ya, Stavropol'.

ZUH-50

ACC NR: AP7000990 (AN) SOURCE CODE: UR/0439/65/044/009/1372/1375

AUTHOR: Kosminskiy, R. B.

ORG: Antiplague Institute of the Caucasus and Transcaucasia, Stavropol' (Protivochumnyy institut Kavkaza i Zakavkaz'ya)

TITLE: Feeding and reproduction of house-mouse fleas in natural and experimental conditions

SOURCE: Zoologicheskiy zhurnal, v. 44, no. 9, 1965, 1372-1375

TOPIC TAGS: flea, flea reproduction, disease vector, mouse

ABSTRACT: House mice of the Southern European SSSR are parasitized mainly by Leptopsylla segnis and Ceratophyllus mokrzeckyi fleas. These fleas play a significant role as vectors of some diseases; however, their biology has been studied very insufficiently. Imagos of Leptopsylla segnis and L. taschenbergi generally ingest blood three to four times daily, while females oviposit three times in 24 hours. No differences in the feeding and reproduction rates were noted in fleas exposed to temperatures of 4—8C and 20—22C. With the air temperature of 20—22C the Ceratophyllus mokrzeckyi imagos generally feed 1.9 to 2.8 times a

Card 1/2 UDC: 595.755:599.323.4:591.5

day and oviposit 1.8 times in 24 hours, while at the air temperature of 5—6C, the respective activities is 0.8 to 1.2 times, the females laying less than 1 egg batch per day. In the wild, L. segnis reproduces intensely all year, while C. mokrzeckyi reproduces mainly in the cold season. The author expresses his gratitude to N. F. Darskaya for her friendly assistance in this work. Orig. art. has: 2 tables. [Based on author's abstract] [WA-50]

SUB CODE: 06/ SUBM DATE: none/ ORIG REF: 003/

Card 2/2

KOSMINSKIY, V M COMP.

Anglo-Russkiy Slovar' Po Ugol'Noy Promyshlennosti. (English-Russian dictionary pertinent to the coal industry) Moskya, Ugletekhizdat, 1950.

282 p. Diagrs., Tables.

KOSMODAMIANSKAYA, D.M.

Sanitary and hygienic evaluation of living quarters made of large silicate blocks made under the conditions of Saratov. Gig. i san. 26 no.6:104-105 Je '61. (MIRA 15:5)

1. Iz kafedry obshchey gigiyeny Saratovskogo meditsinskogo instituta.
(BUILDING--HYGIENIC ASPECTS) (SILICA)

KOSMODAMIANSKAYA, Dina Moiseyevna

Chloro-Absorbency and Effectiveness of Chlorination of Volga Water

Dissertation for candidate of a Medical Science degree. Chair of General Hygiene (head, Prof. L.I. Los') Saratov Medical Institute, 1951

KOSMODAMIANSKAYA, D.M.

KOSMODAMIANSKAYA, D.M.

Micro-climate of rural dwellings built with local fireproof material in the Trans-Volga region. Gig.i san. no.7:13-17 Jl '53. (MLRA 6:7)

1. Kafedra obshchey gigiyeny Saratovskogo meditsinskogo instituta.
(Volga valley--Dwellings) (Dwellings--Volga valley) (Temperature)

L 48983-65 EWP(z)/EWT(m)/EWG(m)/EWP(b)/EWP(t)/T Pad IJP(c) RWH/JD/HW

ACCESSION NR: AP5011466 UR/0078/65/039/004/0870/0876 30 26 B

AUTHOR: Kudryavtsev, N. T.; Golovchankaya, R. G.; Baraboshkina, N. K.; Kosmodamianskaya, L. V.

TITLE: Electrodeposition of titanium-iron and titanium-nickel alloys from aqueous solutions

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 4, 1965, 870-876

TOPIC TAGS: electroplating; alloy deposition, titanium alloy, iron alloy, nickel alloy, current efficiency, metatitanate electrolyte

ABSTRACT: Ti-Fe alloys of varying composition were deposited from alkaline solutions of sodium and iron metatitanate. The cathodes used were made of platinum, copper, brass, nickel, or steel. Armco plates served as the cathodes, and the alloy was deposited at 1-45 A/dm^2 at 20, 50, and 7[illegible]C. The nickel-titanium alloys were deposited from hydrofluoric acid and fluoboric acid solutions; the latter were found to be preferable. To study the relative discharge rates of the ions, the cathodic potentials were measured in the course of separate and joint deposition of the metals. The influence of concentration of the salts in the electrolyte, current density, stirring, and other factors on the composition and quality of the deposits, current efficiency, and

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L 18983-65

ACCESSION NR: AP5011466

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cathodic polarization was studied. In the case of Ti-Fe alloys, coatings containing up to 97% Ti were obtained. The current efficiency of the metals depends substantially on the proportion of Ti in the alloy: the higher the Ti, the lower the current efficiency. Deposits containing 20-40% Ti deposit with current efficiencies of 20 to 30%. In the case of Ni-Ti alloys, coatings containing up to 6% Ti were obtained. The current efficiency remains practically unchanged and amounts to 36-40%. An explanation is offered for the inhibition of the discharge of Fe and Ni ions during the codeposition of each with titanium. "The x-ray structural analyses were carried out in the Laboratoriya stroyeniya poverkhnostnykh sloyev Instituta fizicheskoy khimii AN SSSR (Laboratory for the Structure of Surface Layers, Institute of Physical Chemistry, AN SSSR) under the guidance of Yu. M. Polukarov and V.P. Moiseyev." Orig. art. has: 5 figures and 3 tables.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva (Moscow Chemical Engineering Institute)

SUBMITTED: 03Aug63 ENCL: 00 SUB CODE: MM

NO REF SOV: 004 OTHER: 000

Card 2/2

KOSMODAMIANSKAYA, M.M.

Formation of shoots of the common ryegrass (Lolium perenne L.) as affected by mowing used in the development of lawns. Izv. AN Mold. SSR. no.10:30-34 '63. (MIRA 18:5)

KOSMODAMYANSKIY, A.S.

Kosmodamianskii, A. S. Bending of a plane curvilinear anisotropic beam by a force applied at the end. Akad. Nauk SSSR. Prikl. Mat. Mech. 16, 249-252 (1952). (Russian)

The problem of the title was first solved by Lehnitskii [Anisotropic plates, Moscow-Leningrad, 1947; these Rev. 10, 415] for orthotropic beams. The author solves it for a non-orthotropic beam. The beam under consideration is a circular segment of a constant rectangular cross-section with cylindrical anisotropy. The deformations are assumed small. The author finds the expressions for stresses and gives a numerical example for chosen values of elastic constants. The solutions show the following. 1) The maximum value of the tangential stress is much greater than that of radial and shearing stresses. 2) This maximum is at a point on the inside radius and is not at the cross-section perpendicular to the direction of the bending force (the case of isotropic, orthotropic beam). 3) At the point of maximum tangential stress the shearing stress does not vanish (the case of isotropic, orthotropic beam). 4) For small ratios of the outside radius to the inside radius the distribution of stresses across a radial cross-section is as follows: tangential stresses are approximately linear, shearing stresses parabolic.

[illegible] (Lexington, Ky.)

3000

SOV/124-57-4-4590

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 102 (USSR)

AUTHOR: Kosmodamyanskiy, A. S.

TITLE: The Flexure of an Anisotropic Beam Under the Action of a Uniform Load (Izgib anizotropnoy balki pod deystviyem ravnomernoy nagruzki)

PERIODICAL: Uch. zap. Rostovsk. n/D. un-ta, 1955, Vol 32, Nr 4, pp 75-94

ABSTRACT: A study of the elastic equilibrium of a beam of constant cross section being deformed under the action of surface and body forces; it is assumed that the ends of the beam are restrained in an arbitrary manner; the forces operating are reduced to a bending load distributed uniformly along the beam. It is also assumed that the beam is composed of an anisotropic homogeneous material and that at any point it possesses a plane of elastic symmetry that is normal to the axis of the beam. The flexure problem under examination is reduced to the evaluation of two stress functions ϕ and F which are contained within a cross section of the beam and which satisfy the following equations:

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The Flexure of an Anisotropic Beam Under the Action of a Uniform Load

$$[a_{44}\frac{\partial^2}{\partial x^2} - 2a_{45}\frac{\partial^2}{\partial x\,\partial y} + a_{55}\frac{\partial^2}{\partial y^2}]\ \phi = f$$

$$[\beta_{22}\frac{\partial^4}{\partial x^4} - 2\beta_{26}\frac{\partial^4}{\partial x^3\,\partial y} + (2\beta_{12} + \beta_{66})\frac{\partial^4}{\partial x^2\,\partial y^2} - 2\beta_{16}\frac{\partial^4}{\partial x\,\partial y^3} + \beta_{11}\frac{\partial^4}{\partial y^4}]\ F = \psi$$

and

$$\beta_{ij} \equiv a_{ij} - \frac{a_{i3}\,a_{j3}}{a_{33}} \qquad (i, j = 1, 2, 3)$$

and the boundary conditions

$$\phi = \alpha, \quad \frac{\partial F}{\partial x} = \beta, \quad \frac{\partial F}{\partial y} = \gamma$$

Card 2/3

The Flexure of an Anisotropic Beam Under the Action of a Uniform Load

where f, ψ, α, β, and γ are known expressions containing arbitrary constants. These constants are determined by the conditions of restraint of the ends of the beam. The flexure of an anisotropic beam with elliptical cross section and arbitrarily restrained ends was investigated in detail under conditions of uniformly distributed loading. The same conditions were employed in investigating the flexure of an orthotropic beam of rectangular cross section.

A. K. Rukhadze

KOSMODAMYANSKIY, A.S. (Saratov)

Bending of anisotropic beams subjected to distributed loads. Inzh.sbor. 24:114-126 '56. (MLRA 10:5)

(Girders)
(Flexure)

KOSMODAMYANSKIY, M.S.

24-58-3-36/38

AUTHOR: Solomonov, M.

TITLE: Elaboration of the Problem of Rock Pressure (K razrabotke problemy gornogo davleniya)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 3, pp 173-174 (USSR)

ABSTRACT: A conference devoted to the phenomena of earth pressure in the rocks surrounding horizontal and vertical workings took place in December 1957 at the Mining Institute of the Academy of Sciences of the USSR. More than 100 representatives of 49 scientific-exploratory bodies, universities and mining enterprises took part in the conference. The conference brought to light problems of theoretical interest related to the distribution of stresses in the rocks, their displacement around the workings and an estimate of pressure upon the timbering of workings - all in line with contemporary notions of the theory of elasticity, plasticity and a creep - flowage. Of exceptional interest among the reports submitted were those which brought to light the role of anisotropy, the problems of an assessment of the creep-flow of rocks and of the influence of the stopping operation upon displacement of

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Elaboration of the Problem of Rock Pressure.

rocks and exposure of the earth pressure in drifts. The following papers were presented: A. S. Kosmodamianskiy on "An estimate of stressed conditions in an anisotropic massif with the workings within it"; Yu. M. Liberman on "The influence of the time factor revealed by the pressure and displacement of rock in drifts under the influence of stopping operations"; K. V. Ruppeneyt "Pressure and displacement in drifts under the influence of stopping operations"; M. I. Rozovskiy "Methodology of laboratory definition of a creep-flow character of rocks and calculation of the flowage around vertical shafts"; T. S. Yerzhanov "Methodology of a laboratory estimate of the characteristic of flowage of rocks and computation of a creep-flowage around vertical main shafts"; T. A. Kryzhanovskaya "Investigation of the problem of rock pressure upon timbering of horizontal workings based on the theory of viscosity and plasticity of the creep-flow". Of the papers devoted to the investigation conducted under shaft conditions, the conference drew attention to measurements made in the railway tunnels and subways in the Nikopol' Manganese basin and the Donets basin and in the main shafts at great depths. B. N. Vinogradov on "Investigation into the phenomenon of earth pressure in tunnel construction"; A. G. Barlas on "An

24-58-3-36/38

Elaboration of the Problem of Rock Pressure.

analytical examination of work (behaviour) of timbering in the weak surrounding rocks and measurements of deformations of timbering and the load in the horizontal workings of Nikopol' Manganese basin"; M. A. Komissarov on "The earth pressure around horizontal and inclined workings in connection with the stopping of coal seams under the conditions of the Donets basin"; A. M. Yanchur on "The investigation of the manifestation of earth pressure in vertical shafts of the Donets basin at great depths".The conference expressed its gratitude to the Czechoslovak scientist, Doctor-Engineer Rudol'f Kvapčil for his interesting communication on the theory of earth shocks.

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1. Geology--Conference--USSR

SOV/24-58-9-23/31

AUTHOR: Kosmodamianskiy, A.S. (Saratov)

TITLE: An Estimate of the Accuracy of the St Venant Principle in the Stretching of an Anisotropic Strip (Otsenka tochnosti printsipa Sen-Venana pri rastyazhenii anizotropnoy polosy)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 9, pp 130 - 133 (USSR)

ABSTRACT: The St Venant principle is usually employed in solving the problem of a strained rectangular strip. The problem of the accuracy of this principle in the case of an isotropic strip was discussed by many authors, among them Timoshenko (Ref 1), Papkovich (Ref 2), Filnenko-Borodich (Ref 3) and others. Timoshenko and Filonenko-Borodich used a variational method to solve this problem. If this method is generalised to the case of an anisotropic strip, one obtains very slowly converging series. In the present paper, a mixed variational method is used and this leads to series which converge sufficiently rapidly. The anisotropic strip is taken to be under the action of stretching loads of the form:

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SOV/24-58-9-23/31

An Estimate of the Accuracy of the St Venant Principle in the Extension of an Anisotropic Strip

$$q(x) = q_0 + \sum_{k=1}^{\infty} q_k \cos \frac{k\pi x}{a} \qquad (1.1)$$

where q_0 and q_k are constants. The calculations have shown that when the anisotropic strip is stretched in the direction lying across the filaments, the use of St. Venant's principle leads to considerably greater errors than when it is extended along the filaments. Expressions are derived which may be used as criteria as to whether St. Venant's principle for the particular anisotropic strip applies. Using the notation of the figure on p 130, it is shown that if b/a is sufficiently large, St Venant's principle will apply. The minimum value of this ratio must be estimated from Eq (2.10). If k is large, the principle will also be correct for small values of b/a. There are 1 figure, 1 table and 6 Soviet refs.

SUBMITTED: December 20, 1957

Card 2/2

VOROVICH, I.I. (Rostov-na-Donu); KOSMODAMIANSKIY, A.S. (Saratov)

Elastic equilibrium of an isotropic plate weakened by a row of similar curvilinear holes. Izv.AN SSSR.Otd.tekh.nauk. Mekh. i mashinostr. no.4:69-76 Jl-Ag '59. (MIRA 12:8)
(Elastic plates and shells)

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S/179/59/000/06/018/029
E081/E141

AUTHOR: Koskodamianskiy, A.S. (Saratov)

TITLE: Determination of the Stress State in an Anisotropic Plate with a Curvilinear Hole Reinforced with a Rigid Ring

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 6, pp 118-121 (USSR)

ABSTRACT: It is assumed that: 1) the anisotropic plate is of infinite size; 2) the plate is deformed by forces acting at infinity in its middle plane; 3) a rigid ring is fixed to the edge of the hole; 4) body forces are absent; 5) the deformations are small; 6) there is a plane of elastic symmetry at each point of the plate, parallel to the middle surface. The problem is solved by finding the stress and strain components in the plate when the hole is absent, and then superimposing a stress system which makes the displacements at the boundary of the hole vanish. The complex variable method described by Lekhnitskiy (Ref 1) is used. As an example, the stress distribution round a hole approximating in shape to an equi-lateral triangle is calculated. The material

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Determination of the Stress State in an Anisotropic Plate with a Curvilinear Hole Reinforced with a Rigid Ring

is assumed orthotropic and to have the elastic constants of plywood. The stresses are calculated for applied forces parallel and perpendicular to one side of the triangle (Figs 2 and 3), and compared with the stresses in an isotropic material under the same conditions (Table, p 120). It is found that the reinforcement round the hole appreciably reduces the stress concentration.

Heading to Table, page 120:

Value of $\sigma_{r/p}$ (q=0)				Value of $\sigma_{r/q}$ (p=0)			
Veneer			Isotropic	Veneer			Isotropic
Approximation			Accurate solution	Approximation			Accurate solution
1	2	3		1	2	3	

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There are 3 figures, 1 table and 1 Soviet reference.

SUBMITTED: January 24, 1958

KOSMODAMIANSKIY, A. S.

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

134. A. A. Ilyushin (Moscow): Problems of the theory of plasticity under combined loading.

135. V. K. Kabulov (Tashkent): Elastic-plastic vibrations of rods of non-circular cross section.

136. V. S. Kalinin (Leningrad): The forced non-linear flexural vibrations of a homogeneous prismatic rod and a very long rectangular plate.

137. S. Kaliski (Warsaw): On a method of solving the equations of motion for an infinite anisotropic medium in the presence of a magnetic field.

138. G. N. Kan, P. A. Zhimizi (Kharkov): An engineering method for the design of open prismatic shells.

139. I. I. Kandaurov (Leningrad): The distribution of vertical compressive stresses and strains in foundations in homogeneous or stratified soils.

140. B. Ia. Kantor (Kharkov): Bending of cantilever plates of variable stiffness.

141. K. S. Karapetian (Erevan): The effect of aging and anisotropy on the creep of concrete.

142. L. M. Kachanov (Leningrad): On the time of rupture in creep.

143. L. M. Kachanov (Leningrad): On some variational principles and methods in the theory of plasticity.

144. K. A. Kerimov (Baku): A procedure of determining an impact tension diagram for large deformations.

145. N. A. Kilchevskii (Kiev): Some generalizations of the formulation of elastostatic and elasto-dynamic contact problems and methods for their solution.

146. A. Kh. Kim (Minsk): The flow of a visco-plastic medium in a cone.

147. L. A. Kitover (Leningrad): On the elastic equilibrium of thin, infinite orthotropic plates.

148. K. V. Kovalev (Kharkov): Models of the influence surfaces for the intensity of the [illegible] in thin plates and shells.

149. A. D. Kovalenko (Kiev): Shallow shells of revolution of variable thickness in a two-dimensional temperature field.

150. K. Kozarov (Sofia): Dynamic stability of cylindrical and spherical shells.

151. M. Komarov (Sofia): The influence of initial imperfections of shape on the stability of thin elastic cylindrical sandwich shells under axial compression.

152. W. T. Koiter (Delft): Elastic stability and post-buckling behavior.

153. A. G. Kondratev (Kuibyshev), Ya. F. Burkov (Orenburg): The effect of support elasticity on the natural vibrations of rods.

154. I. M. Kopev, I. A. Oding (Moscow): Strength and plasticity of "whiskers".

155. B. G. Korenev (Moscow): The design of flexible plates and beams on elastic foundation.

156. M. S. Kornishin (Kazan): Bending of rectangular shallow shells with elastic ribs.

157. M. S. Kornishin (Kazan): On the solution of the nonlinear algebraic equations of shell theory.

158. V. G. Korotkin, D. M. Zartakovskii (Leningrad): The one-dimensional problem of the consolidation of a sediment layer with variable specific weight and variable water permeability.

159. A. S. Kosmodamianskii (Saratov): The elastic equilibrium of anisotropic plate with a finite number of elliptical holes.

160. Yu. I. Kosterin (Iaroslavl), I. V. Kragelskii (Moscow): Rheological phenomena in dry friction.

161. Ya. V. Krotov (Stalinsk): Lateral stability of coupled arches with double curvature.

162. A. I. Kuznetsov (Leningrad): On the theory of plane plastic stress.

163. V. N. Kukudzhanov, L. V. Nikitin (Moscow): Propagation of elastic, visco-plastic waves in bars.

164. V. D. Kupradze (Tbilisi): The investigation of contact problems in the theory of elasticity by the method of singular integral equations.

165. N. V. Lazovskaia (Moscow): The investigation of the deformations of drains on models by the X-ray method.

166. A. Langenbach (Berlin): Application of the non-linear variational principle to some problems of the theory of elastic-plastic strains.

167. S. M. Levi (Moscow): The investigation of rheological properties of gelatin solutions.

Kosmodamyanskiy, A.S.

PHASE I BOOK EXPLOITATION SOV/4042

Leningrad. Universitet

Polyarizatsionno-opticheskiy metod issledovaniya napryazheniy; trudy konferentsii 13-21 fevralya 1958 goda (Optical Polarization Method for Stress Analysis; Transactions of the Conference of February 13-21, 1958). [Leningrad] Izd-vo Leningradskogo univ., 1960. 451 p. Errata slip inserted. 2,400 copies printed.

Resp. Ed.: S.P. Shikhobalov; Ed.: Ye.V. Shchemeleva; Tech. Ed.: S.D. Vodolagina; Editorial Board: S.G. Gutman, L.M. Kachanov, V.M. Krasnov, T.D. Maksutova, N.I. Prigorovskiy, V.M. Proshko, N.S. Rozanov, and Ye.I. Edel'shteyn.

PURPOSE: This collection of 58 articles is intended for scientists and engineers concerned with experimental stress analysis of machine parts and structural components.

COVERAGE: The collection contains reports presented at the conference on optical polarization methods in stress analysis held February 13 - 21, 1958, in Leningrad and attended by 324 delegates including representatives of the People's Republic of China, the Polish People's Republic, the German Democratic Republic, and the Republic of Czechoslovakia. The reports discuss general theoretical problems and new methods of investigation and describe apparatus and materials used in the optical method. Solutions of specific two-dimensional and three-dimensional problems occurring in shipbuilding, aircraft design, engine construction, in various branches of heavy and precision machine design, in mining, metallurgy, hydraulic structures, railroad transport, in structural mechanics, geodynamics, in the control of stresses in products of the glass and electronic industry, etc., are given. Solution of the three-dimensional problem by means of the method of photoelasticity is introduced and the use of this method for the solution of problems associated with plasticity, creep, dynamics, hydrodynamics, etc., is demonstrated. Reports previously published elsewhere are printed here in abbreviated form. No personalities are mentioned. References are found at the end of 47 of the reports.

Optical Polarization Method (Cont.) SOV/4042

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S/179/60/000/03/037/039
E081/E441

AUTHOR: Kosmodamyanskiy, A.S. (Saratov) 26

TITLE: Bending of an Elliptical Beam with Two Circular Cavities

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960, Nr 3, pp 184-185 (USSR)

ABSTRACT: The problem is treated by the method given in Ref 1. The material of the beam is isotropic; one end of the beam is rigidly fixed and the other is subjected to a transverse force P. The cross section is elliptical with two circular holes separated by a distance 2ℓ between the centres (see figure, p 184). For simplicity, it is assumed that the holes are of radius $r = 1$ and are symmetrically situated with respect to the centre of the ellipse. The semi-axes of the ellipse are a and b; the boundary of the ellipse is denoted by L_0 and the boundaries of the holes by L_{-1} and L_1. The x and y axes are shown on the figure; the z_1 axis coincides with the geometric axis of the beam. The stress system in the beam is investigated using a complex variable formulation. Calculations are carried

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E081/E441

Bending of an Elliptical Beam with Two Circular Cavities

out for an elliptical beam with $2\ell = 3r$, $a = 3.5r$, $b = 2r$ and for a circular beam with radius $R = 3.5r$. Table 2 shows the shear stresses at the points O, A, B, C, D (Fig, p 184) for the elliptical and circular beams; the asterisked values are for a continuous beam. The maximum stress occurs at the points A and is nearly three times as great as in a continuous beam. There are 1 figure, 1 table and 1 Soviet reference.

SUBMITTED: January 30, 1960

Card 2/2

10.9110

S/022/60/013/006/002/005
C 111/ C 333

AUTHOR: Kosmodamianskiy, A. S.

TITLE: Elastic equilibrium of an anisotropic plate with a finite number of elliptic holes

PERIODICAL: Akademiya nauk Armyanskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, v. 13, no. 6, 1960, 19-26

IX

TEXT: At first the author considers an anisotropic plate which has a finite number of elliptic holes and which is deformed by stresses acting along the boundaries of the holes in the central plane of the plate. The author assumes that the holes are equally large and that they are displaced against each other by constant distances in the direction of the x-axis. In this case the stresses are given by

$$\sigma_x = -2\mathrm{Re}\left[\beta^2\phi'_1(z_1) + \delta^2\phi'_2(z_2)\right],$$
$$\sigma_y = 2\mathrm{Re}\left[\phi'_1(z_1)\ \phi'_2(z_2)\right], \qquad (1.15)$$
$$\tau_{xy} = 2\,\mathrm{Rei}\left[\beta\phi'_1(z_1) + \delta\phi'_2(z_2)\right],$$

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C 111/ C 333

IX

Elastic equilibrium of an . . .

where β and δ characterize the anisotropy, and $\phi_1(z_1)$, $\phi_2(z_2)$ are two complex functions which must be determined according to the method of S. G. Lekhnitskiy (Ref.1: Anisotropic plates. Gostekhizdat, M., 1957).

Then the author considers plates with two and three elliptic holes, where the boundaries of the holes are free of stress. The order of the holes and the stress are shown by figures 2 and 3.

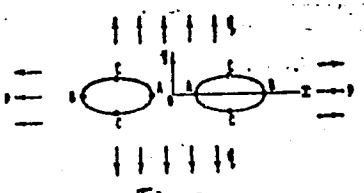

Fig. 2.

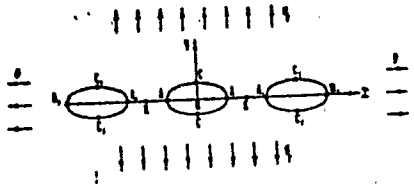

Fig. 3.

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Elastic equilibrium of an . . .

The numerical calculation for plates of CBAM (SVAM) (glass-fibrous anisotropic material) (see A. K. Burov, G. D. Andreyevskaya (Ref. 3: Glass-fibrous anisotropic materials and their technical application. Izd. AN SSSR, M.-L., 1956)) was carried out with $\beta = 1.89$, $\delta = 0.531$; the distance of the holes was equal to the large semiaxis a; $c = a/b$, where b was the small semiaxis. The values referring to the case of one hole are given with a star in the tables. Table 1 shows the data for two holes and table 2 for 3 holes.

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Elastic equilibrium of an . . .

Table 1

c	Points	$p=0,\ q\neq 0$				$p\neq 0,\ q=0$			
		σ_x/q	σ_y/q	σ^*_x/q	σ^*_y/q	σ_x/p	σ_y/p	σ^*_x/p	σ^*_y/p
1	O	0.32	2.08	0.32	1.49	0.10	0.03	0.16	—0.07
	A	0.004	3.51	0	3.42	0.002	—0.48	0	—1.00
	B	—0.02	3.71	0	3.42	0.006	—0.91	0	—1.00
	C	—0.94	—0.01	—1.00	0	3.17	0.02	3.42	0
0.5	O	0.82	1.89	0.46	1.40	0.13	0.03	0.45	0.01
	A	0.02	6.20	0	5.83	—0.02	—0.60	0	—1.00
	B	—0.01	6.10	0	5.83	0.01	—0.89	0	—1.00
	C	—0.92	—0.001	—1.00	0	2.03	0.001	2.21	0
0.25	O	0.95	1.78	0.47	1.35	0.50	0.02	0.73	0.01
	A	0.05	11.53	0	10.65	—0.03	—0.83	0	—1.00
	B	—0.01	11.15	0	10.65	0.01	—0.94	0	—1.00
	C	—0.94	0.001	—1.00	0	1.53	0	1.61	0

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Elastic equilibrium of an . . .

Table 2

c	Points	$p=0,\ q\neq 0$				$p\neq 0,\ q=0$			
		σ_x/q	σ_y/q	σ_x^*/q	σ_y^*/q	σ_x/p	σ_y/p	σ_x^*/p	σ_y^*/p
1	B_1	−0.01	3.71	0	3.42	0.03	−0.89	0	−1.00
	A_1	0.04	4.04	0	3.42	−0.04	−0.58	0	−1.00
	A	0.06	3.87	0	3.42	−0.06	−0.57	0	−1.00
	C_1	−0.90	−0.01	−1.00	0	3.18	−0.01	3.42	0
	C	−0.82	−0.03	−1.00	0	2.95	0.02	3.42	0
	K	0.58	2.13	0.32	1.49	0.08	0.04	0.16	−0.07
0.5	B_1	−0.02	6.26	0	5.85	0.02	−0.85	0	−1.00
	A_1	0.10	6.42	0	5.85	−0.09	−0.69	0	−1.00
	A	0.08	6.61	0	5.85	−0.08	−0.60	0	−1.00
	C_1	−0.87	0.01	−1.00	0	1.99	−0.01	2.21	0
	C	−0.77	−0.004	−1.00	0	1.79	−0.004	2.21	0
	K	0.88	1.95	0.46	1.40	0.09	0.04	0.45	0.01
0.25	B_1	−0.02	11.44	0	10.68	0.02	−0.90	0	−1.00
	A_1	0.07	11.74	0	10.68	−0.05	−0.84	0	−1.00
	A	0.07	12.01	0	10.68	−0.04	−0.79	0	−1.00
	C_1	−0.91	0.01	−1.00	0	1.51	−0.001	1.61	0
	C	−0.87	−0.01	−1.00	0	1.45	−0.002	1.61	0
	K	1.01	1.84	0.47	1.36	0.49	0.03	0.73	0.01

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20721
S/022/60/013/006/002/005
C 111/ C 333

Elastic equilibrium of an . . .

With the aid of the tables the author states: The concentration of stress decreases with a higher number of holes, it the plate is stretched in the direction of the hole centers, and it increases with a higher number of holes, if the plate is stretched orthogonal in this direction. If the plate is stretched orthogonal to the line of the hole centers, then σ_x and σ_y increase considerable in the points between the holes compared with the case of a plate with one hole; this increase is larger for a smaller c.

There are 3 figures, 2 tables and 3 Soviet-bloc references.

ASSOCIATION: Saratovskiy gosuniversitet imeni Chernyshevskogo (Saratov State University imeni Chernyshevskiy)

SUBMITTED: June 6, 1960

Card 6/6

KOSHODAMIANSKIY, A.S. (Saratov)

Stressed state of an anisotropic plate with two unequal holes. Izv. AN SSSR. Otd. tekh.nauk.Mekh. i mashinostr. no. 1:175-177 Ja-F '61. (MIRA 14:2)
(Elastic plates and shells)

KOSMODAMIANSKIY, A.S. (Saratov)

Elastic plastic problem for an isotropic mass weakened by an infinite row of similar circular openings. Izv. AN SSSR. Otd.tekh.nauk.Mekh.i mashinostr. no.4:187-188 Jl-Ag '61.
(MIRA 14:8)

(Elastic solids)

KOSMODAMIANSKIY, A.S. [Kosmodamians'kyi, O.S.] (Saratov)

Elastic equilibrium of an isotropic plate weakened by a finite number of curvilinear holes. Prykl.mekh. 7 no.6:663-671 '61. (MIRA 14:11)

1. Saratovskiy gosudarstvennyy universitet.
(Elastic plates and shells)

KOSMODAMIANSKIY, A.S. [Kosmodamians'kyi, O.S.]

Stressed state of an isotropic plate weakened by a finite number of infinite series of circular apertures. Dop. AN URSR no.11: 1444-1449 '61. (MIRA 16:7)

1. Saratovskiy gosudarstvennyy universitet. Predstavleno akademikom AN UkrSSR G.N.Savinym [Savin, H.M.].
(Elastic plates and shells)

KOSMODAMIANSKIY, A.S. (Saratov)

Torsion of an elliptic bar with two circular cavities. Inzh.sbor. 31:76-79 '61. (MIRA 14:6)

(Torsion)

37853

10.7100

S/022/62/015/003/002/008
D234/D308

AUTHOR: Kosmodamianskiy, A.S.

TITLE: Torsion and bending of orthotropic rods with cavities by a transverse force

PERIODICAL: Akademiya nauk Armyanskoy SSR. Izvestiya v. 15, no.3, 1962, 37-49

TEXT: Using the results of D.I. Sherman (Ref. 2: Inzhenernyy sbornik, 25, 1959) the author constructs an approximate solution of the torsion problem, in which the boundary conditions are not exactly satisfied. The rod is assumed to be elliptic with several elliptic cavities. An orthotropic circular rod with two circular cavities is considered as an example in a first and second approximation. Numerical values of stresses for a special case are given. Bending of an orthotropic elliptic rod with two elliptic cavities or a circular rod with two circular cavities is considered separately, with a numerical example. A strong influence of aniso-

Card 1/2

tropy is noted in case of a rod with cavities. There are 4 figures and 4 tables.

ASSOCIATION: Saratovskiy gosudarstvennyy universitet im N.G. Chernyshevskogo (Saratov State University im. N.G. Chernyshevskiy)

SUBMITTED: January 25, 1962

Card 2/2

KOSMODAMIANSKIY, A.S. [Kosmodamianskyi, O.S.] (Saratov); MEGLINSKIY, V.V. [Meblinskyi, V.V.] (Saratov); SIVETSOV, V.A. (Saratov)

Stretching of an anisotropic plate having a curvilinear hole reinforced with a rigid ring. Prykl.mekh. 8 no.3:237-247 '62. (MIRA 15:6)

1. Saratovskiy gosudarstvennyy universitet.
(Elastic plates and shells)

KOSMODAMIANSKIY, A.S.

Torsion and flexure of orthotropic rods with cavities by a transverse force. Izv. AN Arm. SSR. Ser. fiz.-mat. nauk 15 no.3:37-49 '62. (MIRA 15:9)

1. Saratovskiy gosudarstvennyy universitet imeni N.G. Chernyshevskogo.
(Elastic rods and wires)

KOSMODAMIANSKIY, A.S., kand.fiziko-matematicheskikh nauk

Approximative methods of determining the stress state of an elastic rock massif in which circular shafts have been driven. [Trudy] VNIMI no.45: 180-193 '62. (MIRA 16:4)
(Rock pressure) (Mining engineering) (Strains and stresses)

KOSMODAMIANSKIY, A.S., kand.fiziko-matem.nauk

Stress state of a rock massif which has been weakened by a large number of square workings. [Trudy] VNIMI no.45:194-203 '62. (MIRA 16:4)

(Rock pressure) (Mining engineering) (Strains and stresses)

KOSMODAMIANSKIY, A. S. [Kosmodamians'kyi, O. S.] (Saratov)

Thermoelastic problem for a cylinder with cavities. Prykl. mekh. 8 no.6:671-675 '62. (MIRA 15:10)

1. Saratovskiy gosudarstvennyy universitet)

(Cylinders) (Thermal stresses)

GUR'YANOV, V.M. [Hur'ianov, V.M.] (Saratov); KOSMODAMIANSKIY, A.S. [Kosmodamians'kyi, O.S.] (Saratov)

Effect of the curvature of an isotropic plate with a curvilinear hole on its stressed state. Prykl.mekh. 9 no.5:487-495 '63. (MIRA 16:10)

1. Saratovskiy gosudarstvennyy universitet.

L 16883-65 EWT(d)/EWT(m)/EWP(w)/EWA(d) ASD(f)-2 EM
ACCESSION NR: AR4045234 S/0124/64/000/007/V005/V005

SOURCE: Ref. zh. Mekhanika, Abs. 7V35

AUTHOR: Kosmodamianskiy, A. S.

TITLE: The elastic equilibrium of an anisotropic half-phane, weakened by an elliptical aperture

CITED SOURCE: Tr. Gruz. politekhn. in-t, no. 8(93), 1963, 179-183

TOPIC TAGS: half plane, elastic equilibrium, tensile stress, compression, anisotropic plane, elliptical borehole, stress concentration

TRANSLATION: A solution is given to the problem of the stress concentration in an orthotropic half-plane with an elliptical aperture. The solution is so constructed that the boundary conditions are satisfied exactly on the rectilinear boundary, and approximately on the contour of the elliptical aperture. The unknown functions of the complex variables are expanded into convergent series, which break off in the process of solution. The accuracy of the solution derived is established by checking the fulfillment of the boundary conditions on the aperture profile. By way of example, two load cases

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ACCESSION NR: AR4045234

are considered: 1. an external pressure load on the aperture contour, 2. tensile stresses applied at infinity. Numerical stress data are given for a half-plane manufactured of SVAM, and a comparison is provided with known results for an isotropic half-plane with a circular aperture. The effect of the anisotropy of the material on maximum stresses is explained. Ye. F. Burmistrov.

SUB CODE: ME, AS ENCL: 00

Card 2/2

KOSMODAMIANSKIY, A.S. [Kosmodamians'kyi, O.S.] (Saratov); MEGLINSKIY, V.V. [Mehlins'kyi, V.V.] (Saratov); SHVETSOV, V.A. (Saratov)

Stretching of an anisotropic plate with an arch-shaped hole. Prykl. mekh. 9 no.4:441-446 '63. (MIRA 16:8)

1. Saratovskiy gosudarstvennyy universitet.

KOSMODAMIANSKIY, A.S. [Kosmodamians'kyi, O.S.] (Saratov); MEGLINSKIY, V.V. [Mehlins'kyi, V.V.]; (Saratov); SHVETSOV, V.A. (Saratov)

Tension of an anisotropic plate with a trapiezoid hole reinforced with a rigid ring. Prykl. mekh. 9 no.6:683-685 '63. (MIRA 16:12)

1. Saratovskiy gosudarstvennyy universitet.

KOSMODAMIANSKIY, A.S. [Kosmodamians'kyi, O.S.]

Regularity of infinite systems resulting from the solution of problems involving torsion of rods with longitudinal cavities. Dop. AN URSR no.7:882-884 '64. (MIRA 17:9)

1. Saratovskiy gosudarstvennyy universitet. Predstavleno akademikom AN UkrSSR G.N.Savinym [Savin, H.M.].

KOSMODAMIANSKIY, A.S. [Kosmodamians'kyi, O.S.]

Regularity of infinite systems obtained when examining the stressed state of elastic media with circular holes. Dop. AN URSR no.9:1142-1145 '64. (MIRA 17:11)

1. Saratovskiy gosudarstvennyy universitet. Predstavleno akademikom AN UkrSSR G.N. Savinym [Savin, H.M.].

L 7049-65 EWT(m)/EWP(r) AFTC(p)/ASD(f)
ACCESSION NR: AP4043522 S/0258/64/004/003/0486/0494

AUTHOR: Gur'yanov, V. M. (Saratov); Kosmodamianskiy, A. S. (Saratov) B

TITLE: Stress distribution in an isotropic plate weakened by a curvilinear hole 26 26

SOURCE: Inzhenernyy zhurnal, v. 4, no. 3, 1964, 486-494

TOPIC TAGS: isotropic plate, thin plate, thin isotropic plate, hole weakened plate, stress distribution, stress concentration

ABSTRACT: Stress analysis of an infinite, isotropic thin plate under arbitrary forces (at infinity) acting on its middle surface is presented. The plate is weakened by a hole of arbitrary smooth contour. A general solution of the problem is given by superposition of two stress fields: one in a plain plate and one caused by the hole. Both fields are described by complex-variable functions determined for the given boundary conditions (for either displacements or stresses prescribed on the hole contour). Holes with

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L 7049-65
ACCESSION NR: AP4043522

unstiffened edges and with a perfectly rigid ring along the hole contour are examined. Results of analysis of stress concentration in a plate under tension with an opening having a shape close to a rectangle with rounded corners are presented. The stress distribution along the contour in case when the tension is 1) parallel to the long side of the hole, 2) parallel to the short side of the hole, and 3) omnidirectional is evaluated (on the Ural-1 high-speed computer) and plotted in diagrams (for holes with free and with ring-stiffened edges). The effects of the hole's side ratio of fillet curvature are mentioned. Orig. art. has: 5 tables, 3 figures, and 16 formulas.

ASSOCIATION: none

SUBMITTED: 28Mar63 ATD PRESS: 3104 ENCL: 00

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

Card 2/2

KOSMODAMIANSKIY, A.S. (Saratov)

Quasi-regularity of infinite systems in problems on stressed state of an anisotropic medium with elliptic holes. Prikl. mekh. 1 no.10:1-6 '65. (MIRA 18:12)

1. Saratovskiy gosudarstvennyy universitet. Submitted April 10 1964.

L 41245-65 EWT(m)/EWP(w)/EPR EM S/0198/65/001/001/0015/0021

ACCESSION NR: AP5006985

AUTHOR: Kosmodamianskiy, A. S. (Saratov)

TITLE: On quasi-regularity of an infinite system in the problem of stress concentration near curvilinear holes

SOURCE: Prikladnaya mekhanika, v. 1, no. 1, 1965, 15-21

TOPIC TAGS: stress concentration, analytic function, complex variable, Taylor series

ABSTRACT: The weakening of an isotropic medium by drilling two elliptic or square holes was studied analytically with and without reinforcement of the hole boundary by rigid rings. The stressed state is defined by means of the functions $\varphi(z)$ and $\chi(z)$ with complex arguments and the boundary condition on the hole periphery $\varkappa\varphi(t) - (t-\bar{t})\overline{\varphi'(t)} - \overline{\chi(t)} = c$, where $\varkappa$ is a function of the Poisson's coefficient. The functions φ and χ are defined by $\varphi(z) = \varphi_0(z) + \sum_{k=1}^{\infty} \frac{\alpha_k}{\zeta^k} + \sum_{k=1}^{\infty} \frac{(-1)^{k+1}\alpha_k}{[\zeta(z^*+2l)]^k}$, $\chi(z) = \chi_0(z) + \sum_{k=1}^{\infty} \frac{\beta_k}{\zeta^k} + \sum_{k=1}^{\infty} \frac{(-1)^{k+1}\beta_k}{[\zeta(z^*+2l)]^k}$, and, from considerations of symmetry (see Fig. 1

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ACCESSION NR: AP5006985

on the Enclosure), only the right hole is considered. The function χ is shown to be holomorphic [illegible] and consequently the following holds: $[\zeta(z^*+2l)]^{-1} = \sum_{k=0}^{\infty} A_{1k} P_k(z^*)$, where A_{1k} are defined by $A_{1k} = \sum_{n=0}^{\infty} a_{k+2n} c_{k+2n}^n m_0^{n+k} m_1^n$, and P is a Faber polynomial. To determine the coefficients α_k and β_k an infinite system of algebraic equations is obtained which is quasi-regular at any point near the elliptic holes. A similar analysis is made for the square holes, but instead of a Faber polynomial expansion a Taylor expansion is used, thus $[\zeta(z^*+2l)]^{-1} = \sum_{k=0}^{\infty} A_{1k} z^{*k}$, where $A_{1k} = \frac{1}{k!} \lim_{z^* \to 0} \frac{d^k}{dz^{*k}} \left[\zeta(z^*+2l)^{-1}\right]$. A similar infinite quasi-linear system is obtained, as for the elliptic holes, whose solution can be obtained to any desired degree of accuracy by a proper truncation. Orig. art. has: 22 equations and 2 figures.

ASSOCIATION: Saratovskiy gosudarstvennyy universitet (Saratov State University)

SUBMITTED: 020ct64 ENCL: 01 SUB CODE: ME

NO REF SOV: 005 OTHER: 000

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R000825120015-7"

ENCLOSURE: 01

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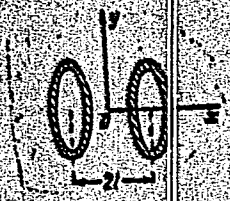

Fig. 1

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following boundary conditions

$$\varphi(t)+(t-t)\overline{\varphi'(t)}+\overline{\chi_1'(t)}=-\tfrac{1}{2}p(t-e^{2i\alpha}t).$$

These functions are expanded in powers of $\epsilon = l^{-1}$ up to $\epsilon \leq 4$. The resulting expression for the two functions becomes

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L 1460-66
ACCESSION NR: AP5021719

$$\varphi(z) = \varphi^*(z) - 2\varepsilon\{\alpha_1\lambda_2\varepsilon^2 + 3\lambda_4\varepsilon^4(m\alpha_1 + \alpha_3)\} - 2\alpha_1\lambda_4\varepsilon^4 z^2$$
$$\chi_1'(z) = \chi^{*\prime}(z) - 2\varepsilon\{\beta_1\lambda_2\varepsilon^2 + 3\lambda_4\varepsilon^4(m\beta_1 + \beta_3)\} - 2\beta_1\lambda_4\varepsilon^4 z^2$$

$$\lambda_{2k} = \sum_{n=1}^{\infty} n^{-2k} \qquad (k = 1, 2)$$

The coefficients α_k and β_k are determined around the hole contours according to the boundary conditions stated above. These coefficients are calculated in two steps, first, for powers of $\varepsilon \leq 2$, followed by a second approximation $\varepsilon = 4$, corresponding to various values of eccentricity $m = (a-b)/(a+b)$. The resulting expressions for the stresses are given in tabular forms. Orig. art. has: 15 equations, 1 table, and 1 figure.

ASSOCIATION: none

SUBMITTED: 20Feb63 ENCL: 00 SUB CODE: ME

NO REF SOV: 004 OTHER: 000

Card 2/2

KOSMODAMIANSKIY, A.S. (Saratov)

Regularity of infinite systems obtained in determining the stressed state of elastic media with circular holes. Izv. AN SSSR. Mekh. no.5 106-110 S-O '65. (MIRA 18:10)

L 21311-66 EWT(m)/EWP(w) IJP(c) EM

ACC NR: AP6007543 SOURCE CODE: UR/0198/66/002/001/0028/0034

AUTHOR: Kosmodamianskiy, A. S. (Saratov) 34/

ORG: Saratov State University (Saratovskiy gosudarstvennyy universitet) B

TITLE: Determining the stressed state of a plate with a strong anisotropy and containing two elliptic holes 24 27

SOURCE: Prikladnaya mekhanika, v. 2, no. 1, 1966, 28-34

TOPIC TAGS: stress analysis, stress concentration, complex function, anisotropic medium

ABSTRACT: A stress analysis was made for an anisotropic plate with two identical elliptic holes spaced a distance $2l$ apart. The external stresses around the holes have a zero principal vector and a zero principal moment. The analysis consists of determining the complex function $\Phi_k^*(z_k)$ subject to the conditions

$$2\mathrm{Re}\,[\Phi_1^*(z_1) + \Phi_2^*(z_2)] = \int_0^s Y_n ds + c_1;$$

$$2\mathrm{Re}\,[s_1\Phi_1^*(z_1) + s_2\Phi_2^*(z_2)] = -\int_0^s X_n ds + c_2.$$

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L 21311-66

ACC NR: AP6007543

The boundary conditions on the hole contours are given by

$$\Phi_1(\sigma)+\Phi_2(\sigma)+\overline{\Phi_1(\sigma)}+\overline{\Phi_2(\sigma)}=f_1(\sigma);$$
$$\beta\Phi_1(\sigma)+\delta\Phi_2(\sigma)-\beta\overline{\Phi_1(\sigma)}-\delta\overline{\Phi_2(\sigma)}=f_2(\sigma).$$

As a special case, the two holes are assumed to be circular with a radius equal to unity. This then leads to the expression for the azimuthal stress

$$\sigma_\theta=p+q+2\mathrm{Re}\left[(1-\beta^2)\frac{\sigma^2\Phi_1'(\sigma)}{m_2\sigma^2-m_1}+(1-\delta^2)\frac{\sigma^2\Phi_2'(\sigma)}{n_2\sigma^2-n_1}\right].$$

Curves are drawn to show the effect of the plate anisotropy on the stress distribution. Orig. art. has: 25 equations, 5 tables, and 3 figures.

SUB CODE: 20,13 SUBM DATE: 11Oct65/ ORIG REF: 007

Card 2/2

KUDRYAVTSEV, N.T.; GOLOVCHANSKAYA, R.G.; BARABOSHKINA, N.K.; KOSMODAMIANSKAYA, L.V.

Electrodeposition of titanium-iron and titanium-nickel alloys from aqueous solutions. Zhur. fiz. khim. 39 no.4:870-876 Ap '65. (MIRA 19:1)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva. Submitted Aug. 3, 1963.

L 44199-66 EWT(m)/EWP(j)/T IJP(c) WW/RM

ACC NR: AP6015673 (A) SOURCE CODE: UR/0413/66/000/009/0076/0076

INVENTOR: Lazaryants, E. G.; Aleshin, A. M.; Gromova, V. A.; Zemit, S. V.; Kopylov, Ye. P.; Kosmodem'yanskiy, L. V.; Romanova, R. G.; Troitskiy, A. P.; Tsaylingol'd, V. L.; Shikhalova, K.P.; Shushkina, Ye.N.; Kostin, D. L.

ORG: none

TITLE: Preparation of divinyl-alpha-methylstyrene rubber. Class 39, No. 181294

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 9, 1966, 76

TOPIC TAGS: rubber, methylstyrene rubber, alpha methylstyrene, divinyl

AESTRACT: This Author Certificate introduces a method of preparing divinyl-alpha-methylstyrene rubber by emulsion copolymerization of divinyl with alpha-methylstyrene at 20C and above in thr presence of persulfate initiators and emulsifiers. To increase the polymerization rate and improve the conditions for the granular coagulation of latex, commercial grades of sodium salts of the synthetic fatty acids C_{10}-C_{16}

Card 1/2 UDC: 678.762.2-134.62

L 44199-66

ACC NR: AP6015673

are suggested as emulsifiers in the following composition (%): C_{10}, 5—7; C_{11}, 12—14; C_{12}, 16—17; C_{13}, 15—17; C_{14}, 12—13; C_{15}, 9—10; C_{16}, 7—8; below C_{10} and above C_{16}, 15—20. [Translation]

[LD]

SUB CODE: 11/ SUBM DATE: 12Mar62/

Card 2/2 JS

10.6000

21358
S/021/61/000/011/005/011
D299/D304

AUTHOR: Kosmodamians'kyy, O.S.

TITLE: On the stressed state of an isotropic plate, perforated by a finite number of infinite rows of circular holes

PERIODICAL: Akademiya nauk UkrRSR. Dopovidi, no. 11, 1961, 1444-1448

TEXT: The Bubnov-Galerkin method is applied to solving problems involving perforated plates. It is shown that this method yields a simple and effective solution if the distance between the holes is not large. For simplicity, it is assumed that the holes have the same radius, R = 1, the distances between the centers of holes of one row are equal (denoted by 1); the hole-contours are under similar stresses. Determination of the stressed state involves determination of the functions $\varphi(z)$ and $X(z)$ of a complex variable, from the boundary conditions at the hole contours:

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On the stressed state ...

$$\varphi(t) + (t - \overline{t})\varphi'(t) + \overline{X(t)} = f(t) \qquad (1)$$

where t denotes a point of the contour, and f(t) is a known function which depends on the loading. After φ and X have been determined, the stresses are found by the formulas

$$\sigma_x + \sigma_y = 4\mathrm{Re}\,\varphi'(z),$$

$$\sigma_y - \sigma_x + 2i\tau_{xy} = 2\left[(\bar{z} - z)\,\varphi''(z) - \varphi'(z) + X'(z)\right] \qquad (2)$$

The functions φ and X are sought in the form

$$\varphi(z) = \sum_{k=1}^{\infty}\sum_{n=-\infty}^{\infty}\sum_{m=0}^{p-1}\frac{a_{kp}}{(z - nl - l_m)^k},\quad \chi(z) = \sum_{k=1}^{\infty}\sum_{n=-\infty}^{\infty}\sum_{m=0}^{p-1}\frac{b_{kp}}{(z - nl - l_m)^k} \qquad (3)$$

Card 2/5

On the stressed state ...

Using the Bubnov-Galerkin method in the r-th approximation, the functions (3) are sought in the form:

$$\varphi(z) = \sum_{k=1}^{r} \sum_{n=-\infty}^{\infty} \sum_{m=0}^{p-1} \frac{a_{kp}}{(z - nl - l_m)^k}, \quad \chi(z) = \sum_{k=1}^{r} \sum_{n=-\infty}^{\infty} \sum_{m=0}^{p-1} \frac{b_{kp}}{(z - nl - l_m)^k}. \tag{4}$$

Thereby, one obtains, to determine the coefficients, the algebraic system

$$\int_{L_m} \left[\overline{\varphi}(t) + (T - t)\overline{\varphi'(t)} + \overline{\chi(t)} - f(t) \right] \frac{dt}{(t - l_m)^{\pm k}} = 0$$

$$(m = 0, 1, \ldots, p - 1) \tag{5}$$

Card 3/5

On the stressed state ...

The effectiveness of the method is verified for the case of a plate having one row of equal circular holes. In this case, the function (4) has the form

$$\varphi(z) = \sum_{k=1,3,\ldots}^{r} \sum_{n=-\infty}^{\infty} \frac{a_k}{(z-nl)^k}, \quad \chi(z) = \sum_{k=1,3,\ldots}^{r+2} \sum_{n=-\infty}^{\infty} \frac{b_k}{(z-nl)^k}. \tag{8}$$

The formulas for system (5) in the first- and second approximation are given; in practice, the second approximation is sufficient; hence the third approximation is not given. Further, the stresses which act on the surface elements which are normal to the principal holes (i.e. the holes with centers on the x-axis), are considered. These stresses are expressed by

$$\sigma_\theta = p + q + 4\mathrm{Re}\,\varphi'(\sigma) \tag{14}$$

where $\sigma = e^{i\theta}$ (θ being the polar angle), and φ are functions

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which differ in the various approximations. Formulas for φ' in the first- and second approximation are given. A table shows that the second approximation is sufficient. It is noted that the above method can be extended, without substantial modifications, to the case of a plate with non-circular holes with sufficiently equal contours. There are 4 figures, 1 table and 6 Soviet-bloc references.

ASSOCIATION: Saratovs'kyy derzhavnyy universytet (Saratov State University)

PRESENTED: by Academician H. M. Savin AS UkrRSR

SUBMITTED: June 24, 1961

Card 5/5

S/198/61/007/006/006/008
D299/D301

AUTHOR: Kosmodamians'kyy, O. S. (Saratov)

TITLE: Elastic equilibrium of isotropic plate, having a finite number of curvilinear holes

PERIODICAL: Prykladna mekhanika, v. 7, no. 6, 1961, 663-670

TEXT: A plate with n curvilinear holes is considered, the center of the holes lying on the x-axis. The problem reduces to determining the functions $\varphi(z)$ and $X(z)$ of a complex variable. These functions are expressed by the series

$$\varphi(z)=\sum_{k=0}^{n-1}\sum_{m=1}^{\infty}\frac{a_m^{(k)}}{[\zeta(z-l_k)]^m};\quad \chi(z)=\sum_{k=0}^{n-1}\sum_{m=1}^{\infty}\frac{\beta_m^{(k)}}{[\zeta(z-l_k)]^m}; \qquad (1.2)$$

where

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Elastic equilibrium of ...

$$z - l_k = R_k\left(\zeta + \sum_{k=1} \frac{m_k}{\zeta}\right) \qquad (1.3)$$

l_k denoting the distance between the hole centers, R_k and m_k being constants related to the shape and size of the holes. At the hole contours L_k, the function $\varphi(z)$ can be expressed in the form

$$\varphi(t) = \sum_{m=1}^{\infty} \frac{a_m^{(v)}}{[\zeta(t-l_v)]^m} + \sum_{k=0}^{n-1} \sum_{m=1}^{\infty} \frac{a_m^{(k)}}{[\zeta(t-l_k)]^m}, \qquad (1.4)$$

This function is expanded in a convergent Taylor series and the problem is approximately solved by retaining a finite number of terms. Analogous considerations apply to the function $X(z)$. The functions

Card 2/5

Elastic equilibrium of ...

$$\varphi_\nu^*(\zeta) = \sum_{m=1}^{\infty} \frac{a_m^{(\nu)}}{[\zeta(z-l_\nu)]^m}; \quad \chi_\nu^*(\zeta) = \sum_{m=1}^{\infty} \frac{\beta_m^{(\nu)}}{[\zeta(z-l_\nu)]^m} \tag{1.7}$$

are determined from the boundary conditions. The stresses in the plate are determined in terms of the functions $\varphi(z)$ and $X(z)$. As an example, the stressed state of a plate is considered with 2 similar curvilinear holes. The functions

$$\varphi_1(z) = \sum_{m=1}^{\infty} \frac{(-1)^{k+1}\alpha_m}{[\zeta(z+l)]^m}; \quad \chi_1(z) = \sum_{m=1}^{\infty} \frac{(-1)^{k+1}\beta_m}{[\zeta(z+l)]^m} \tag{2.8}$$

are considered as known; these functions express the influence of the left hole on the stressed state. Applying M. I. Muskhelishvili's method, function (2.8) is expanded in series in the small parameter $\varepsilon = R/2\,l$, and a finite number of terms is retained; hence

Card 3/5

the influence of the left hole on the stressed state in the vicinity of the right hole is not fully taken into account. Retaining terms which contain up to the fourth power of ε inclusive, one obtains

$$\varphi_1(z) = -(z-1)(\alpha_1\varepsilon^2 - 2\alpha_2\varepsilon^3 + 3\alpha_3\varepsilon^4) + (z-1)^2(\alpha_1\varepsilon^3 - 3\alpha_2\varepsilon^4) - \\ - (z-1)^3\alpha_1\varepsilon^4 \qquad (2.9)$$

(with an analogous expression for $X_1(z)$). Further, the normal stresses σ_θ are computed. The results of the computations, for distances between holes equal to the side of a square (approximating the shape of a hole), are listed in a table. The above method was also used for computing the stressed state of a plate with 2 circular holes. From the table and graphs obtained, it is evident that in a plate with 2 holes (as compared to a plate with 1 hole), the stress

KOSMODAMIANSKIY, O.S.

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AUTHORS: Kosmodamians'kyy, O.S., Mehlins'kyy, V.V., and Shvetsov, V.A., (Saratov)

TITLE: Straining an anisotropic plate having a curvilinear hole reinforced by a rigid ring

PERIODICAL: Prykladna mekhanika, v. 8, no, 3, 1962, 237 - 247

TEXT: The stressed state of an anisotropic plate with a curvilinear (elliptic) hole is determined by the small-parameter method, proposed by S.G. Lekhnits'kiy (Ref. 1: Anizotropnye plastinki (Anisotropic Plates), Gostekhizdat, 1957). The function which effects a conformal mapping of the interior of the unit circle onto the exterior of the contour of the anisotropic plate, has 6 terms, viz.:

$$z = \omega(\zeta) = a\left[\frac{1+c}{2}\zeta^{-1} + \frac{1-c}{2}\zeta + \varepsilon\sum_{k=2}^{5} a_k \zeta^k\right]; \qquad (1.2)$$

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Straining an anisotropic plate ...

(c = b/a; a, b are axes). This makes it possible to obtain formulas for the stressed state of a plate with many holes. At infinity, the plate is subjected to uniformly distributed stresses p, which are parallel to the x-axis, and to stresses q, parallel to the y-axis. It is assumed that the deformations are small, that body forces are absent and that Hooke's generalized law applies. It is required to determine the stresses state of the plate in the neighborhood of the contour. The plate is assumed as orthotropic. The stresses σ_x, σ_y, τ_{xy} are expressed by the functions $\Phi_1(z_1)$ and $\Phi_2(z_2)$, where z is a complex variable. The functions Φ are expanded in series in the small parameter ε, and terms, up to second-order, are retained. The boundary conditions are set up. After calculations, one obtains working formulas for the stresses. In the case of an isotropic plate, the problem under consideration has an exact solution. As an example, a plate with a triangular hole is considered. The mapping function is obtained by means of expansions in terms of the Christoffel-Schwartz integral. The authors calculated the stresses which arise in the neighborhood of such holes. The results of the calculation are given in the form of graphs and tables. These lead to the

following conclusions: 1) The presence of a rigid ring reduces sharply the stress concentration near the hole, (as compared to the case where the ring is absent). 2) The stress concentration in an anisotropic plate with a hole, reinforced by a ring, is lower than in an isotropic plate. If the hole is not reinforced, then the converse is true. 3) In the case of a veneer plate with a reinforced hole, the stress concentration is greater if $E_y = E_{max}$ with the strain in the direction of the x-axis, and smaller if $E_y = E_{max}$ with the strain along the y-axis. If the hole is not reinforced by a ring, then the converse is true. There are 5 figures, 4 tables and 6 Soviet-bloc references.

ASSOCIATION: Saratovs'kyy derzhavnyy universytet (Saratov State University)

SUBMITTED: November 17, 1961

X

L 41785-65 EED-2/EWT(d)/EWG(r)/EWT(l)/EWT(m)/FS(v)-3/EWP(w)/EEC(k)-2/EWG(j)/EWG(v)/EWP(v)/T-2/EWG(n)-2/EWP(k)/EWG(c)/EWA(h) Po-4/Pe-5/Pq-4/Pac-4/Pi-4/Pae-2/Peb/Pi-4 TT/EM/GW S/0258/64/004/002/0219/0224

ACCESSION NR: AP4037092

42
B

AUTHOR: Kosmodem'yanskiy, V. A. (Moscow)

TITLE: On multistage rocket design 14

SOURCE: Inzhenernyy zhurnal, v. 4, no. 2, 1964, 219-224

TOPIC TAGS: multistage rocket, powered flight phase, vertical climb, gravitational field, constant thrust, specific flow rate, optimum staging

ABSTRACT: A new system of relationships between the construction parameters of a compound rocket $k_1, k_2, \ldots$ and the optimization of some integral characteristics of the motion (velocity, active stage duration, etc.) has been presented for optimum selection of rocket stages. It is assumed that the thrust is constant and that relative particle ejection velocity per stage V_1^T, V_2^T, ..., the specific flow rate β_1, β_2, ... and k_1, k_2, ... are different for each stage but are constant. The rocket system is designated "nonhomogeneous," and for maximum velocity at the end of the active stage the conditions are derived between k_i and β_i

$$(\partial u_n/\partial k_i) = \beta_{i+1}(1 + k_{i+1}) - \beta_i(1 + k_i) = 0 \quad (i = 1, \ldots, n-1)$$

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where $u = m/m_0$, m - mass of rocket stage, m_0 - starting rocket mass, and between k_i and V_i

$$V_i^r (1 + k_{i+1}) u_i u_{i+1} = V_{i+1}^r (1 + k_i) u_i u_{i+1} \quad (i=1,\ldots,n-1)$$

where $\lambda_{i-1} = V_i^r / V_1^r$. This last equation shows the dependence between the numbers exhibiting the relative masses corresponding to the subrockets. For a fixed flight time in the active stage a maximum active stage duration rocket is considered under zero thrust and air resistance. Calculations are made for a compound rocket with maximum vertical climb in a homogeneous gravitational field leading to the expression

$$\sum (1 + k_i) \frac{u_{i+1-} - u_i}{u_i} + k \ln \frac{u_1}{u_{n+1-}} + \frac{1}{u_1} \left[\frac{u_1}{u_{1-}} \beta \left(\frac{v}{g} + T - t_1 \right) - \right.$$
$$\left. - \frac{u_{i+1}}{u_{i+1-}} \beta \left(\frac{v}{g} + T_1 - t_{i+1} \right) \right] = 0,$$

where T - given flight time and t_i - moment of dead mass separation from i-th stage. A numerical example is given corresponding to the case of a homogeneous two-stage rocket with $V^r = 2000$ m/sec and T = 56.9 sec. The optimum values for u_1, v, S and H are tabulated, where S is the length of the active stage and H is given by

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ACCESSION NR: AP4037092

$$H=\sum_{i=1}^{n} s_i-\frac{gT^2}{2}+\frac{v^2}{2g}$$

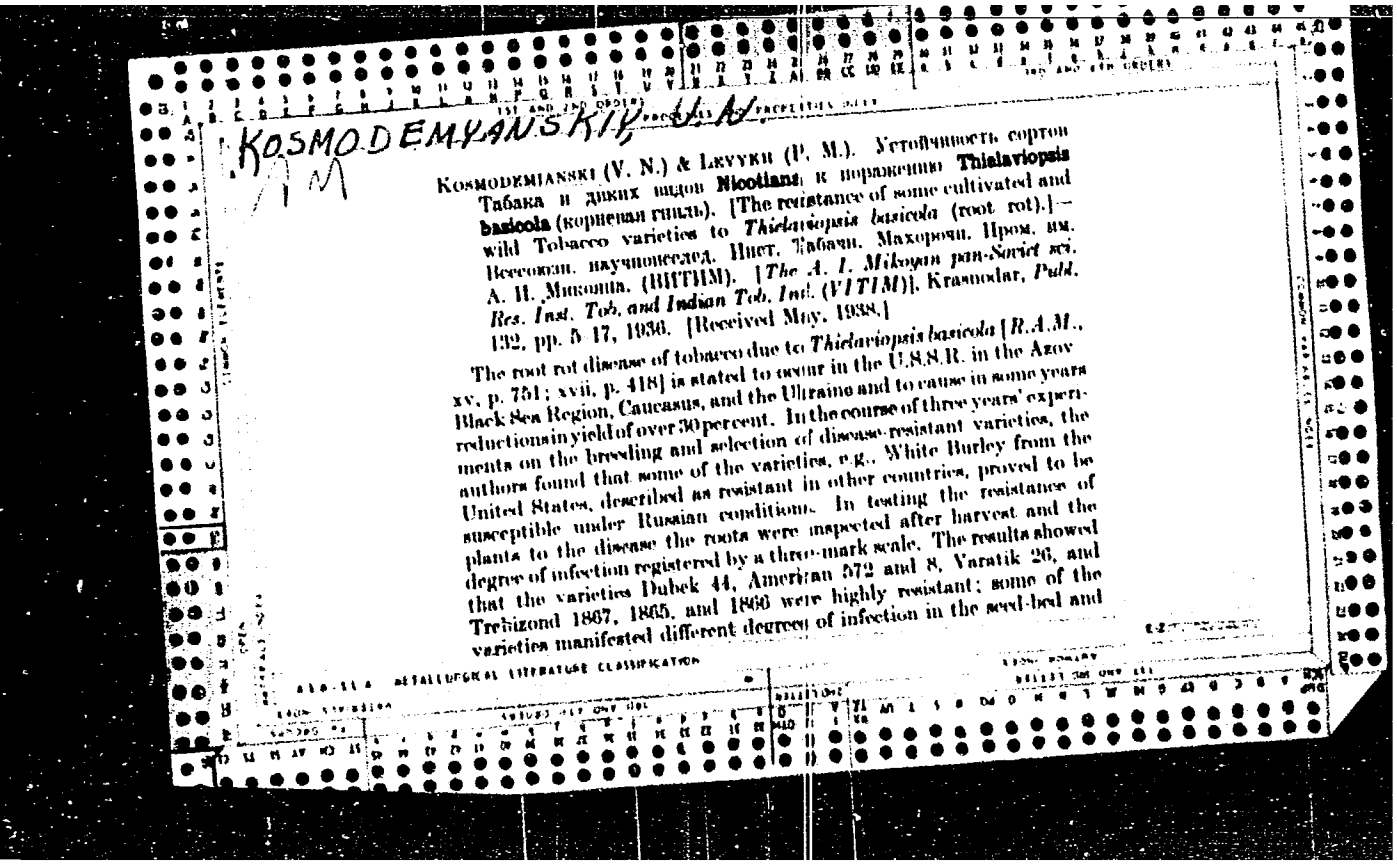
These results show that separation in homogeneous rockets is attained by reaching a maximum S, whereas separation in compound rockets is attained with a maximum in V or H. Orig. art. has: 19 equations, 9 tables, and 1 figure.

ASSOCIATION: none

SUBMITTED: 13Mar63 ENCL: 00 SUB CODE: SV

NO REF SOV: 000 OTHER: 004

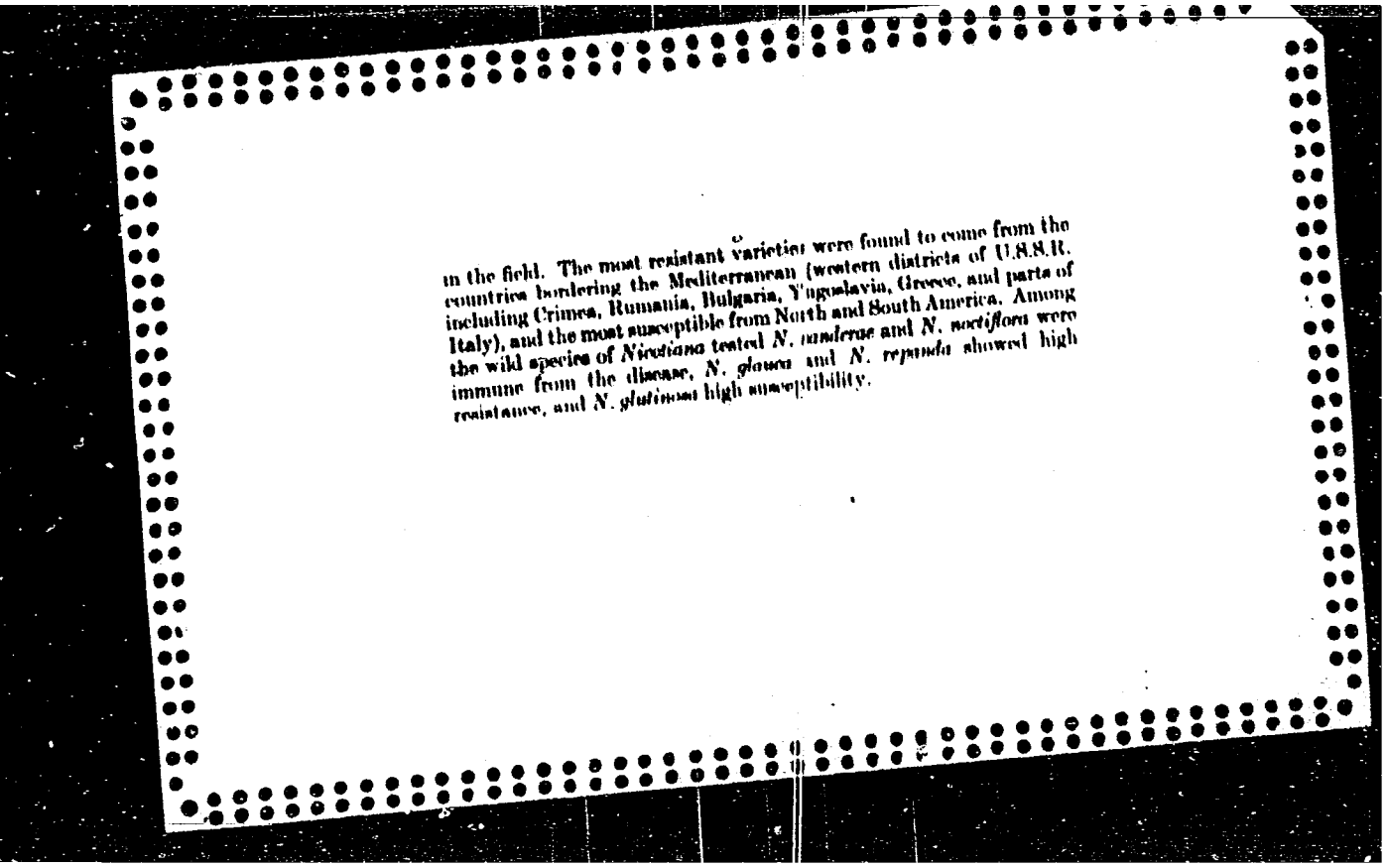
Card 3/3



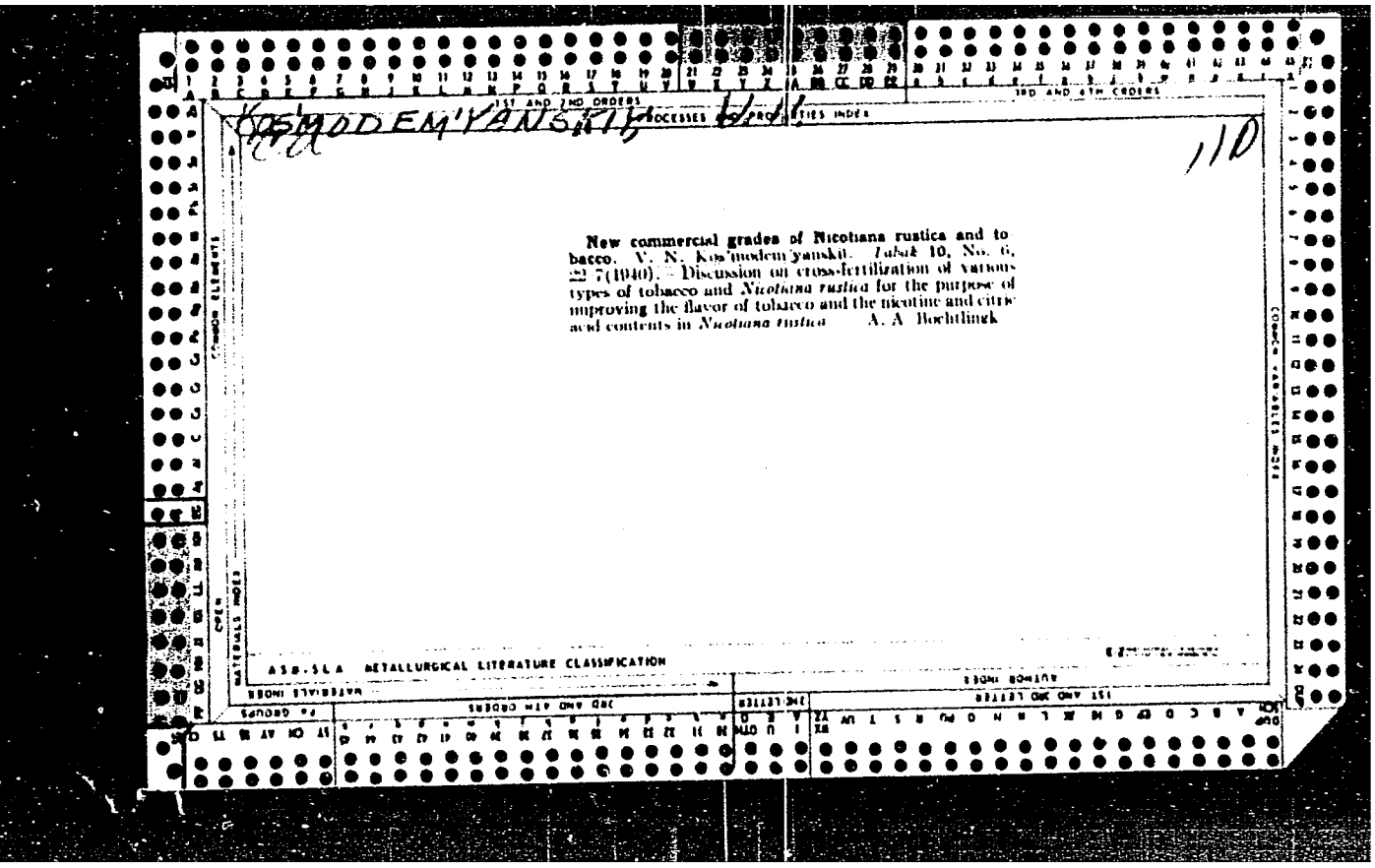
KOSMODEMYANSKIY, V.N.

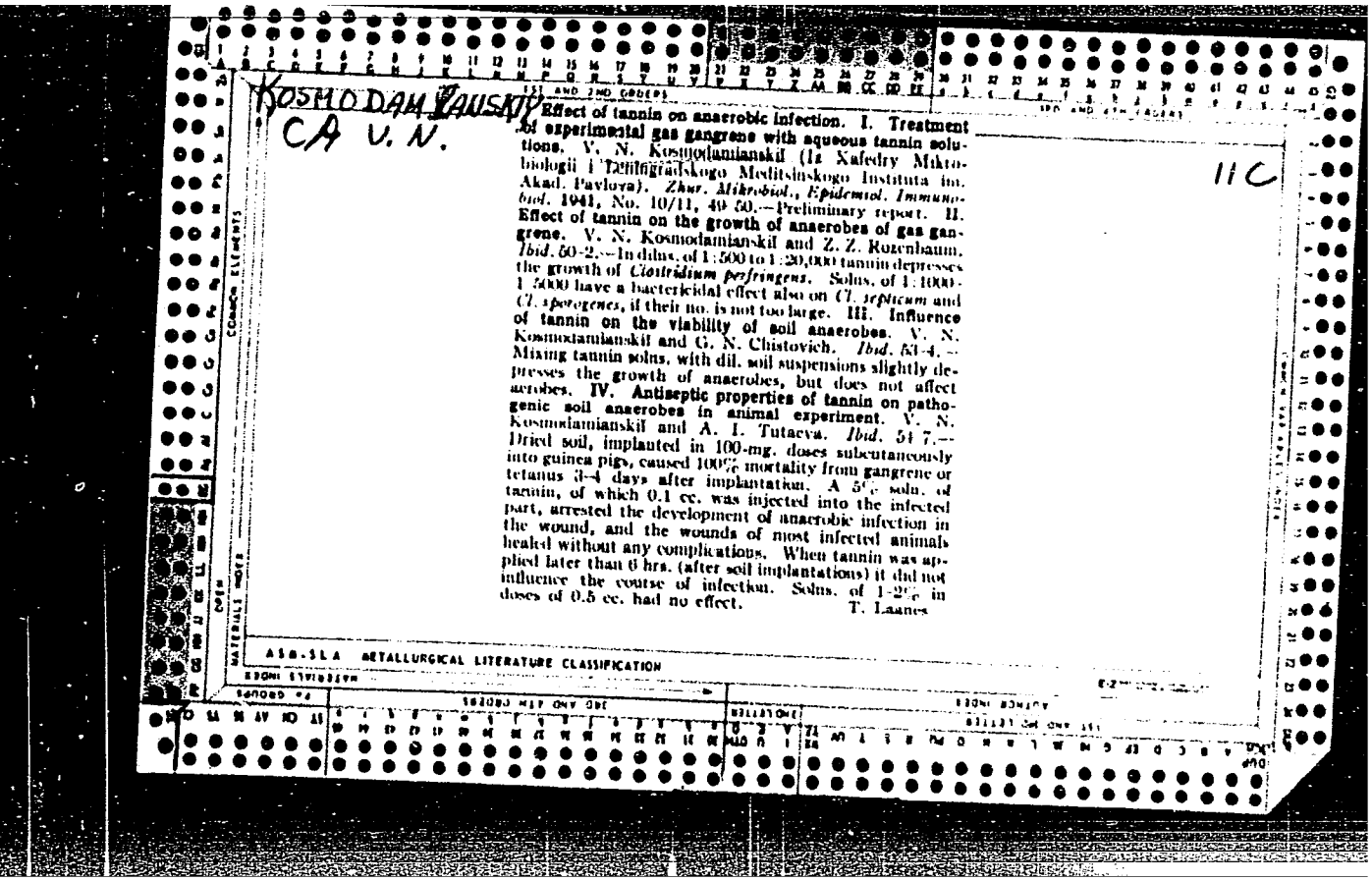
KOSMODEMIANSKI (V. N.) & LEVYKH (P. M.). Устойчивость сортов Табака и диких видов **Nicotiana** к поражению **Thielaviopsis basicola** (корневая гниль). [The resistance of some cultivated and wild Tobacco varieties to *Thielaviopsis basicola* (root rot).]—Всесоюзн. научноисслед. Инст. Табака, Махорки, Прон. им. А. И. Микояна. (ВИТИМ). [*The A. I. Mikoyan pan-Soviet sci. Res. Inst. Tob. and Indian Tob. Ind.* (*VITIM*)]. Krasnodar, *Publ.* 132, pp. 5–17, 1936. [Received May, 1938.]

The root rot disease of tobacco due to *Thielaviopsis basicola* [*R.A.M.*, xv, p. 751; xvii, p. 418] is stated to occur in the U.S.S.R. in the Azov-Black Sea Region, Caucasus, and the Ukraine and to cause in some years reductions in yield of over 30 percent. In the course of three years' experiments on the breeding and selection of disease-resistant varieties, the authors found that some of the varieties, e.g., White Burley from the United States, described as resistant in other countries, proved to be susceptible under Russian conditions. In testing the resistance of plants to the disease the roots were inspected after harvest and the degree of infection registered by a three-mark scale. The results showed that the varieties Dubek 44, American 572 and 8, Yaratik 26, and Trebizond 1867, 1865, and 1866 were highly resistant; some of the varieties manifested different degrees of infection in the seed-bed and



in the field. The most resistant varieties were found to come from the countries bordering the Mediterranean (western districts of U.S.S.R. including Crimea, Rumania, Bulgaria, Yugoslavia, Greece, and parts of Italy), and the most susceptible from North and South America. Among the wild species of *Nicotiana* tested *N. undulata* and *N. noctiflora* were immune from the disease, *N. glauca* and *N. repanda* showed high resistance, and *N. glutinosa* high susceptibility.





KOSMODAMIANSKII, V. N.
CA V. N.

IIC

Effect of tannin on anaerobic infection. I. Treatment of experimental gas gangrene with aqueous tannin solutions. V. N. Kosmodamianskii (Iz Kafedry Mikrobiologii i Leningradskogo Meditsinskogo Instituta im. Akad. Pavlova). *Zhur. Mikrobiol., Epidemiol. Immunobiol.* 1941, No. 10/11, 49-50.—Preliminary report. **II. Effect of tannin on the growth of anaerobes of gas gangrene.** V. N. Kosmodamianskii and Z. Z. Rozenbaum. *Ibid.* 50-2.—In dilns. of 1:500 to 1:20,000 tannin depresses the growth of *Clostridium perfringens*. Solns. of 1:1000-1:5000 have a bactericidal effect also on *Cl. septicum* and *Cl. sporogenes*, if their no. is not too large. **III. Influence of tannin on the viability of soil anaerobes.** V. N. Kosmodamianskii and G. N. Chistovich. *Ibid.* 53-4.—Mixing tannin solns. with dil. soil suspensions slightly depresses the growth of anaerobes, but does not affect aerobes. **IV. Antiseptic properties of tannin on pathogenic soil anaerobes in animal experiment.** V. N. Kosmodamianskii and A. I. Tutaeva. *Ibid.* 54-7.—Dried soil, implanted in 100-mg. doses subcutaneously into guinea pigs, caused 100% mortality from gangrene or tetanus 3-4 days after implantation. A 5% soln. of tannin, of which 0.1 cc. was injected into the infected part, arrested the development of anaerobic infection in the wound, and the wounds of most infected animals healed without any complications. When tannin was applied later than 6 hrs. (after soil implantations) it did not influence the course of infection. Solns. of 1-2% in doses of 0.5 cc. had no effect.

T. Laanes

A58-3LA METALLURGICAL LITERATURE CLASSIFICATION

[illegible]EVINSKIY, V.I.

Bacteriology and pathogenesis of tuberculosis. (Leningrad) Medgiz. 1950. 132 p.

KOSMODAMYANSKIY, V. N.

"Recollections of Academician D. K. Zabolotnyy", (Lecture to the Scientific Conference of the Leningrad Division of the All-Union Society of Microbiologists, 12 January 1950), Zhur Mikrobiol, Epidemiol i Immunobiol, No. 1, pp 15-18, 1950.

Kosmodamianskii, V. N.

KOSMODAMIANSKII, V. N.

Effect of penicillin and other antibiotics on tubercle bacilli. Probl. tuberk., Moskva No. 3, May-June 50. p. 20-6

1. Of the Department of Microbiology, First Leningrad Medical Institute imeni Academician Pavlov and of the Bacteriological Laboratory LIKhT.

CIIL 19, 5, Nov., 1950

KOSHODAMYANSKIY, V. N.

"Recollections of Academician D. K. Zabolotnyy" (Lecture to the Scientific Conference of the Leningrad Division of the All-Union Society of Microbiologists, 12 January 1950), Zhur Mikrobiol, Epidemiol I Immunobiol, 1951, No. 1

Mikrobiologiya, Vol XX, No. 5, 1951.
[redacted]-W-24635.

KOSMODAMIANSKIY, V. N.

KOSMODAMIANSKIY, V. N.

USSR/Medicine - Cholera, Typhoid, Diphtheria

FD 162

Card 1/1

Author : Kosmodamianskiy, V. N., Chernov, N. V., and Suvalova, Ye. P.

Title : Koz'ma Trofimovich Glukhov, 1879 - 1953. Obituary

Periodical : Zhur. mikrobiol. epid. i immun. 5, 85-86, May 1954

Abstract : On December 6, 1953, Koz'ma Trofimovich Glukhov, Head of the Chair of Infectious Diseases of the First Leningrad Medical Institute imeni I. P. Pavlov, member of the CPSU, Doctor of Medical Sciences, died in Leningrad. A biographical sketch of his life and work is given. He worked on many infectious diseases, primarily, cholera, typhoid and diphtheria.

Institution :

Submitted :

KOSMODAMYANSKIY, V.N., redaktor

[Intestinal infections; problems in bacteriology, immunology, and therapy of typhoid fever and dysentery] Kishechnye infektsii; voprosy bakteriologii, immunologii i kliniki briushnogo tifa i dizenterii. [Leningrad] Medgiz, 1956. 198 p. (MLRA 9:11)
(TYPHOID FEVER) (DYSENTERY)

KOSMODAMIANSKIY, V.N.; KLIMASHEVSKAYA, V.F.

Effect of soluble saluzid on Mycobacterium tuberculosis [with summary in French]. Probl.tub. 37 no.1:88-93 '59. (MIRA 12:2)

1. Iz kafedry mikrobiologii I Leningradskogo meditsinskogo instituta.
(MYCOBACTERIUM TUBERCULOSIS, eff. of drugs on,
isoniazid (Rus))
(ISONIAZID, effects,
on M. tuberc. (Rus))

KOSMODAMIANSKIY, V.N.

The concept of enteral immunization in intestinal infections and its development in the U.S.S.R. Zhur.mikrobiol.epid. i immun. 28 no.11:70-76 N '57. (MIRA 11:3)

1. Iz kafedry mikrobiologii I Leningradskogo meditsinskogo instituta.
(GASTROINTESTINAL DISEASES, prevention and control, enteral vacc., progr. in Russia (Rus)
(VACCINES AND VACCINATION, enteral vacc. against gastrointestinal dis., progr. in Russia (Rus)

BUNINA, B.Z., prof.; DRABKINA, R.O., prof.; KLEBANOVA, A.A., kand. biolog.nauk; KOSMODAMIANSKIY, V.N., prof.; MODEL', L.M., prof.; RABUKHIN, A.Ye., prof.; STRUKOV, A.I., prof.; STUKALO, I.T., prof.; TIMASHEVA, Ye.D., kand.med.nauk; CHISTOVICH, A.N., prof.; SHMELEV, N.A., prof.; EYNIS, V.L., prof., zasluzhennyy deyatel' nauki, otv. red., red.toma; KORNEV, P.G., prof., red.; KUDRYAVTSEVA, A.I., prof. [deceased], red.; LEBEDEVA, Z.I., kand.med.nauk, red.; LAPINA, A.I., red.; MASSINO, S.V., doktor med.nauk, red.; SHEBANOV, F.V., prof., zasluzhennyy deyatel' nauki, red.; SENCHILO, K.K., tekhn.red.

[Multivolume handbook on tuberculosis] Mnogotomnoe rukovodstvo po tuberkulezu. Moskva, Gos.izd-vo med.lit-ry. Vol.1. [General problems in tuberculosis] Obshchie problemy tuberkuleza. Red. toma: V.L.Einis, A.I.Strukov. 1959. 672 p. (MIRA 13:6)

1. Chlen-korrespondent AMN SSSR (for Strukov, Shmelev). 2. Deystvitel'nyy chlen AMN SSSR (for Kornev).
(TUBERCULOSIS)

KOSMODEMYANOV, YE. A.

Dissertation: "Investigation of the Influence of the Unsettled Character of a Load on the Dynamic and Economic Indexes of the D-35 Engine Operating With Overloading." Cand Tech Sci, Moscow Inst of Mechanization and Electrification of Agriculture, Moscow, 1953. (Referativnyy Zhurnal--Mekhanika, Moscow, Apr 54)

SO: SUM 243, 19 Oct 1954

KOSMODEM'YANSKA, G. V.

"Thermochemical Investigations of Certain Peroxide Compounds of Molybdenum and Wolfram." Cand Chem Sci, Moscow Order of Lenin Stat U imeni M. V. Lomonosov, 29 Dec 54. (VM, 21 Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

AUTHORS: Kosmodem'yanskaya, G. V., Khomyakov, K. G.

SOV/156-58-3-6/52

TITLE: The Investigation of the Kinetics of the Decomposition of Solid Permolybdates (Izucheniye kinetiki raspada tverdykh permolibdatov)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 3, pp. 426-429 (USSR)

ABSTRACT: The authors devised a method to investigate the kinetics of the decomposition of the red permolybdate $Na_2MoO_8 \cdot 4H_2O$ under isothermal conditions. The decomposition of the red permolybdate can be classified to the type of reaction: solid 1 = solid 2 + gas. This reaction is governed by the rules deduced for topochemical reactions. It was shown that a decrease in the water of hydration in the permolybdate leads to its becoming more stable. Only 2 of the 4 molecules of water can be removed without liberating active oxygen. The kinetics of the decomposition of the yellow permolybdate $Na_2MoO_6 \cdot H_2O$ were investigated; it is assumed that the

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decomposition of the yellow permolybdate takes place in two stages. The experiments were carried out in a calorimeter, which is shown in a scheme. The experimental arrangement is discussed. The active oxygen was determined volumetrically. The experimental results are shown in three diagrams. There are 4 figures and 7 references, 6 of which are Soviet.

ASSOCIATION: Kafedra obshchey khimii Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Chair of General Chemistry of Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 29, 1957

5(2) SOV/78-4-10-11/40

AUTHORS: Kosmodem'yanskaya, G. V., Khomyakov, K. G.

TITLE: Determination of Dehydration Heat of Some Per-compounds and Crystal Hydrates of Molybdenum-6

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 10, pp 2242-2243 (USSR)

ABSTRACT: N. I. Kobozev and N. N. Sokolov (Ref 1) investigated the thermal efficiency of the decomposition of permolybdates in acid permanganate solution and assumed the heat of dehydration to be equal to zero. In order to check this assumption the dehydration heat was measured in the vacuum. This experiment is described in detail. The dehydration heats of $Na_2MoO_4 \cdot 2H_2O$ and $Na_2WO_4 \cdot 2H_2O$ at 65° were found to be 5.33 kcal and 5.04 kcal, respectively. The heat of dehydration of $Na_2MoO_8 \cdot 4H_2O$ had to be measured at 28°, since the permolybdate decomposes at higher temperature. This compound can give off only 2 moles H_2O without loss of active oxygen. The dihydrate $Na_2MoO_8 \cdot 2H_2O$ not yet described was obtained. The dehydration heat of the tetra-

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Determination of Dehydration Heat of Some Per-compounds and Crystal Hydrates of Molybdenum-6

hydrate was determined to be 2.4 kcal (on separation of 2 moles water). The permolybdate $Na_2MoO_8 \cdot 2H_2O$ differs considerably from the tetrahydrate. At higher temperature the active oxygen is separated under explosion. The fact that the water cannot be completely removed from the permolybdate without destroying the molecule permits the conclusion that the compounds investigated really are perhydrates and not genuine peroxides. The yellow permolybdate $Na_2MoO_6 \cdot H_2O$ can be obtained by hydrolysis of the red $Na_2MoO_8 \cdot 4H_2O$, but not from $Na_2MoO_8 \cdot 2H_2O$. There are 2 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova, Khimicheskiy fakul'tet, Kafedra obshchey khimii (Moscow State University imeni M. V. Lomonosov, Chemical Department, Chair of General Chemistry)

SUBMITTED: February 20, 1958

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5(2), 5(4) SOV/78-4-11-3/50

AUTHORS: Kosmodem'yanskaya, G. V., Khomyakov, K. G.

TITLE: The Indirect Method of Determining the Decomposition Heat of Some Peroxide Compounds of Molybdenum

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 11, pp 2428-2431 (USSR)

ABSTRACT: N. I. Kobozev and N. N. Sokolov (Ref 1) dealt with the indirect determination of the thermal effect of the decomposition of permolybdates and have found that direct determination was not possible. The authors will soon describe the direct determination made by them. They also repeated Kobozev's and Sokolov's experiments, the calculation rendered more precise by taking account of the dehydration heat and other corrections, which forms the subject of this article. The calorimeter is described in which the permolybdates were decomposed by means of $KMnO_4$. The authors investigated the reaction $Na_2MoO_8 \cdot 4H_2O_{solid} = Na_2MoO_4$ dissolved $+ 4H_2O_{liquid} + 2O_2$ gaseous $+ Q_3$. Red permolybdate could not be prepared in pure state because of its

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The Indirect Method of Determining the Decomposition Heat of Some Peroxide Compounds of Molybdenum

instability. It decomposes into the ordinary molybdate so that experiments were made with a mixture of $Na_2MoO_8 \cdot 4H_2O$ and $Na_2MoO_4 \cdot 2H_2O$, the content of the individual components being unknown at first. The recalculation of the resultant thermal effects to pure permolybdate is demonstrated. Experimental results are listed in table 1. The authors determined the thermal effect Q_3 of the almost pure permolybdate with recalculation to the pure compound and consideration of the different water content and the thermal effect of decomposition of the yellow permolybdate (= 37.3 kcal). The value Q_3=77.9 kcal was obtained for red permolybdate. Figure 1 shows that the thermal effect of decomposition of red permolybdates is proportional to their oxygen content. There are 1 figure, 1 table, and 5 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova, Khimicheskiy Fakul'tet, Kafedra obshchey khimii (Moscow State

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The Indirect Method of Determining the Decomposition Heat of Some Peroxide Compounds of Molybdenum

University imeni M. V. Lomonosov, Chemical Department, Chair of General Chemistry)

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AUTHORS: Kosmodem'yanskaya, G. V., Khomyakov, K. G.

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ABSTRACT: The authors underline the advantages of direct determination of the thermal effect over the indirect one. They describe the copper calorimeter in which the reaction was carried out and the temperature was measured by means of a thermocouple. Experimental data on red sodium permolybdate are listed in table 1. Decomposition heat is 45.70 kcal. Decomposition temperatures, reaction equations and thermal effects of $Na_2MoO_8.2H_2O$ (= 57.70 kcal), $Na_2MoO_6.H_2O$ (= 15.40 kcal), $Na_2WO_8.2H_2O$ (= 47.13 kcal), and $Na_2WO_6.H_2O$ (= 8.60 kcal) are given in table 2. Table 3 contains the bond energies of the ions MoO_4^{2-} and WO_4^{2-} with active oxygen atoms. The values of permolybdates

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obtained by indirect determination are in good agreement with the values of the direct method. Experiments have shown that active oxygen was separated at a temperature which was the lower the higher was the oxygen- and water content of the peroxide. The effect of water may be attributed to hydrolysis. N. I. Kobozev's and N. N. Sokolov's assumption on the structural conditions of intramolecular recombination of active oxygen atoms (Ref 1) is supposed to be correct in principle. There are 3 tables and 7 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova, Khimicheskiy fakul'tet, Kafedra obshchey khimii (Moscow State University imeni M. V. Lomonosov, Chemical Department, Chair of General Chemistry)

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