Zhukov, Aleksey Mikhaylovich

Narezaniye rez'by (Thread Cutting) Kiyev, Mashgiz, 1957. 145 p
9,000 copies printed.

Reviewer: Rodin, P. R., Candidate of Tech. Sciences, Docent;
Ed.: Dumpe, V. E., Candidate of Tech. Sciences, Docent;
Ed. of Publishing House: Soroka, M. S.; Tech. Ed.:
Rudenskiy, Ya. V.; Corrector: Gornostaypol'skaya, M. S.

PURPOSE: This book is intended for engineering and technical personnel, and for skilled workers in M.T.S. (Machine Tractor Station) machine shops, as well as interregional workshops for general overhauling and maintenance of tractors, automobiles, agricultural machinery, etc.

COVERAGE: This book contains information on practices employed by progressive workers in cutting threads on thread-cutting lathes. Features of various types of threads are described and the most efficient methods of cutting, as well as practices in cutting with cutters, screw taps, and threading dies are reviewed. Problems associated with designing,

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fabricating and sharpening of thread-cutting tools are discussed. A description tool-set-up for the most commonly used thread-cutting lathes and attachments is given. There are 31 references, 23 of which are Soviet and 8 English.

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Zhukov, A. M.

AUTHOR: Zhukov, A. M. (Moscow) 24-9-9/33

TITLE: Mechanical properties of the magnesium alloy MA2 in the case of two axial tensile stresses. (Mekhanicheskiye svoystva splava MA2 pri dvukhosnom rastyazhenii).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.9, pp.56-75 (USSR)

ABSTRACT: In a recent paper (Ref.6) Martinova, T.N. attempted unsuccessfully to improve the accuracy of the theory of small elastic-plastic deformations applicable to certain metastable metals; she carried out separate tensile, compression and torsion tests on specimens of Y10, Д 16T, MA3 and MA5. alloys; the alloy specimens were subjected to hardening and the steel specimens to hardening and low temperature tempering. The results obtained by this author indicate that the $\sigma_i = \sigma_i(\varepsilon_i)$ curves are not in agreement and this is attributed to the metastable nature of the investigated metals. The author of this paper argues that the main conclusion of Martinova relating to the applicability of the theory of small elastic-plastic deformations for metastable metals is unjustified. The aim of the here described experiments was to study the plastic deformations of the magnesium alloy MA2 in the

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case of a complex stress state and to elucidate the conditions of fracture and also the causes of disagreement between theoretical and experimental results. The experiments were effected with rods of 50 mm dia. in the as delivered state. From these, cylindrical specimens of 6 mm dia. were produced which were cut from the rods in the longitudinal, transverse and oblique (45°) position. The results are described in detail and plotted in graphs. The author arrives at the following conclusions: the MA2 alloy is anisotropic in the as delivered state; for this material the plasticity conditions can be assumed valid:

$\sigma_{\theta} = \sigma_{\theta s}$ in the case of $\frac{\sigma_{\theta}}{\sigma_{\theta s}} > \frac{\sigma_z}{\sigma_{zs}} > 0$,

$\sigma_z = \sigma_{zs}$ in the case of $\frac{\sigma_z}{\sigma_{zs}} > \frac{\sigma_{\theta}}{\sigma_{\theta s}} > 0$;

the hardening of the alloy $\sigma_i = \sigma_i(\varepsilon_i)$ depends on the type of its stress state, i.e. it is due to the anisotropy

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of the alloy; the conditions of fracture in the case of bi-axial tension can be expressed by the following relations:

$$\sigma_\theta = \sigma_{\theta b} \text{ in the case of } \frac{\sigma_\theta}{\sigma_{\theta b}} > \frac{\sigma_z}{\sigma_{zb}} > 0,$$

$$\sigma_z = \sigma_{zb} \text{ in the case of } \frac{\sigma_z}{\sigma_{zb}} > \frac{\sigma_\theta}{\sigma_{\theta b}} > 0.$$

Acknowledgments are made to M. G. Shtarkova, Ye. I. Dmitriyev and G. S. Andreychenko for their participation in the experiments and to S. D. Vyalukhin, M. A. Kryukov and N. K. Yugov of the Mechanics Institute, Ac.Sc. (Institut Mekhaniki AN SSSR) for evaluating the experimental data.

There are 7 figure and 9 references, 7 of which are Slavic.

SUBMITTED: March 26, 1956.

Comments to the above by Kishkin, S. T. (pp.65-69)

Contrary to the views of various authors, A. M. Zhukov assumes that the St. Venant or Mises plasticity

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conditions are valid under all circumstances in the case of materials which are isotropic and free from internal stresses. According to him, only anisotropy or internal stresses can cause deviations from the here mentioned plasticity theory; the ability of an alloy to undergo physical and chemical transformations during plastic deformation should not affect the shear resistance. These views cannot be accepted, not only because the experimental results of Zhukov himself do not give any justification for such views, but also because these results are in disagreement with extensive experimental results accumulated during a number of years in numerous laboratories concerned with testing strength. In this respect the results of Bridgman (Ref.10) are quoted who observed a considerable increase of the shear strength as a result of applying a sufficiently high hydrostatic pressure even in the case of annealed steel which has not been subjected to transformations during plastic deformation. Furthermore, numerous results have shown that the physico-chemical transformations during plastic

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deformation of metastable alloys may proceed differently, depending on the type of the stress state. Many alloys with a metastable structure which are practically isotropic may show considerable differences, even when comparing yield points in the case of uniaxial tension or compression. It is pointed out that only understanding of the processes of formation and dissolution of the hardening phases during alloying, heat treatment and of the processes occurring during deformation enables the development of high strength alloys, including high temperature alloys. Therefore, from the practical point of view the most valuable plasticity theory will be that which is able to take into consideration the metastable structural state of the alloy and its change as a function of the loading conditions.
There are 2 tables, 3 figures and 17 references, 10 of which are Slavic.

Author's reply to the above comments. (pp.70-75)

The theory of small elastic-plastic deformations is based on the following three laws:

Card 5/7 1. Volume deformation complies with the Hook law,

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2. Directional tensors of the stresses and strains are equal,
3. Intensity of the stresses σ_i is a function of the intensity of the strains ε_i, which does not depend on the type of the stress state.

In addition, it is assumed that in the initial state, the material is isotropic. For isotropic metals, these laws have been confirmed with sufficient reliability and particularly for the case of simple loading; the theory based on these is in good agreement with experimental results. S. T. Kishkin is mainly concerned with opposing the third mentioned law; he does not establish any relation between the stresses and strains and does not consider at all relations derived by means of existing theories; he does not distinguish between the conditions of plasticity and the theory of plasticity. In his reply A. M. Zhukov quotes work originally quoted by Kishkin, i.e. work of S. I. Ratner, of I. N. Vinogradov and Yu. I. Yagn, Yu. I. Yagn, I. A. Chaplinskiy, T.N.Martynova and also the work of Ya. B. Fridman and S. I. Ratner and the results of I. P. Lipilin; Zhukov claims to prove that Kishkin has not put forward any argument concerning the

AUTHOR: Zhukov, A.M.

TITLE: On certain errors in the work of I. I. Tarasenko. (O nekotorykh oshibkakh v rabotakh I. I. Tarasenko).

24-12-22/24

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.12, pp.93-95 (USSR)

ABSTRACT: Some ideas expressed by I. I. Tarasenko in his article "On the Conditions of Disruption of Metals" (Zhurn.Tekh. Fiz., Vol.21, No.11, 1951) and in later work (Refs.11 and 12) are severely criticised. It is stated that the results of various authors lead to the conclusion that observed differences in the yield point in tension and compression are basically due to the residual stresses produced in the metal by various technological operations and certain types of heat treatment and that the views expressed by Tarasenko on the theory of small elastic-plastic deformations are erroneous and unjustified. There are 15 references, 14 of which are Slavic.

SUBMITTED: February 18, 1957.

AVAILABLE: Library of Congress.

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ZHUKOV, A.M., Doc Phys-Math Sci—(diss) "Plastic deformations and destruction of metals in the complex stress state." Mos, Publishing House of the Acad of Sci USSR, 1958. 7 pp (Acad Sci USSR. Inst of Mechanics), 160 copies. List of author's works at end of text (12 titles)

(KL,45-58, 140)

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AUTHOR: Zhukov, A. M. (Moscow) SOV/24-58-5-20/31

TITLE: On the Conditions of Failure of Plastic Metals in the Case of Combined Stress States (Ob usloviyakh razrusheniya plastichnykh metallov pri slozhnom napryazhennom sostoyanii)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 5, pp 110-115 (USSR)

ABSTRACT: Of the multitude of experimental results, those of Morikav and Griffiths, carried out on tubular specimens of steel similar to the Soviet "Steel 25", are of greatest interest. Under conditions of biaxial tension, they investigated eleven specimens under four different ratios of the main stresses. The maximum deviation from the average value τ_{max} at which the specimens failed did not exceed 10.5%. Marin and Sauer (Ref 4) investigated biaxial tension of tubular specimens made of the aluminium alloy 14S-T6 and their results confirmed the failure condition $\sigma_{max} = \sigma_b$, σ_b being the strength in the case of pure tension. On the basis of experimental results in biaxial tension brought about by internal pressure

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and an axial force for specimens made of Cr-Ni steel (Ref 5), EI-415 steel and 30KhNZA steel, it was found that the condition $\sigma_{max} = \sigma_b$ is in good agreement with experimental results. Since in the quoted experiments the third main stress in the wall of a very thin tubular specimen was negligibly small compared with the other two main stresses, this condition is equivalent to the condition $\tau_{max} = \sigma_b/2$. In these experiments the range of ratios of the main stresses was relatively large. On the basis of the here mentioned results and evaluation of the results of other authors, particularly of L. W. Hu (Ref 9), it is concluded that the failure of plastic metals under conditions of combined loading complies with the theory of maximum tangential stresses. There are 1 table and 12 references, 8 of which are Soviet, 4 English.

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Comments to the article by Yu. I. Yegn

Zhukov tries to show that the correct solution of the appropriate mathematical expression yields the criterion III of the strength theory. He considers particularly indicative the experimental results of Hu and it is to the analysis of these results that the article of Zhukov is mainly devoted. Since in the work of Hu data on deformation are given only for one direction (for the tangential direction), the author of this remark considers inadmissible the view of Zhukov who repudiates the conclusions of Hu on the influence of the average normal stress on the magnitude of the limit plasticity of the material. Although the work of Zhukov is very interesting, it still requires very careful processing of the test results and very accurate evaluation of the accuracy with which such results can be approximated by the criteria of various strength theories.

Reply by the author to the above comments

Card 3/4 The author emphasizes that the data entered in the table, p 112 prove adequately the conclusions made in the paper.

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Yagn defends that part of the work of Hu in which he evalutes the plasticity of the metal under combined loading from the deformation in one of the main directions. The case of a thin walled tube subjected to internal pressure shows that this is inadmissible; in this case the axial stress is half of the anular stress, the axial plastic deformation is zero up to the instant of failure, whilst the anular deformation is very large. If in this case the axial deformation is taken as an indication of the plasticity, it would be concluded that the metal undergoes brittle failure, whilst in reality a high degree of deformation in the anular direction precedes the failure.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics, AS USSR)

SUBMITTED: December 1, 1956

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AUTHOR: Zhukov, A. M. (Moscow) SOV/24-58-8-6/37

TITLE: Some Aspects of the Neutral Stressing Curve (Yield Curve) (Nekotoryye osobennosti krivoy neytral'nogo nagruzheniya)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 8, pp 32-40 (USSR)

ABSTRACT: In the flow theory of plasticity the relationship between strains and stresses is given by

$$d\varepsilon_{ij}'' = H \frac{\partial f}{\partial \sigma_{ij}} df$$

where ε_{ij}'' is the plastic strain tensor,

σ_{ij} is the stress tensor,

H (in general case) is a scalar function depending on stress and strain components and the history of loading, with the boundary condition that $d\varepsilon_{ij} = 0$ for $df \leqslant 0$.

Function f is called the plastic potential or the stress function. The surface $f = 0$ in the principal stresses $(\sigma_1, \sigma_2, \sigma_3)$ space separates the region of stress state where only elastic strain can exist from the region of stress state

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where additional plastic strains are possible. For this reason the surface $f = 0$ is called the yielding surface or the neutral stressing surface. In a two-dimensional state of stressing this surface reduces to a curve. Marin and Hu investigated some problems relating to the yield curve for biaxial state of stressing (Refs.1,2 and 4), their tests being carried out on tubular specimens. These tests were made with the following objectives: to determine whether plastic deformation requirements as predicted by the slip theory were correct, to check the validity of the distortion energy criterion as used in the simple flow theory and to obtain experimentally the yield curve for the case of biaxial tension. From these investigations they concluded that their results were in poor agreement with the simple flow theory but in approximate agreement with the slip theory. This conclusion does not appear fully proved inasmuch as they have not proved that the starting point in their method of successive partial de-loading and up-loading was indeed the corner point of the ellipse. They have only shown that the branch of the

 yield curve they obtained in their tests did not coincide

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with either the Huber-Mises ellipse or St. Venant square which pass through that particular starting point. To check whether that starting point is really the corner point some tests were carried out by Zhukov on specimens made of steel 30KhNZA subjected to biaxial tension. The specimens being essentially isotropic (purely axial tension $\sigma_{zs} = 88.3$ kg/mm^2, purely radial tension $\sigma_{\theta s} = 87.5$ kg/mm^2) they were loaded along the path $\sigma_\theta = \sigma_z$ up to the yield point and then along the ellipse passing through the final point of the straight line loading. During the elliptic path of loading $k = \sigma_z/\sigma_\theta$ varied from 1.0 to 1.91 and both the elastic and total strains were measured all the time. Comparing the increments of purely elastic strains with increments of the total strains, it was found that from the very beginning of the elliptic loading path there was plastic strain present. Thus, it follows that the ellipse does not represent the yield curve and, therefore, the flow theory based on an arbitrary stress curve σ_i as the plastic potential cannot agree with practical results.

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Because of isotropy of the specimens made of steel 30KhNZA the yield curve ought to be symmetrical with respect to the straight line $\sigma_\theta = \sigma_z$ in the case of biaxial tension (in the case of combined tension and subsequent torsion it should be symmetrical with respect to the axis $\tau_{z\theta} = 0$, while in the case of torsion followed by tension with respect to the axis $\sigma_z = 0$). This means that it should be tangent to the corresponding ellipse. All available experimental data show that this tangency does not occur. Hence it might appear that the starting point in the combined stressing process is a singular point. Indeed, some investigators linked this singularity with the presence of the corner point, forgetting that in the plastic region there are time effects (creep, relaxation) even at room temperatures. A. A. Ilyushin in his critical appraisal of Marin's and Hu's paper (Ref 4) drew attention to these time effects as well as to the fact that if a material is once stressed beyond the yield point and the load is then removed, the linear part of the stress strain relation in the subsequent process of

 stressing has markedly different slope from that of the

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original curve. These properties might have influenced the shape of the yield curve obtained by Marin and Hu in their experiments which consisted of a series of partial unloading and subsequent uploading. The presence of the curvilinear portion on the stress strain curve round the yield point makes it difficult to detect accurately the very onset of the plastic deformations during such up-loading steps, since they might be confused with the non-linear elastic deformation and this might result in a substantial error. The object of the present investigation was, therefore, to attempt to determine the yield curve in the case of biaxial tension, as well as tension and torsion combined, under conditions of no time effects being present and no intermediate states of stressing being developed. Biaxial tension experiments were made on tubular specimens of technically pure aluminium of R/δ between 9.4 and 11. The method employed was as follows: each specimen was strained by internal pressure p to $\varepsilon_\theta \approx 0.02$ and then completely unloaded. Next loading was such that p and the axial force P increased proportionally to each other.

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Strains were calculated from the relations:

$$\varepsilon_\theta = \frac{c_3}{D}, \quad \varepsilon_z = \frac{c_1 + c_2}{2l},$$

$$\varepsilon_r = -\frac{\mu}{1-\mu}(\varepsilon_\theta' + \varepsilon_z') - (\varepsilon_\theta'' + \varepsilon_z'')$$

where c_3 is the measured change of the external diameter D of the specimen,

c_1 and c_2 are the axial extensions on the extensometer base l,

ε_θ'' and ε_z'' are the final strains in the radial and axial directions,

μ is Poisson's coefficient.

The true stresses σ_θ and σ_z were obtained from relations given at the bottom of p.34. Putting $\varepsilon_r = 0$ these also were used to determine σ_θ and σ_z, giving eventually ε_θ' and ε_z'. σ_θ and σ_z in the second

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stressing were obtained by using the changed values of D and δ. To check the isotropy of the material, three specimens were tested beforehand. Fig.2 gives the curves for pure axial tension (full • dots), pure radial tension (crossed ⊗ points) and torsion (o points). These tests yielded the following values: Young Modulus E_z = 7700 kg/mm^2, E_θ = 7600 kg/mm^2, Shear Modulus G = 2900 kg/mm^2. In computations E was taken as 7700 kg/mm^2. With increase of plastic deformation, the anisotropy of the material increases as well, as shown in Fig.3 by the slopes of the stress strain diagrams (o - points first stressing, crossed ⊗ points - second stressing). The table gives full details of the difference between the slopes, where column 1 is the specimen number, column 3 gives the experimental slopes, column 4 gives the theoretical slopes and column 5 gives the difference between the two. As a result of the plastic straining of the material during the first cycle of stressing, the metal becomes unisotropic and its elastic properties change. Thus, the history of loading is reflected in

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the change of the mechanical properties of the material. Fig.4 shows the results of the investigations in terms of relative coordinates. Yield points for subsequent stressings were determined as follows: For each specimen stress strain relation $\sigma_i = \sigma_i(\varepsilon_i)$ was obtained and from it the value of σ_{si} corresponding to 0.173% of the final magnitude of deformation was found. For this value of σ_{si} on the graph, σ_Θ and σ_z were obtained. These points are introduced into Fig.4. The dotted line represents the ellipse of Huber-Mises; it passes through the terminal points $\sigma_\Theta/\sigma_{ik}$ and σ_z/σ_{ik} of the first stressing cycle, σ_{ik} being the maximum stress in the first cycle. The experimental curve has no singularity and is tangent to the ellipse at the point of greatest stress of the first cycle and to the line $(\sigma_\Theta/\sigma_{ik}) = 1$. Taking $X = \frac{\sigma_\Theta + \sigma_z}{2\sigma_{ik}}$ and $Y = \sqrt{3}\,\frac{\sigma_\Theta - \sigma_z}{2\sigma_{ik}}$ the Huber-Mises ellipse transforms into a circle (thin continuous line). The yield curve in these coordinates is not quite

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symmetrical with respect to the point of tangency to this circle. This is to be expected as σ_θ was almost twice as large as σ_z and there is practically no axial deformation, so that there is bound to be a different rate of anisotropy in the radial and axial directions. The fact that the yield curve is totally inside the Huber-Mises ellipse and St.Venant square means that a loading along either of these must produce additional plastic deformations. Hence the results given in Ref.3 cannot be due to time effects. In the tests on combined tension and torsion, the specimens used were of steel 45 and had R/δ from 11.8 to 29. To eliminate any anisotropy introduced into the material during its production it was annealed at 900°C. Two specimens were tested in pure tension in axial and radial directions and the results are shown in Fig.5. (the upper curve is the radial direction). These curves show a large region of yielding (not a yield point) which is more pronounced in the axial direction. In order to determine the influence of the initial plastic deformation on the elastic moduli of the material, two specimens were tested as follows: one was

first twisted, unloaded and then put in tension (Fig.6) and the other was first tested in tension, unloaded and then twisted (Fig.7). In the first case it was found $G = 8000$ kg/mm^2 and $E = 16\,000$ kg/mm^2 while in the second case $E = 20\,000$ kg/mm^2 and $G = 6500$ kg/mm^2. Thus, an initial axial plastic strain of 2% resulted in lowering shear modulus by about 19% and an initial torsional plastic strain of the order of 4% lowered Young modulus by 20%. These results indicate not only that initial plastic strains do change the elastic properties of the material, but also that the results of investigations by Peters, Down and Batdorf (Ref 9) are wrong. Thus, as a result of a homogeneous plastic deformation in a metal, there appear stresses of a different kind and these are responsible for the Bauschinger effect as well as for the cold-working hardening effect, which appear in the subsequent stressing of the material, the stressing being of the same kind as the first one. These stresses are also responsible for the disappearance of the pronounced yielding regions in the annealed material when the

 stressing is repeated. Fig.8 shows the yield curve for

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the combined tension and torsion which touches the Huber - Mises ellipse (dotted line) and the circle (full line) at the point corresponding to the final stress attained during the first loading. The curve was obtained in a similar manner to that in the biaxial tension. There are 8 figures, 1 table and 11 references, 6 of which are Soviet, 5 English.

SUBMITTED: August 7, 1957

1. Metals--Deformation 2. Metals--Test methods 3. Plastic flow --Theory 4. Stress analysis 5. Mathematics

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24(6) SOV/179-59-4-31/40

AUTHOR: Zhukov, A. M. (Moscow)

TITLE: Dependence of the Elasticity Modulus and the Linear Coefficient of Thermal Expansion on Temperature in Some Metals

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, 1959, Nr 4, pp 173 - 175 (USSR)

ABSTRACT: At first, a number of shortcomings of the resonance method of determining the elasticity modulus at increased temperatures are pointed out. The results of experiments on some metals concerning the change in E (elasticity modulus) and α (linear coefficient of thermal expansion) in dependence on temperature are put forward. These data are obtained by means of quite simple methods available to any laboratory for fatigue tests. In the fatigue tests of some metals with gradually variable loads, a temporary standstill of the creeping was observed after partial relief. This is illustrated by the diagrams (Fig 1) for steel 40 KhMA at 500°. Figure 2 presents the diagram for the change in E and the temperature in the alloy Nimonik-80, steel 40 KhMA and brass. The deformations were measured by a machine of type

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DST-5000. Figures 3 and 4, respectively, present the diagrams for steel EI 257 and the titanium alloy VT 1 D. The execution of the experiments is described in brief. The diagrams show that E changes with an increase in temperature according to a curvilinear law, whereas α changes according to an almost linear law. In the experiments with the titanium alloy, an intensive damping capacity was observed at 600°. A method similar to the method described can be used for determining the shearing modulus G on machines used for testing thin-walled tube samples in fatigue tests with pure torsion. If E and G are known, the Poisson's ratio can be found in the temperature function. There are 4 figures and 4 references, 1 of which is Soviet.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics of the AS USSR)

SUBMITTED: April 8, 1959

CHUKOV, A.M.

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

102. J. Dvorak (Prague): The state of stress and deformation of the turbine blades.

103. Y. M. Dody (Kharkov): On some new forms of the general solution of the three-dimensional problem of the theory of elasticity expressed in harmonic functions.

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105. B. V. Deriagin (Moscow), S. V. Nerpin (Leningrad): Surface phenomena in the mechanics of clays.

106. A. E. Desov (Moscow): Experimental data concerning the propagation of vibrations of different frequencies in concrete mixtures.

107. G. Yu. Dzhanelidze (Leningrad): Almansi's problem.

108. M. I. Dlugach (Kiev): A finite difference analysis of cylindrical shells with rectangular holes.

109. M. I. Dlugach (Kiev): Generalization of Mohr's method of determining the displacements in problems of the theory of elasticity.

110. M. D. Dalberg (Kharkov): The construction of solutions of the equations of structural mechanics by means of special uniformly convergent series.

111. L. G. Drapkin (Leningrad): A method of investigating the states of stress and strain and the slip lines in anisotropic multilayer metals.

112. A. V. Diatlov (Dnepropetrovsk): The stability of an obliquely bent beam.

113. L. I. Diatlovitskiy, L. B. Rabinovich (Kiev): A problem concerning elastic bodies whose configuration changes in the course of loading, with application to the erection of structures.

114. P. D. Evdokimov (Leningrad): On the shear strength of structural rock foundations.

115. P. D. Evdokimov (Leningrad): On friction in sandy soils and their shear strength.

116. K. E. Egorov (Moscow): The deformation of the ground under an annular foundation.

117. G. S. Eliseyevskii (Moscow): On stresses and strains of thin-walled rods of variable cross section at normal and elevated temperatures.

118. Zh. S. Erzhanov (Dnepropetrovsk): Determination of the pressure on a tunnel facing taking account of the hereditary creep of soils.

119. Zh. S. Erzhanov (Dnepropetrovsk): The integral operator method of determining the creep characteristics of soils from observations in situ.

120. I. F. Erokhin (Gorki): The elastic-plastic bending of a bar.

121. A. M. Zhukov (Moscow): Elastic properties of a plastically deformed metals under combined loading.

122. P. A. Zhuravlev, A. V. Zakharevich, N. P. Nesterov (Leningrad): Application of the method of characteristics to the determination of the tension in the cable of a mine elevator.

123. M. A. Zadoian (Erevan): On the propagation of plastic zones in a beam under impulsive loading.

124. L. I. Zaitsev (Moscow): On the surface-head-wave.

125. N. V. Zvezdkov, Sh. N. Kats (Leningrad): An experimental study of creep-rupture characteristics of tubes under combined stresses.

126. N. V. Zvolinskii (Moscow): The propagation of an elastic wave due to an underground explosion.

127. A. F. Zelenin (Moscow): On the state of stress in compression and its effect on the construction of Mohr's circles.

128. Y. K. Ilicov, Ia. B. Fridman (Moscow): The laws of deformation and rupture kinetics.

129. P. L. Ivanov (Leningrad): Flow of water-saturated soils under dynamic loading

130. V. S. Ivanova (Moscow): The hypothesis of energetic similarity in fatigue fracture and the melting of metals.

131. D. D. Ivlev (Voronezh): On the anisotropy of elastic and plastic bodies.

132. L. P. Isotov, Yu. I. Iagn (Leningrad): Plastic tension and torsion of thin-walled nickel tubes that have become anisotropic through prior plastic deformation.

133. Yu. N. Ilyukhin, B. N. Sokolov (Moscow): Investigation of elastic strains and vibrations in aircraft structures by means of electronic computers.

ZHUKOV, A.M. (Moskva)

Creep of EP-376 steel caused by slowly varying loads. Inzh. zhur. 5 no.6:1130-1133 '65. (MIRA 19:1)

1. Submitted April 6, 1965.

L 16516-66 EWT(d)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(l)

ACC NR: AP6002631 JD (N) SOURCE CODE: UR/0258/65/005/006/1130/1133

AUTHOR: Zhukov, A. M. (Moscow)

ORG: none

TITLE: Creep of EP-376 steel under slowly varying loads

SOURCE: Inzhenernyy zhurnal, v. 5, no. 6, 1965, 1130-1133

TOPIC TAGS: creep, creep characteristic, metal creep, metal testing, stress relaxation/ EP-376 steel, DST-5000 machine

ABSTRACT: Experiments were performed to clarify the laws of one-dimensional creep in conditions of slowly increasing and decreasing loads. The tests were performed on steel specimens composed of the following content: C - 0.0[illegible]%, Mn - 0.29, Si - 0.17, S - 0.007, P - 0.008, Cr - 15.65, Ni - 15.1, Mo - 2.98, Nb - 1.60. The tests involved the use of a DST-5000 machine at 700C. The specimens were prepared by thermal treatment, including preliminary heating, two hours' storage at 1100C, and air cooling. Creep curves for constant loading were developed according to the Davis formula

$$pp^{n} = At^{n},$$

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UDC: 539.376

and according to the formula

$$\dot{p}p^{\alpha} = Be^{\sigma/k},$$

where p is the creep deformation, $\dot{p}$ the creep rate, σ the acting stress, and α, A, B, k and n are material constants. The second formula was developed by F. S. Churikov (K voprosu o napryazheniyakh i deformatsiyakh pri vysokikh temperaturakh. Vestnik MGU, No. 2, 1949). The conditions tested are as given in Table 1.

Table 1.

Specimen No.	σ_o kg/mm^2	t_o hrs	$\Delta\sigma$ kg/mm^2	t_1 hrs	$\sigma_o + \Delta\sigma$ kg/mm^2
37	11	100	117		
others					
21	11	50			
22	11	50	+0,0075	105,5	+0,794
31	11	50	−0,0144	105,1	−1,52
49	11	50	+0,01455	104,0	+1,52
56	0	0	+0,0145	104,3	+1,52
64	0	0	−0,0147	103,5	−1,52

σ_o - initial stress; t_o - constant stress period; t_1 - period of added load or reload; $\Delta\sigma$ - value of final stress variation.

L 16516-66
ACC NR: AP6002631

The results of the tests are plotted and discussed. For example, Figure 1 is a plot of experimental creep curves for the case σ_0 = 11 kg/mm^2 (middle of the three curves) and σ = 11 ± 0.00753 t.

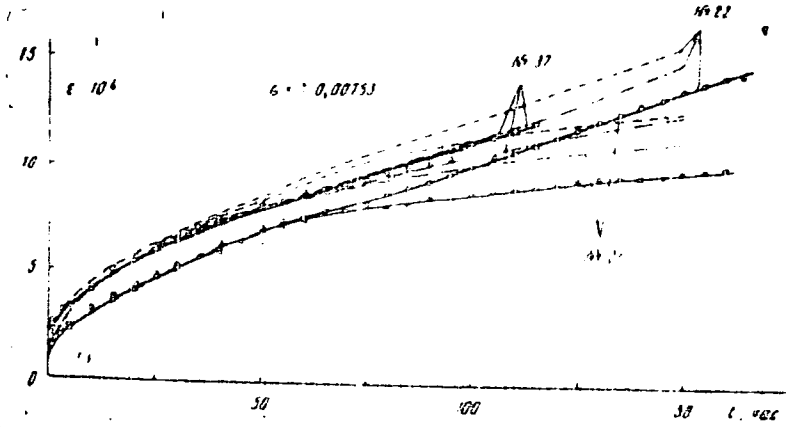

Fig. 1.

Various forms of the creep equation are given and discussed as they apply to particular loading circumstances. Orig. art. has: 3 figures and 4 equations.

SUB CODE: 13/ SUBM DATE: 06Apr65/ ORIG REF: 002/ OTH REF: 001

Card 3/3

OGIBALOV, Petr Matveyevich; SUVOROVA, Yuliy Vasil'yevna. Primimal uchastiye RABINOVICH, A.L., kand. tekhn. nauk, dots.; BEZUKHOV, N.I., zasl. deyatel' nauki i tekhniki RSFSR doktor tekhn. nauk, prof., retsenzent; ZHUKOV, A.M., doktor fiz.-mat. nauk prof., retsenzent; BRONSKIY, A.P., kand. fiz.-matem.nauk, dots., retsenzent; DOZORTSEVA, Ch.I., red.

[Mechanics of reinforced plastics] Mekhanika armirovannykh plastikov. Moskva, Izd-vo Mosk. univ., 1965. 479 p. (MIRA 18:7)

ZHUKOV, A.M. (Moskva); IVANOVA, G.M. (Moskva)

Unidimensional creep of EI-257 steel in the presence of a variable load component. Inzh. zhur. 4 no.4:781-784 '64 (MIRA 18:2)

KULAGIN, Ivan Stepanovich [deceased]; ZHUKOV, A.M., red.; MAKSAKOVA, A.M., red.izd-va; AKOPOVA, V.M., tekhn.red.

[Wages for woodworking industry workers] Oplata truda rabotnikov derevoobrabatyvaiushchei promyshlennosti. Izd.2., isp. i dop. Moskva, Goslesbumizdat, 1963. 156 p. (MIRA 17:1)

(Wages--Woodworkers)

ACCESSION NR: AP3000727

S/0258/63/003/002/0409/0413

AUTHOR: Zhukov, A. M. (Moscow)

TITLE: Creep of nonferrous metals beyond elasticity limits at room temperature

SOURCE: Inzhenernyy zhurnal, v. 3, no. 2, 1963, 409-413

TOPIC TAGS: nonferrous metal, metal flow, creep, metal elasticity limit, nonferrous metal elasticity, creep deformation, steel creep, deformation of steel, low carbon steel deformation, deformation of nonferrous metals, aluminum alloy D16T, magnesium alloy MA2, brass

ABSTRACT: The existing theories on plasticity assumed that the deformation growth was determined by the increase of load and that the deformation increase in time could be neglected. It was proved experimentally that deformations due to creep are of a considerable magnitude. The experimental results described in this article pertain to three nonferrous metals: aluminum alloy D16T, magnesium alloy MA2, and brass. The curves of metal deformation with respect to time showed that metal deformation caused by creep reached 5% for MA2, over 0.7% for D16T, and nearly 3% for brass. Metals MA2 and D16T were investigated analytically by the simplest

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ACCESSION NR: AP3000727

relation $\varepsilon = At^n$, where ε is creep deformation, A and n are constants and t is time. The creep curve of brass was not analyzed because it showed anomalous behavior in several cases. The author concludes that the considerable effect of time, observed in the metals at room temperature, requires that this factor be considered in formulating the theories on plasticity. "I express my gratitude to S. D. Vyalukhina, B. F. Mushket, N. K. Nikolayeva, G. N. Nilova, and M. A. Romanova for their participation in the experimental works and for processing of the results obtained." Orig. art. has: 1 table and 6 figures.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics AN SSSR)

SUBMITTED: 16Jan62 DATE ACQ: 21Jun63 ENCL: 00

SUB CODE: PH NO REF SOV: 002 OTHER: 000

Card 2/2

SPRINTSYN, M.N.; AMALITSKIY, V.M.[deceased]; DENIS'YEV, V.I.; ZHUKOV, A.M.; LIKHOVIDOV, N.K.; SHCHEDRIN, B.Ye.; KAFTANOVSKIY, G.M.; SUKHANOVSKIY, A.I.; TSVETKOV, V.A.[deceased]; MITEL'MAN, Ye.L.; KALASHNIKOV, P.L.; ANDREYEV, I.I., retsenzent; SALTYKOV, M.I., otv. red.; SLUTSKER, M.Z., red. izd-va; GRECHISHCHEVA, V.I., tekhn. red.

[Handbook for the logging enterprise economist]Spravochnik ekonomista Lespromkhoza. Moskva, Goslesbumizdat, 1962. 291 p. (MIRA 16:1)

(Lumbering--Handbooks, manuals, etc.)

S/258/62/002/004/014/019
E081/E135

AUTHORS: Zhukov, A.M., and Vyalukhina, S.D. (Moscow)

TITLE: Mechanical properties of a glass plastic at room temperature

PERIODICAL: Inzhenernyy zhurnal, v.2, no.4, 1962, 330-336

TEXT: Some results are available on the behaviour of these plastics in bending, but not in pure compression-tension. The present experiments were carried out on the glass plastic СТЭР-1-30 (STER-1-30), made from satin and epoxy-phenol resin. Values are reported for the basic strength characteristics in tension: Young's modulus, Poisson's ratio, proportional limit, ultimate strength, and extension at break. The methods of preparing and testing the specimens are described, and stress-strain curves are given for specimens of various orientations. The variability of the different strength properties is tabulated. The theoretical change of properties with orientation is calculated on the assumption that the material is orthotropic, and reasonable agreement is obtained between calculated and measured values. Strain-time curves are reproduced for specimens of

DUBOVENKO, Ye.P., red.; ZHUKOV, A.M., red.; LEVCHENKO, O.K., tekhn. red.

[The honor of a Soviet worker]Chest' radians'koho trudivnyka; zbyrnyk materialiv i statei. Kyiv, Derzh.vyd-vo polit. lit-ry URSR, 1962. 86 p. (MIRA 16:3)
(Ukraine--Agriculture--Labor productivity)

ZHUKOV, A. M. (Moskva); VYALUKHINA, S. D. (Moskva)

Mechanical properties of glass-reinforced plastics at room temperature. Inzh. zhur. 2 no.4:330-336 '62.
(MIRA 16:1)

1. Institut mekhaniki AN SSSR.

(Glass reinforced plastics)

DARAGAN, M.V.[Darahan, M.V.]; CHUISTOV, V.M.; NESTERENKO, O.O., glav. red.; ZHUKOV, A.M., red.; MIL'KIN, Yu.A., tekhn. red.

[Creating the material and technical foundation of communism; visual aid]Stvorennia material'no-tekhnichnoi bazy komunizmu v SRSR; naochnyi posibnyk. Kyiv, Derzhpolitvydav URSR, 1962. 30 p. (MIRA 16:3)

1. Chlen-korrespondent Akademii nauk Ukr. SSR (for Nesterenko).
(Russia--Economic policy--Audio-visual aids)

ZHUKOV, A.M. (Moskva)

Creep of nonferrous metals at indoor temperature beyond elastic limit. Inzh. zhur. 3 no.2:409-413 '63. (MIRA 16:6)

1. Institut mekhaniki AN SSSR.
(Creep of metals)

ZHUKOV, A.M. (Moskva)

Deformation anisotropy and creep of low carbon steel at a normal temperature. Inzh.zhur. 1 no.4:150-153 '61. (MIRA 15:4)

1. Institut mekhaniki AN SSSR.
(Steel--Testing)

ZHUKOV, A.M. (Moskva)

Strength characteristics of organic glass subjected to biaxial tension. Inzh.zhur. 1 no.2:200-204 '61. (MIRA 14:12)

1. Institut mekhaniki AN SSSR.
(Glass--Testing)

S/137/62/000/005/085/150
A006/A101

AUTHOR: Zhukov, A. M.

TITLE: Some peculiarities of metal behavior in elastic-plastic deformation

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 27-28, abstract 5I156 (V sb. "Vopr. teorii plastichnosti", Moscow, AN SSSR, 1962, 30-57)

TEXT: Experiments were made on single-stage and repeated deformation of isotropic materials (metals and alloys) in plain and complex loading. It is shown that in plain loading and in complex loading, when the orientation of the stress-tensor axes is maintained, the theory of deformation in the 1-st approximation can be applied. In complex loading with sharp turning of the stress-tensor axes, none of the existing theories is adequate to forecast the metal behavior in the initial stage of complex loading. The author proves that the widespread opinion on the independence of elastic properties of the material on plastic deformation, is wrong. In the experiments performed, preliminary plastic deformation caused up to 19% decrease in G and up to 20% decrease in E. Anisotropy did also arise. This is connected with residual stresses of the II kind.

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Some peculiarities of metal behavior ...

However, a definite dependence of these changes upon deformation was not established. Extended relaxation almost fully reestablishes G and E values. The author points to the non-linear course of the law of unloading and repeated loading with multiple deformations. The Bauschinger effect, once arisen in the metal, is not eliminated by aging and should be taken into account in calculations. The fact that slopes of initial linear sections in plastic-deformed metal can change due to extended relaxation or due to intermediate loading, shows that E cannot be determined from these slopes in the conventional sense. Results are given obtained by investigating steel creep (beyond the elasticity limit) at room temperature, indicating considerable temporary deformation effects, which should be considered in calculations. This fact calls for a more correct approach to studies of flow surfaces. There are 36 references.

V. Geminov

[Abstracter's note: Complete translation]

KULAGIN, Ivan Stepanovich; ZHUKOV, A.M., red.; MAKSAKOVA, A.M., red. izd-va; PARAKHINA, N.L., tekhn. red

[Wages for workers in the woodworking industry] Oplata truda rabotnikov derevoobrabatyvaiushchei promyshlennosti. Moskva, Goslesbumizdat, 1961. 58 p. (MIRA 15:1)
(Wages--Woodworking industry)

S/567/61/000/001/001/001
B139/B104

AUTHOR: Zhukov, A. M.

TITLE: Some characteristic features in the behavior of metals on elastoplastic defor ation

SOURCE: Akademiya nauk SSSR. Nauchnyy sovet po probleme "Nauchnyye osnovy prochnosti i plastichnosti." Voprosy teorii plastichnosti. Moscow, 1961, 30 - 56

TEXT: The existing theory of plasticity with composite load has to take account of the following facts: (1) On the basis of the theory of deformation the behavior of metals can be predicted also for the case of a composite load differing considerably from the single load, if the quantity σ_i further increases with unchanged orientation of the stress tensor axes. (2) For the case of composite load with a sharp turn of the stress tensor axes the results obtained by the existing theories of plasticity which are based on the assumptions that the elastic properties are unchanged by plastic deformations, are not in agreement with the empirical results. (3) Plastic deformations cause anisotropy and change

Card 1/2

the metal elasticity. (4) At room temperature, above the elastic limit the metals start to yield considerably. (5) As a result of yield, plastic deformation increases with an increase in the load acting upon the yield surfaces which were determined by unloading. V. A. Sveshnikova (O plasticheskom deformatsii uprochnyayushchikhsya metallov. Izv. AN SSSR, OTN, no. 1, 1956), Sh. M. Kats, L. M. Kachanov (O plasticheskoy deformatsii pri slozhnom nagruzhenii. Izv. AN SSSR, OTN, no. 11, 1957), B. M. Rovinskiy, V. G. Lyutsau (Relaksatsiya oriyentirovannykh mikronapryazheniy, ZhETF, v. 27, no. 2, 1957) are mentioned. There are 8 tables, 20 figures, and 36 references: 26 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: P. M. Naghdi, J. C. Rowley. An experimental study of biaxial stress-strain relations in plasticity. J. Mech. Phys. Solids, v. 3, 1954; J. Marin, L. W. Hu, Biaxial plastic stress-strain relations of mild steel for variable stress ratios. Trans. ASME, v. 78, no. 3, 1956; P. M. Naghdi, F. Essenburg, W. Koff, An experimental study of initial and subsequent yield surfaces in plasticity. JAM, v. 25, no. 2, 1958; L. W. Hu, J. E. Bratt. Effect of tensile deformation on yield condition. JAM, v. 25, no. 3, 1958.

Card 2/2

ZHUKOV, A.M., (Moskva)

Comments on D.D.Ivlev's article. Inzh.sbor. 31:254-259 '61.
(MIRA 14:6)

1. Institut mekhaniki AN SSSR.
(Strength of materials)
(Ivlev, D.D.)

32802
S/137/61/000/012/122/149
A006/A101

10.7200 1327, 4016

AUTHOR: Zhukov, A.M.

TITLE: Behavior of metals during unloading and repeated loading

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 32, abstract 12Zh236 ("Inzhenernyy zh.", (byvsh. Inzhernyy sb.), 1961, v. 1, no. 1, 124 - 133)

TEXT: The author studied the laws of unloading and subsequent loading, the effect of the magnitude of plastic deformation on changes in E and the influence of relaxation on the Bauschinger effect. The experiments were mainly carried out with tubular 30ХГСА (30KhGSA) steel specimens in annealed state. Prior to programmed tests, on a Martens apparatus, E was determined for each specimen during longitudinal extension and in some cases during compression. Tension of the specimen was performed on a ЦДМ-2500 (TsDM-2500) machine; loading and unloading curves were plotted. It is shown that in the plastic zone, the curves of unloading and subsequent loading proceed along broken lines whose inclinations are always below E in the initial state. It is pointed out that the Bauschinger effect does not vanish as a result of extended metal relaxation.

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32802
S/137/61/000/012/122/149
A006/A101

Behavior of metals ...

During the torsion of tubular specimens in the zone above the yield limit, the plastic modulus of shear is below the modulus of shear during unloading; and the latter is by far less than the modulus of metal shear in the initial state. There are 6 references.

Z. Fridman

[Abstracter's note: Complete translation]

Card 2/2

ZHUKOV, A.M., red.; PLESKO, Ye.P., red. izd-va; PARAKHINA, N.L., tekhn. red.

[Standard production and wage norms in logging camps] Edinye normy vyrabotki i rastsenki na lesozagotovkakh. Moskva, Goslesbumizdat, 1960. 71 p. (MIRA 14:5)

1. Russia (1923- U.S.S.R.) Gosudarstvennyi komitet po voprosam truda i zarabotnoy platy.
(Lumbering) (Wages)

ZHUKOV, A.M. (Moskva)

Elastic properties of a plastically strained metals and combined loads. Inzh.sbor. 30:3-16 '60. (MIRA 13:10)
(Plasticity) (Elasticity)

ZHUKOV, A.M. (Moskva)

Properties of a titanium alloy under combined stress conditions.
Inzh.sbor. 28:220-223 '60. (MIRA 13:10)
(Titanium alloys—Testing)

ZHUKOV, A.M. (Moskva)

Properties of the D16T alloy subjected to stretching and torsion.
Inzh.sbor. 29:55-62 '60. (MIRA 13:10)
(Steel alloys--Testing)

ACCESSION NR: AP4026233 S/0293/64/002/001/0046/0050

AUTHOR: Zhukov, A. N.; Lebedev, V. N.

TITLE: Variation problem of flight between heliocentric circular orbits using a solar sail

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 1, 1964, 46-50

TOPIC TAGS: artificial satellite, artificial satellite orbit, artificial satellite heliocentric orbit, solar sail, space flight, interplanetary flight

ABSTRACT: Analysis of studies of the possibilities of the solar sail for space flight made by Tsu (ARS Journal, 6, 422, 1959), London (ARS Journal, 2, 198, 1960) and others indicates that the most effective use of the solar sail requires investigation of other types of trajectories than those proposed so far. This paper considers the problem of finding the most effective means for flight from the earth's orbit to the orbits of other planets of the solar system. The key parameter is orientation of the sail relative to the sun's rays. It is assumed that the planetary orbits are circular and coplanar. It is assumed further that the resistance of the cosmic medium is small in comparison with solar pressure. This problem, applying the L. S. Pontryagin maximum principle, reduces to the boundary problem for a system of 8 differential equations which are solved on an electronic

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ACCESSION NR: AP4026233

computer; selection of the lacking initial conditions is accomplished by Newton's method. The results show that by means of a solar sail it is possible to make flights from an artificial earth satellite orbit to artificial satellite orbits of other planets without expenditure of fuel, since the propulsion of a spaceship with a solar sail is also feasible in the gravitational field of a planet. The number of years required for flight to the orbits of other planets with a solar sail is: Mercury -- 0.53, Jupiter -- 6.6, Saturn -- 17, Uranus -- 49, Neptune -- 96 and Pluto -- 145. For flight to Mars the following ratios apply (acceleration in mm/sec^2/time in days): 1/405, 2/405, 3/286, 4/264, 5/248. "The authors thank N. N. Moiseyev for useful advice and discussion of the results of the work".
Orig. art. has: 11 formulas and 5 figures.

ASSOCIATION: none

SUBMITTED: 19Jun63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: AS NO REF SOV: 004 OTHER: 003

Card 2/2

ZHUKOV, A.N.; LEBEDEV, V.N.

Variational problem of flights between heliocentric circular orbits by means of the solar sail. Kosm. issl. 2 no.1:46-50 Ja-F '64. (MIRA 17:4)

ZHUKOV, A.N. ;LEBEDEV, V.N. (Moscow)

"The variational problem of transver between heliocentric circular orbits using a solar sail"

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

BOCHARNIKOV, G.B. [Bocharnikov, H.B.] kand.tekhn.nauk; ZHUKOV, A.O., inzh. (Krivoy Rog Dneporpetrovskoy oblasti).

The Dnieper-Krivoy-Rog Canal. Nauka i zhyttia 10 no.9:17-19 S '60. (MIRA 13:9)
(Dnieper-Krivoy-Rog Canal)

ZHUKOV, A. P.

32621. ZHUKOV, A. P. I KOZHEVNIKOV, V. A. Sravnitel'naya Kharkakgeristika krasnoy krovi Ovets V Gorakh. (K Postanovke Boprosa Ob Akklimatizats 11). Iz Vestiya Tadzh. Filiala Akad. Nauk SSSR, No. 14, 1947, s. 31-45.

SO: Letopis' Zhurnal'nykh Statey, Vol. 44, Moskva, 1949

ZHUKOV, A. P. 15066

USSR/Shoe Factories 4414.0500 Sep 1947

"Increasing the Importance of Cost Accounting," A. P. Zhukov, Production Planning Section Head, Shoe Factory "Skorokhod," 3 pp

"Legkaya Prom" Vol VII, No 9

Figures on profits for 1940, 1946, and for Jan and Feb 1947. Production norm of several brigades given in percentage. Discusses principles of cost accounting and how they apply to "Skorokhod" factory.

LC 15066

ZAKHAROV, S.R.; ZHUKOV, A.P.

Potentialities in footwear manufacture. Leg.prom. 16 no.5:5-9 My '56. (MLRA 9:8)

1. Direktor fabriki "Skorokhod" (for Zakharov); 2. Nachal'nik PPO (for Zhukov).
(Leningrad--Shoe industry)

ZHUKOV, Anatoliy Petrovich

[Technology and organization in large-panel housing construction] Tekhnologiia izgotovleniia i organizatsiia stroitel'stva krupnopanel'nykh domov. Moskva, Stroiizdat, 1964. 113 p. (MIRA 17:10)

ZHUKOV, A.P., inzh.; TALAIKOV, S.I., inzh.

Pumping station built of reinforced cement. Biul.tekh.inform. po stroi. 5 no.10:28 O '59. (MIRA 13:3)
(Pumping stations)
(Reinforced concrete construction)

ZHUKOV, A.R., dotsent

Estimating the energy-producing value of feeds and rations for cattle. Trudy SZVI 11:43-62 '62. (MIRA 16:7)

(Cattle--Feeding and feeds)

ZHUKOV, A. R.

"The Effect of Yeast Treated Fodders, Microelements, and Iron on the Productivity and Condition of Sows." Cand Agr Sci, Leningrad Inst for the Advenced Training of Veterinary Physicians Leningrad, 1953. (RZhBiol, No 2, Sep 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

So: Sum. No. 481, 5 May 55

ZHUKOV, A.S. (Krasnodar)

Flat headed borer Capnodis tenebrionis. Priroda 52 no.2:118 '63. (MIRA 16:2)

(Borers (Insects))

ZHUKOV, A.S.; GRECHUK, A.I.; BICHURIN, R.T.

Quick-change patterns for machine molding. Lit. proizv. no.8: 36 Ag '63. (MIRA 16:10)

ZHUKOV, A.S.

Participation of the young naturalists in the selection of the best varieties of apricot. Biol. v shkole no.3:63-64 My-Je '61. (MIRA 14:7)

1. Krasnodar, Severo-Kavkazskiy zonal'nyy nauchno-tekhnicheskiy institut sadovodstva i vinogradarstva.
(Krasnodar Territory--Apricot--Varities)

ZHUKOV, A.S.

Eliminating the fusion of sand in narrow grooves of thick walled cast iron castings. Lit. proizv. no.4:40 Ap '64. (MIRA 18:7)

ZHUKOV, A.S.

The P-132-Sh spinning machine for wool yarn. Biul.tekh.-ekon.inform. no.2:38-39 '58. (MIRA 11:4)
(Spinning machinery)

ZHUKOV, A. S.

"The Effect of Circular Spool Stops on Thread Tension During Spinning." Cand Tech Sci, Moscow Textile Inst, Min Higher Education USSR, Moscow, 1955. (KL, No 12, Mar 55)

SO: Sum. No. 670, 29 Sep 55-Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

ZHUKOV, A.S., inzh.-zemleustroitel'; SUKHONOSENKO, A.I., inzh.-zemleustroitel'

Organization of land use within the farm is of great importance in developing agricultural production. Zemledeli 7 no.5:90-96 My '59. (MIRA 12:7)

(Farm management)

ZHUKOV, A.S.

Making molds of high, small cross-section, blanks. Lit. proizv. no.1:48 Ja '59. (MIRA 12:1)
(Molding (Founding))

SAFRONOV, G.I., inzh.-zemleustroitel'; ZHUKOV, A.S., inzh.-zemleustroitel'

Land laws. Zemledelie 7 no.1:80-82 Ja '59. (MIRA 12:1)
(Land tenure--Law)

18(5) SOV/128-59-7-21/25

AUTHOR: Zhukov, A.S., Engineer

TITLE: Split Flask Dowel

PERIODICAL: Liteynoye Proizvodstvo, 1959, Nr 7, p 45 (USSR)

ABSTRACT: To protect the upper mold box against the influence of ferro-statics of the liquid metal and to eliminate at the same time slanting of the flask a new type dowel pin has been designed. There are 2 diagrams

Card 1/1

L 15325-66 EWI(m)/EWP(j)/T WW/RM

ACC NR: AP6000991 (A) SOURCE CODE: UR/0286/65/000/022/0061/0061

AUTHORS: Zhukov, A. S.; Stokozenko, V. N.

ORG: none

TITLE: A method for obtaining epoxide resins. Class 39, No. 176418

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 61

TOPIC TAGS: polymer, polycondensation, resin, epoxy

ABSTRACT: This Author Certificate presents a polycondensation method for obtaining epoxide resins and compounds possessing several functional groups and containing labile hydrogen atoms. To obtain colored resins, azo-dyes or mixtures of azo-dyes containing two or more functional groups with labile hydrogen atoms (free or substituted with an alkali metal), e.g., 4,4'-dioxyazobenzene, straight blue, or alizarin yellow, are used as polyfunctional compounds. In an alternative method, the azo-dye is mixed with dioxydiphenylpropane.

SUB CODE: 07/11/ SUBM DATE: 20May62

Card 1/1 UDC: 678.643'42'5:547.556.33:66.062.539

ZHUKOV, A.S.

The P-66-Sh1-type silk spinning machine. Biul. tekh.-ekon. inform. no.3:52-54 '58. (MIRA 11:6)
(Spinning machinery) (Silk thread)

ZHUKOV, A. S.

Zhukov, A. S.: "The layout of land in karakul state farms in introducing grassland rotation", Karakulevodstvo i zverovodstvo, 1949, No. 1, p. 19-26.

SO: U-3042, 11 March 53, (Letopis 'nykh Statey, No. 10, 1949).

ZHUKOV, A.S., inzh.

Heighten the role of the Office of Standardization in enterprises.
Standartizatsiia 22 no.5:86 S-O '58. (MIRA 11:11)
(Standardization)

ZHUKOV, A. S.

24173 ZHUKOV, A. S. Organizatsiya zagonnoy past'y ovets. Karakulevodstvo i zverovodstvo, 1949, No. 4, S. 8-14.

SO: Letopis, No. 32, 1949.

ZHUKOV, A. S.

Karakul Sheep

Karakul breeding on state farms of the Main Turkmen Canal zone. Kar. i zver., 5, No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.

1. BOYKO, D. F.; ZHUKOV, A. S.

2. USSR (600)

4. Pastures

7. Ways to increase the carrying capacity of pastures on state karakul farms. Kar. i zver. 6 No. 2, 1953.

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

AUTHOR: Zhukov, A.S., Engineer

SOV/28-58-5-33/37

TITLE: Boosting the Role of the BNS in Enterprises (Povysit' rol' BNS na predpriyatiyakh)

PERIODICAL: Standartizatsiya, 1958, Nr 5, p 86 (USSR)

ABSTRACT: The article deals with the position and status of the BNS (Bureau of Normalization and Standardization) in industrial enterprises. The author stresses the necessity of keeping to the specific duties and activities of a normalization and standardization bureau and preventing it from being submerged under a mass of small duties and extraneous work, imposed on it by the other sections of the enterprise.

1. Standardization--USSR

Card 1/1

ZHUKOV, Arkadiy Vladimirovich, kand. tekhn. nauk; GUDZENKO, K.V., otv. red.; TEPLYAKOVA, A.S., red.

[Latest progressive building materials in the Ukrainina S.S.R.] Noveishie progressivnye stroitel'nye materialy v Ukrainskoi SSR. Kiev, 1961. 39 p. (Obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii Ukrains'koi SSR. Ser.7, no.5) (MIRA 14:9)
(Ukraine--Building materials)

U.

USSR/General Problems of Pathology - Shock

Abs Jour : Ref Zhur - Biol., No 2, 1959, 8623

Author : Zhukov, A.V.

Inst : Moscow Medical Institute

Title : The Liver and Serum Proteins in Tourniquet Shock

Orig Pub : Uch. zap. 2-go Mosk. med. in-ta, 1957, 6, 36-40

Abstract : Shock was produced in 45 rabbits by the application of a tourniquet to both hind paws for 6 hours. Immediately after removal of the tourniquets, methionine-S^{35} was injected I.V. (1000 impulses/min) and after 3 hours the serum was examined. In healthy animals the uptake of methionine-S^{35} was more active in the globulins than in the albumins. In shock the uptake of methionine-S^{35} is considerably increased in the serum and liver proteins (in the albumins by 86%; in globulins by 57%;

Card 1/2

USSR/General Problems of Pathology - Shock U.

Abs Jour : Ref Zhur - Biol., No 2, 1959, 8623

in the liver proteins by 38%). After cooling the ischemic extremity the uptake of methionine-55 was somewhat less pronounced (respectively, 44, 24 and 23%). The total serum protein dropped by 1.03% 3 hours after removal of the tourniquets. The same changes were observed on cooling the extremities.

Card 2/2

ZHUKOV, A.V.; BUROBIN, V.A.

Determination of urocaninase in the blood in children. Vop.med.khim. 11 no.6:39-42 N-D '65. (MIRA 18:12)

1. TSentral'naya nauchno-issledovatel'skaya laboratoriya II Moskovskogo gosudarstvennogo meditsinskogo instituta imeni N.I.Pirogova i kafedra biokhimii I Moskovskogo meditsinskogo instituta. Submitted June 23, 1964.

ZHUKOV, A. V.

Ceramic Industries

Manufacture of large ornamental ceramic parts. Buil. stroi. tekh. 9. No. 16, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

1. ZHUKOV, A. V.

2. USSR (600)

4. Ceramic Industries

7. Forming large-size architectural-constructural ceramic products on vertical tube presses, Stek. i ker. 10, no. 1, 1953.

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

ARKHANGEL'SKIY, K.P.; SHLEVIN, D.N.; SHOR, Sh.I.; ZHUKOV, A.V., kandidat tekhnicheskikh nauk, redaktor; KNYAZEVSKIY, P. redaktor; IOAKIMIS, A., tekhnicheskiy redaktor.

[Producing corrugated roofing sheets on the SKVL-2 machine] Proizvodstvo krovel'nykh volnistykh listov na stanke SKVL-2. Pod red.A.V.Zhukova. Kiev, Gos.izd-vo lit-ry po stroit. i arkhitekture USSR, 1955. 80 p. (MLRA 9:5)
(Roofing)

ZHUKOV, A.V.; SLOBODYANYUK, V.V.; GRINBERG, S.M., redaktor; PYATAKOVA, N.D., tekhnicheskiy redaktor

[Natural drying of material by means of axial ventilators; work practices of Ukrainian brick factories] Estestvennaia sushka syrtsa s primeneniem osevykh ventiliatorov; iz opyta raboty kirpichnykh zavodov USSR. Moskva, Gos.izd-vo lit-ry po stroit.materialam, 1957. 34 p. (MLRA 10:7)
(Brick--Drying) (Fans, Electric)

ZHUKOV, A.V.

ZHUKOV, A.V., kand.tekhn.nauk

Bloated clays as aggregates for lightweight concretes. Nov.v stroi.tekh. no.11:100-111 '57. (MIRA 10:12)

1. TSentral'nyy nauchno-issledovatel'skiy institut stroymaterialov Ministerstva promyshlennosti stroitel'nykh materialov USSR.
(Lightweight concrete--Testing) (Clay)