APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

SEDLACEK, B.A.J.; VAVRIKOVA, J.; ZVOLANKOVA, K.

Problems of excessive heating of fats in communal catering. Cesk. hyg. 10 no.1:18-26 F '65.

1. Ustav pro vyzkum vyzivy lidu, Praha.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

KRONDL, A.; MICHALEC, C.; VAVERKOVA, H.; VOKRO, V.; statisticke zhodnoceni ZVOLANKOVA, K.

Effect of the concentration of bile acids for metabolism of lipids. 1. The degree and emulsion of lipids in man. Cesk. gastroent. vyz. 15 no.1:31-38 F '61.

1. Ustav pro vyzkum vyzivy lidu v Praze, reditel doc. MUDr. Josef Masek Laborator pro proteosyntezu University Karlovy v Praze, prednosta prof. Jar. Horejsi.

(BILE ACIDS AND SALTS physiol.)
(LIPIDS metabolism)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

HATLE, J.; ZVOLANKOVA, K.; ROBKOVA, J.

The applicability of food table coefficients in nutritional evaluation. Cesk; gastroent. vyz. 15 no.7:546-563 N '61.

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(FOOD)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

FACHR, J.; SVOLASKOVA, V.

Influence of personal factors in the collection of data on food consumption. Cesk. gastroent. vyz. 15 no.8:576-583 D '62.

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(NUTRITION SURVEYS)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

MASEK, Josef; KRIKAVA, Louis; OSANCOVA, Katerina; statisticke zpracovani
ZVOLANKOVA, K.; HATLE, J.

The level of blood cholesterol and phospholipids in the population II. Cholesterol level in the Czechoslovakian population and seasonal variations. Cas lek. cesk. 101 no.51:1489-1494 21 D '62.

1. Ustav pro vyzkum vyzivy lidu, Praha - Krc, reditel prof. dr. J. Masek.
(BLOOD CHOLESTEROL) (SEASONS)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

HATLE, J.; ZVOLANKOVA, K.

Seasonal variations in nutritional characteristics. 2. Cesk. gastroent. vyz. 17 no.6:367-370 S '63.

1. Ustav pro vyzkum vyzivy lidu v Praze, reditel prof. dr. J. Masek, DrSc.

(NUTRITION SURVEYS) (SEASONS)
(DIETARY PROTEINS) (DIETARY FATS)
(DIETARY CARBOHYDRATES) (VITAMINS)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

KRONDL, A.; VAVRINKOVA, H.; MICHALEC, C.; stat. zhodnocent: ZVOLANKOVA, K.

Role of the concentration of bile acids in the metabolism of fats. 3. Absorption of fats in man. Cesk. gastroent. vyz. 15 no.4:282-289 Je '61.

1. Ustav pro vyzkum vyzivy lidu v Praze, reditel doc. MUDr. Josef Masek.

(FATS metab) (BILE ACIDS AND SALTS metab)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

MASEK, J.; KRIKAVA, L.; OSANCOVA, K.; statisticke zpracovani ZVOLANKOVA, K.; HATLE, J.

Blood levels of cholesterol and phospholipids in the population. III. Influence of diet and physical work (population studies). Cas. lek. cesk. 102 no.8:198-204 22 F '63.

1. Ustav pro vyzkum vyzivy lidu, Praha-Krc, reditel prof. dr. J.Masek.
(BLOOD CHOLESTEROL) (PHOSPHOLIPIDS) (BLOOD LIPIDS)
(EXERTION) (FATS) (DIETARY PROTEINS) (ASCORBIC ACID)
(BLOOD CHEMICAL ANALYSIS)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

RATH, R.; PLACER, Z.; SLABOCHOVA, Z.; Technicka spoluprace: HRADILOVA, L.; MUNCLINGEROVA, M.; Statisticka spoluprace: ZVOLANKOVA, K., inz.

Body water space. Part 8. Cesk. gastroent. vyz. 19 no.6:335-339 S '65.

1. Ustav pro vyzkum vyzivy lidu v Praze (reditel prof. dr. J. Masek, DrSc.).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

RATH, R. (Praha-Krc, Budejovicka 800); MASEK, J.; PETRASEK, R.; Technicka spoluprace: MUNCLINGEROVA, M.; Statisticka spoluprace: ZVOLANKOVA, K., inz.

Some problems in obesity and body composition. Cas. lek. Cesk. 104 no.51:1386-1389 17 D '65.

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ZVOLANKOVA, M.

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SBORNIK. RADA C: SPISY FAKULTY LESNICKE
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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

VOJTECHOVSKY, M.; HORACKOVA, E.; KUHN, E.; se statistickou spoluprací inž. ZVOLANKOVE, K.

Neuroticism in peptic ulcer. Cas. Lek. Cesk. 101 no.5:142-149 2 F '62.

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(PEPTIC ULCER psychol) (NEUROSES)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVARA, V.; KOTULA, V.; ZVOLENSKY, M.

Ureterocele and its clinical significance. Cesk. radiol. 19 no.2:130-136 Mr '65.

1. Urologicka klinika (Prednosta: MUDr.F.Jakes); II. detska klinika (prednosta: prof. dr. J. Michalickova) Lekarskej fakulty University Karlovy v Bratislave.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

MICHALICKOVA, J.; ZVOLENSKY, M.

Staphylococcal pyopneumothorax in infants and young children. (Frequency and therapy). Cesk. pediat. 16 no.10:890-898 O '61.

1. II detska klinika lek. fak. UK v Bratislave, prednosta prof. MUDr. J. Michalickova.

(STAPHYLOCOCCAL INFECTIONS in inf & child)
(PNEUMOTHORAX in inf & child)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLENSKY, M.; KAPELLEROVA, A.; STEFANOVICOVA, V.

Recurrent and chronic respiratory disease in infants. Cesk. pediat. 19 no.8:688-692 Ag '64.

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

S/128/60/000/010/008/016/XX
A033/A133

AUTHORS: Gel'perin, N. V.; Zvolinskaya, V. V.; Parfenov, V. S., and Sherman, A. D.

TITLE: Technological process of casting crankshafts for the ДВ-30 (DV-30) engine at the Vladimorovskiy traktornyy zavod (Vladimirov Tractor Plant)

PERIODICAL: Liteynoye proizvodstvo, no. 10, 1960, 16 - 17

TEXT: Based on the experience of the Khar'kov "Serp i molot" Plant, the Vladimirov Tractor Plant started the casting of crankshafts for the DV-30 engine. The authors enumerate the deficiencies occurring during the casting of the crankshaft for the СМД-7 (SMD-7) engine at the "Serp i molot" Plant and point out that the elimination of black spots by increasing the machining tolerances is not expedient; therefore, it is necessary to prevent the origination of black spots which can be attained by the desulfurization of the cast iron, bringing the S-content down to 0.008 - 0.005%. This is possible if the cast iron is smelted in a basic electric furnace. Attempts were made to eliminate the technical difficulties connected with the

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production of magnesium-modified cast iron by using other modifiers, like cerium, tellurium, calcium, strontium, lithium, etc. Tests proved cerium and foundry alloys on the base of cerium to be the most suitable modifiers. In comparison with magnesium, cerium offers the following advantages: no metal ejection during modification; the assimilability of cerium amounts to not less than 30%; lower sensitivity of the cast iron to demodifiers; insignificant cast iron temperature drop during the modification process (between 20 and 40°C); uniform distribution of sulfur over the casting and absence of black spots on its surface. In order to maintain a constant chemical cast iron composition during the investigations basic cast iron of the following chemical composition (in %) was smelted in a 3-ton acid electric furnace: 3.5 - 3.8 C; 2.0 - 2.2 Si; 0.8 - 1.0 Mn; not more than 0.04 S. Then this cast iron was remelted in a 50-kg capacity acid induction furnace. The metal was heated to 1,480 - 1,450°C, the modifiers (composition: 5 - 7% Mg, 10% Fe, 40 - 50% Ce, the rest rare earths) amounting to 0.4 - 0.35% of the liquid metal weight was put on the ladle bottom. To remove cementite formations and increase the mechanical properties, the cast iron was subjected to additional modification by 0.3 - 0.4% Cu (Si) 75 ferrosilicium. After two minutes holding in the ladle the metal was poured into the crankshaft

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shell molds. Besides, specimens were cast to determine the macro- and microstructure and the mechanical properties. Table 1 shows the results obtained. The sand-resin mixture was prepared in a mixer of NIILITMASh design, model 821, the shell mold was made on a model 830 machine of NIILITMASh design. The cast crankshaft structure contained ledeburite cementite. The crankshafts were annealed as to the following conditions: holding at 950°C for 2 - 5 hours, cooling in the furnace to 630°C, holding at 630°C for 1 hour, cooling in the furnace to 450°C, further cooling in the air. In comparison to die-forged crankshafts 22 kg metal were saved with each cast crankshaft. The economic effect amounts to 15% of the crankshaft cost price. There are 4 figures, 2 tables and 4 Soviet-bloc references.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZHUKOV, A.A.; ZVOLINSKAYA, V.V.

Certain problems in the geometry of the structural diagrams of iron-carbon-sulfur alloys. Zhur. fiz. khim. 38 no.2:483-485 F '64. (MIRA 17:8)

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

GEL'PERIN, N.V.; ZVOLINSKAYA, V.V.; PARFENOV, V.S.; SHERMAN, A.D.

Crankshaft founding procedure at the Vladimir Tractor Plant for DV-30 engines. Lit. proizv. no.10:15-16 O '60. (MIRA 13:10)
(Vladimir--Founding) (Cranks and crankshafts)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

MIKHALEV, I.P.; ZVOLINSKAYA, V.V.; KUROCHKIN, P.D.

Casting and stand testing of cerium cast iron crankshafts. Lit. proizv. no.9:40-41 S '64. (MIRA 18:10)

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ADRIANOVA, V.P.; ANDREYEV, T.V.; ARANOVICH, M.S.; BARSKIY, B.S.; GROMOV, N.P.; GUREVICH, B.Ye.; DVORIN, S.S.; YERMOLAYEV, N.F.; ZVOLINSKIY, I.S.; KABLUKOVSKIY, A.F.; KAPELOVICH, A.P.; KASHCHENKO, D.S.; KLIMOVITSKIY, M.D.; KOLOSOV, M.I.; KOROLEV, A.A.; KOCHINEV, Ye.V.; LESKOV, A.V.; LIVSHITS, M.A.; MATYUSHINA, N.V.; MOROZOV, A.N.; POLUKAROV, D.I.; RAVDEL', P.G.; ROKOTYAN, Ye.S.; SMOLYARENKO, D.A.; SOKOLOV, A.N.; USHKIN, I.N.; SHAPIRO, B.S.; EPSHTEYN, Z.D.; AVRUTSKAYA, R.F., red. izd-va; KARASEV, A.I., tekhn.red.

[Brief handbook on metallurgy, 1960] Kratkii spravochnik metallurga, 1960. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1960. 369 p. (MIRA 13:7)
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ZVOLINSKIY, M.V. and ZAITSEV, L.P.

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SO: Translation-2524467, 30 Apr 1954.

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VOLKOV, Yu.I., inzh.; GAFANOVICH, A.A., kand.tekhn.nauk; GLADKOV, N.G., kand.sel'skokhoz.nauk; GORKUSHA, A.Ye., agr.; ZHITNEV, N.P., inzh.; ZANIN, A.V., kand.tekhn.nauk; ZAUSHITSYN, V.Ye., kand.tekhn.nauk; ZVOLINSKIY, N.P.; ZEL'TSERMAN, I.M., kand.tekhn.nauk; KAIPOV, A.N., kand.tekhn.nauk; KASPAROVA, S.A., kand.sel'skokhoz.nauk; KOLOTUSHKINA, A.P., kand.ekon.nauk; KRUGLYAKOV, A.M., inzh.; KURNIKOV, I.I., inzh.; LAVRENT'YEV, L.N., inzh.; LEBEDEV, B.M., kand.tekhn.nauk; LEVITIN, Yu.I., inzh.; MAKHLIN, Ye.A., inzh.; NIKOLAYEV, G.S., inzh.; POLESHCHENKO, P.V., kand.tekhn.nauk; POLUNOCHEV, I.M., agr.; P'YANKOV, I.P., kand.sel'skokhoz.nauk; RABINOVICH, I.P., kand.tekhn.nauk; SOKOLOV, A.F., kand.sel'skokhoz.nauk; STISHKOVSKIY, A.A., inzh.; TURBIN, B.G., kand.tekhn.nauk; CHABAN, I.V., inzh.; CHAPKEVICH, A.A., kand.tekhn.nauk; CHERNOV, G.G., kand.tekhn.nauk; SHMKLEV, B.M., kand. tekhn.nauk; KRASNICHENKO, A.V., inzh., red.; KLETSKIN, M.I., inzh., red.; MOLYUKOV, G.A., inzh., red.; BLAGOSKLONOVA, N.Yu., inzh., red.; UVAROVA, A.F., tekhn.red.

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Cultivators for taking care of tilled crops. Sel'khozmashina no.10:14-20 O '53. (MLRA 6:11)
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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

LAYKHTER, E.G.; CHUMAK, A.V., inzh., red.; BEZHUCHKIN, I.P., kand.tekhn. nauk, red.; ZANIN, A.V., kand.tekhn.nauk, red.; ZVOLINSKIY, N.P., inzh., red.; IVANOV, I.S., inzh., red.; KLETSKIN, M.I., inzh., red.; PETROV, G.D., kand.tekhn.nauk, red.; PUSTYGIN, M.A., doktor tekhn. nauk, red.; RABINOVICH, I.P., kand.tekhn.nauk, red.; RUDASHEVSKIY, D.Sh., kand.tekhn.nauk, red.; SINEOKOV, G.N., doktor tekhn.nauk, red.; SYSOYEV, N.I., kand.tekhn.nauk, red.; FEDOROV, V.A., inzh., red.; CHAPKEVICH, A.A., kand.tekhn.nauk, red.; PONOMAREVA, A.A., tekhn.red.

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1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya.

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1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya.

(Agricultural machinery)

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

VETCHINKIN, VLADIMIR PETROVICH, and N.V. ZVOLINSKIY

Kriticheskaia uglovaia skorost' rastianutogo vala. Sposoby opredeleniia natiazheniia v trossakh i kanatakh. Moskva, 1931. 32p., illus. (TSAGI. Trudy, no.75)

Summary in English.

Title tr.: The critical speed of a rotating shaft under tension. Methods of determining tension on wire ropes and cables.

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

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Summary in English.

Title tr.: Some cases of an exact solution of the problem of center of bending.

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

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Bibliographical footnotes.

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Title tr.: Application of the integral equation method to the solution of a problem of stability of a cylindrical shell.

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5A

A 53
B

65. Torsion of Bar under Tension. P. M. Riz and N. V. Zvolinsky. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 30, 2-3. *pp.* 101-104, 1938. *In English.*—According to the linear theory of elasticity, the state of stress of a prism subjected to combined torsion and tension is obtained by superposing the two sets of stresses for torsion and tension acting separately, and this result does not accord with experiment. In this paper, second-order terms are retained in the expression for the strains, and the law relating principal stresses σ_i with principal elongations e_i is assumed to be, for finite displacements not exceeding the limit of proportionality, $\sigma_i = \lambda \sum_{a=1}^{3} e_a + 2Ge_i$. An expression is then worked out for the torsional stiffness T of the prism, which provides a correcting factor to T_0, the stiffness in the absence of tension. J. P. A.

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

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Szhatie priamougol'noi plastinki za predelom ustoichivosti. Moskva, 1940. 28 p., illus. (TSAGI. Trudy, no. 505)

Title tr.: Compression of a rectangular plate beyond the buckling point.

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"Problem of Strain in a Floating Ice Layer," Works of Sci-Res Institution of the Main Administration of the Hydrometeorological Service SSSR, Series IV, No 20, 1946 (16-28). (Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

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A.T.R

Wave Motion, Propert, Seismology 36

317. N. V. Zvolinskiy, "Plane waves in an elastic semispace covered with a liquid layer" (in English), *C. R. Acad. Sci. URSS*, Apr. 10, 1947, vol. 56, no. 1, pp. 19-22.

This paper deals with the propagation of plane waves in an elastic semispace covered with a layer of inviscid compressible liquid. The surface of the liquid is assumed parallel to the plane boundary of the elastic medium, while the wave fronts are normal to it. Two cases are considered, depending on the relative magnitude of the velocity of propagation of the plane waves, and of the two specific velocities of propagation of waves in the solid. By the use of the boundary conditions, the velocity potential of the motion in the liquid and the potentials of displacement in the solid are expressed as infinite series involving two arbitrary functions.

The paper is clearly motivated by a geophysical problem, but no applications or numerical results are given. It may be compared with work by V. Gogoladze [*C. R. Acad. Sci. URSS*, 1945, vol. 49, nos. 5 and 7] on reflection and refraction of nonstationary waves. See also S. L. Sobolev [*Trans. Seism. Inst. Acad. Sci. USSR*, 1933, no. 18 (in Russian)] and D. J. Slatman [*Trans. Seism. Inst. Acad. Sci. USSR*, 1945, no. 115 (in Russian)].

A. Robinson, England

Jan 48

SB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

USSR/Geophysics 1 May 1947
Seismology

"Surface Plane Waves in an Elastic Semi-space and a Liquid Layer Covering It," N V Zvolinskiy, 4 pp

"Dok Akad Nauk USSR Nov Ser" Vol LVI, No 4

Purely theoretical treatment

1T92

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

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Title tr.: Free oscillations of a three-blade propeller.

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

"Diffusion of Shock from a Point Impulse in an Elastic Semi-Space Covered by a Liquid Layer," Dokl AN, 59, No. 6, 1948

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V.

DOC PHYSICOMATH SCI

Dissertation: "Certain Problems of Vibration Propagation in an elastic Medium with Plane-Parallel Boundaries."

18 May 49

Geophysics Inst, Acad Sci USSR

SO Vecheryaya Moskva
Sum 71

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

USSR/Nuclear Physics - Disintegration 14Mar 49
Nuclear Physics - Fission

"The Rules of Selection for Beta-Disintegration," N. V. Zvolinskiy, Geophys Inst, Acad Sci USSR, 2 pp

"Dok Ak Nauk SSSR" Vol LXV, No 2

Establishes that beta-transformation is possible if no realignment occurs in the nucleus, and that beta-transformation is always forbidden when realignment does occur. Submitted by Acad P. I. Lukirskiy, 13 Jan 48.

[redacted]

39/49T95

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V.

USSR/Geophysics - Head Waves, Properties of — Sep/Oct 51

"Investigation of Head Wave With Axial Symmetry, Originating in Plane Boundary of Separation Between Two Elastic Fluids," L. P. Zaytsev, N. V. Zvolinskiy, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk, Ser Geofiz" No 5, pp 40-50

Authors had discussed this problem in 2-dimensional space (ibid. No 1, 1951). Here they study properties of head wave produced from incident wave having no plane front, excited by point source on plane boundary between 2 elastic fluids. For soln

193T35

USSR/Geophysics - Head Waves, Properties of (Contd) — Sep/Oct 51

they utilize results obtained for plane polarized oscillations. Submitted 20 Jun 51.

193T35

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3

USSR/Geophysics - Seismography 176T43

Jan/Feb 51

"Analysis of Head Wave Occurring in the Boundary Between Two Elastic Liquids," L. P. Zaytsev, N. V. Zovlinskiy, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geog i Geofiz" Vol XV, No 1, pp 20-39

Dynamic properties of head wave produced by incidence of wave with nonplanar front on boundary between 2 elastic media. Properties of this wave are of interest for analysis of seismographic observations. Wave analysis is processed by function-invariant soln suggested by V. I. Smirnov and S. L. Sobolev, assuming plane-polarized oscillations in boundary plane between the 2 media. Oscillator is assumed to be point source of cen propagation type.

PA 176T43

USSR/Geophysics - Tectonics Nov/Dec

"Review of V.V. Belousov's Book 'Tectonic Faults, Their Types and Mechanism of Formation'," P.N. Kropotkin, Dr of Geol-Min Sci, N.V. Zvolinskiy and Yu.V. Riznickenko, Drs of Phys-Math Sci, reviewers

Iz Ak Nauk SSSR, Ser Geofiz, No 6, pp 561-568

Favorably review V.V. Belousov's book "Tektonicheskiye razryvy, ikh Tipy i Mekhanizm Obrazovaniya," which is No 17 (144) of the series entitled 'Trudy Geofizicheskogo Instituta AN SSSR' (Works of th Geophys Inst Acad Sci USSR), Izdatel'stvo AN SSSR (Publishing House of Acad Sci USSR), Moscow, 1952, 147 pp with illustrations, 1000 copies, price 8 rubles.

273T63

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Card 1/1

Author : Zvolinskiy, N. V., Dr. Phys-Math. Sci.;
Levin, B. Yu., Cand Phys-Math. Sci.;
Molodenskiy, M. S., Corr. Mem. Acad. Sci. USSR.

Title : Vnutrenneye stroyeniye zemli [Internal structure of the Earth], by V. F. Bonchkovskiy

Periodical : Izv. AN SSSR, Ser geofiz. 3, p 299, May/Jun 1954

Abstract : Favorable review of geophysics book, belonging to the popular-science series put out by the Acad. Sci. USSR. The book contains a large amount of material in the form of numerous graphs, maps, and tables.

Institution :

Submitted :

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZYUZIN, A.I. Ref.

Multiple reflections of elastic waves in a layer. Trudy Geofiz.inst. no.22:26-49 '54. (MIRA 8:4)
(Seismology)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ISHLINSKIY, A.Yu.; ZVOLINSKIY, N.V.; STEPANENKO, I.Z.

Theory of elasticity. Dokl.AN SSSR 95 no.4:729-731 Ap '54. (MLRA 7:3)

1. Deystvitel'nyy chlen Akademii nauk USSR (for Ishlinskiy).
(Soil mechanics) (Blasting)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

LEYBENZON, Leonid Samuilovich, 1879-1951 (deceased); NEKRASOV, A.I., akademik; TIKHONOV, A.N.; IL'YUSHIN, A.A.; SOKOLOVSKIY, V.V.; GALIN, L.A.; SHCHELKACHEV, V.N., doktor tekhnicheskikh nauk; TREBIN, F.A., doktor tekhnicheskikh nauk; GRIGOR'YEV, A.S., kandidat tekhnicheskikh nauk; SEDOV, L.I., akademik, redaktor; ZVOLINSKIY, N.V., professor, redaktor; ALEKSEYEVA, T.V., tekhnicheskiy redaktor.

[Collected works] Sobranie trudov. Moskva, Izd-vo Akademii nauk SSSR. Vol.4[Hydroaerodynamics. Geophysics] Gidroaerodinamika, Geofizika, 1955. 398 p. (MLRA 8:11)

1. Chlen-korrespondent AN SSSR (for Tikhonov, Il'yushin, Sokolovskiy, Galin)

(Geophysics) (Fluid dynamics)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

USSR/Physics
Mechanics

Card 1/1 Pub. 85 - 6/16 FD-3091

Author : Zvolinskiy, N. V.; Ishlinskiy, A. Yu.; Stepanenko, I. Z.

Title : Remarks on S. S. Grigoryan's article "Stating of dynamic problems for ideal plastic media"

Periodical : Prikl. mat. i mekh., 19, Nov-Dec 1955, 733

Abstract : The present authors remark that S. S. Grigoryan carried out interesting investigations of the equation of state of plastic medium, which equation was proposed by them ("Dynamics of ground masses," DAN SSSR, 95, No 4, 1954), and his results deserve attention. Grigoryan pointed out that the energy condition on the surface of strong discontinuity is fulfilled during the entire time of the process only if in the external region the pressure equals the critical pressure, as was assumed in the authors' work, and he also made a conclusion concerning the impossibility of the existence of a certain zone III etc. As a result Grigoryan concludes categorically that the stated problem cannot be solved by means of the authors' equation of state. The present authors cannot agree with the categorical character of this conclusion. The authors consider their scheme as a limiting scheme and not as completely solving the problem of deformation of densification of grounds. The entire problem consists in whether their description gives the main outlines of the phenomenon of dynamic densification of grounds. The problem remains open.

Submitted :

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

FOLDNSKIY, N.V.; SKORIDIN, G.A.

Asymptotic solution of dynamic problems on the theory of elasticity. Izv.AN SSSR.Ser.geofiz.no.2:134-143 F '56. (MLRA 9:7)

1.Akademiya nauk SSSR, Geofizicheskiy institut.
(Elasticity) (Waves)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

SOV/124-57-9-10813

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 9, p 140 (USSR)

AUTHORS: Antsyferov, M. S., Zvolinskiy, N. V., Konstantinova, A. G.

TITLE: On the Emission and Propagation of Quasi-harmonic Elastic Waves Under the Conditions Obtaining in Underground Mines (Ob izuchenii i raspostranenii kvazigarmonicheskikh uprugikh voln v usloviyakh podzemnykh vyrabotok)

PERIODICAL: Tr. Geofiz. in-ta. AN SSSR, 1956, Nr 34 (161), pp 280-295

ABSTRACT: The authors examine problems relating to the emission and propagation of quasi-harmonic stationary elastic waves under conditions obtaining in underground mines. For the purposes of their examination of these problems the medium is considered to be ideally homogeneous. They examine two types of driving forces: 1) Forces acting from within the elastic medium [three-dimensional (spherical; Transl. Ed. Note)] waves and 2) forces acting on the free boundary of a semi-infinite medium (surface waves). It is established that the driving power needed to excite surface waves having a given amplitude is approximately two orders of magnitude smaller than the driving power needed to excite three-dimensional waves having that same amplitude.

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

SOV/124-57-9-10813

On the Emission and Propagation of Quasi-harmonic Elastic Waves Under the (cont.)

Also, the authors elucidate the law whereby the intensity of the emissive power must increase with the observer's distance from the emitter. An account is given of observation methods used, and the results obtained thereby, in coal mines of the Donbass. While, in general, the author's experimental findings do support their theoretical conclusions, the wave-attenuation picture as traced by them is rendered more complicated in some respects by the operation of interference and resonance factors. Included are experimental data on the propagation distance of elastic waves (in the 300-1,000 cps frequency range) in Donbass coal seams and in the rock enclosing them.

Authors' résumé

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V.

AUTHOR: Zvolinskiy, N. V. 49-10-1/10

TITLE: Reflected and primary waves occurring at a plane boundary of division of two elastic media. Part I. (Otrazhennyye i golovnyye volny, voznikayushchiye na ploskoy granitse razdela dvukh uprugikh sred. I)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1957, No.10, pp.1201-1218 (USSR)

ABSTRACT: In 1933 Smirnov, V. and Sobolev, S. (Ref.1) published a paper (in French) in which they expounded a new method of integration of the wave equation by means of the functional-invariant solution. In earlier work, the author of this paper and Zaytsev, L.P. (Refs.2 and 3) found that this method is very suitable for studying the near front zone of the wave and leads to physically clear results but they studied only very simple problems. G. S. Markhasev, G.S. (Ref.4) also considered the reflection and refraction of spherical waves on a plane boundary of two elastic media; he developed a method of separating the asymptotic part of the wave field. However, he did not consider important features of the wave field and his final results are in a too general form which makes their practical utilisation difficult.

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

49-10-1/10

Reflected and primary waves occurring at a plane boundary of division of two elastic media. Part I.

In this paper the author shows that the method of functionally invariant solutions can be applied for the near front zone of the waves entering on the background of the preceding wave field in addition to the first entries of the reflected waves and primary waves. Using the method of functionally invariant solutions, the author studies the reflected and the main waves forming at a plane boundary of division of two elastic media. The author also describes a method of separating the asymptotic part of the field in a different formulation which gives clearer results and the final form of which is convenient for practical application. The problem of reflection and refraction of elastic waves on a plane boundary has also been studied by other authors (Refs.5-8) who used different variants of the method of sub-division of the variables. However, for the given problem, the method of functionally invariant solutions leads to the same final formulae as the sub-division of the variables and, therefore, the formulae arrived at in this paper are not new; they approach closely those published by Ogurtsov, K. I. (Ref.8). The derived final formulae for

Card 2/3

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the incident and the reflected waves, eqs.(26''') and (25''') are given on p.1217; these are based on the assumption that the duration of the action of the source is so small that all the caused disturbances are located within the near front zone.
There are 8 figures and 10 references, 7 of which are Slavic.

SUBMITTED: February 7, 1957.

ASSOCIATION: Ac.Sc., U.S.S.R. Institute of Physics of the Earth. (Akademiya Nauk SSSR Institut Fiziki Zemli).

AVAILABLE: Library of Congress

Card 3/3

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V.

49-1-1/16

AUTHOR: Zvolinskiy, N.V.

TITLE: Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II (Otrazhennyye i golovnyye volny, voznikayushchiye na ploskoy granitse razdela dvukh uprugikh sred. II)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 1, pp.3-16 (USSR).

ABSTRACT: The problem was investigated in Ref.(1) of the reflection and the refraction of spherical waves at a plane boundary between two elastic half-spaces. The solution of this problem was derived by the method of functionally invariant solutions, and the possibility of approximately describing the reflected wave PP in the region of incidence was indicated. In the present paper the author considers the approximate description of the reflected wave PS and the direct waves in the region of incidence. The statement of the problem, the choice of a frame of reference and the choice of symbols are as in Ref.(1). It is assumed that at a distance, z_0, from the plane boundary division there consists a point source of disturbance emitting a spherical, longitudinal wave. The source strength is given by:

Card 1/11

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\varphi_0 (r, z, t) = \begin{cases} \dfrac{a_1 (a_1 t - R_0)}{R} & \text{when } a_1 t > R_0 , \\ 0 & \text{when } a_1 t < R_0 . \end{cases} \quad \text{(Eq.1)}$$

The velocities of propagation of the waves in the two half-spaces are assumed to satisfy the inequality

$$b_1 < a_1 < b_2 < a_2 . \quad \text{(Eq.1')}$$

Under these conditions there are two reflected waves PP and PS, two refracted waves PP_1 and PS_1, and five direct waves PPP, PPS, PSP, PSS, PP_1S_1. The radial and axial components of the disturbance specified by the wave PS are expressed by the formulae (Ref.1):

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Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\left.\begin{aligned} q_s &= \frac{-a_1^2}{\pi} \operatorname{Re}\int_0^{\pi} B(\vartheta_1) \frac{\vartheta_1\sqrt{\frac{1}{b_1^2} - \vartheta_1^2}}{\sqrt{1 - a_1^2\vartheta_1^2}} \frac{\cos\omega d\omega}{\Delta_1'} \\ w_s &= \frac{a_1^2}{\pi} \operatorname{Re}\int_0^{\pi} B(\vartheta_1) \frac{\vartheta_1^2 d\omega}{\sqrt{1 - a_1^2\vartheta_1^2\Delta_1'}} \end{aligned}\right\} \quad \text{(Eq.2)}$$

Here ϑ_1 is a function of r, z, t, ω, defined by :

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\Delta_1 \equiv t - r \cos \omega \vartheta_1 - z\sqrt{\frac{1}{b_1^2} - \vartheta_1^2} - z_0\sqrt{\frac{1}{a_1^2} - \vartheta_1^2} = 0. \qquad \text{(Eq.3)}$$

$B(\vartheta_1)$ is the coefficient of reflection of the reflected transverse wave (Ref.1). A new variable is introduced by the relation

$$s = \sqrt{1 - b_1^2 \vartheta_1^2} \quad ;$$

In terms of the new variable Eq.(3) takes the form

$$b_1 t - r\sqrt{1 - s^2} \cos \omega - zs - z_0\sqrt{s^2 - \gamma^2} = 0, \qquad \text{(Eq.3'')}$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

where

$$\gamma^2 = 1 - \frac{b_1^2}{a_1^2}$$

The integral expressions (Eq.2) are transformed to

$$\left.\begin{aligned} q_s &= \frac{a_1}{\pi b_1 r} \operatorname{Re} \int_{l_s} \frac{B(s)}{\sqrt{s^2-\gamma^2}\sqrt{1-s^2}} \frac{[b_1 t - zs - z_0\sqrt{s^2-\gamma^2}]s^2 ds}{r\sqrt{1-s^2}\sin\omega}, \\ w_s &= -\frac{a_1}{\pi b_1} \operatorname{Re} \int_{l_s} \frac{B(s)}{\sqrt{s^2-\gamma^2}\sqrt{1-s^2}} \frac{(1-s^2)s\, ds}{r\sqrt{1-s^2}\sin\omega} \end{aligned}\right\} \quad (2')$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

$B(s)$ denotes the coefficient of reflection of the transverse wave regarded as a function of the new variable s. The path of integration obtained by transforming the straight line segment $(0, \gamma)$ in the plane ω is denoted by l_s. In order to clarify the characteristic properties of the line l_s and the possibility of transforming the path of integration, it is necessary to study the transformation of the plane of the complex variable s described by the function

$$W = \cos \omega = \frac{b_1 t - zs - z_0 \sqrt{s^2 - \gamma^2}}{r\sqrt{1 - s^2}} \qquad \text{(Eq.4)}$$

It is proved that the equation $dW/ds = 0$ has a single root which lies on the real axis to the right of the point γ. The zeros of dW/ds lying in the finite part of the plane are given by

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$W_1 \equiv z + z_0(1 - \gamma^2)\frac{s}{\sqrt{s^2 - \gamma^2}} - b_1 ts = 0 . \qquad \text{(Eq.5)}$$

By considering the change in $\arg W_1$ round a closed contour in which $W_1(s)$ is regular, it is seen that there is one real root. If $W_1(1) < 0$, then the root lies in the interval $(\gamma, 1)$. The author considers the contour l_s under the supposition that the above inequality holds, and derives:

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\left.\begin{aligned} q_s &= \frac{a_1}{\pi b_1 r} \operatorname{Re} \int_{l_s} B(s) \frac{(zs + z_0\sqrt{s^2-\gamma^2} - b_1 t)s^2 ds}{\chi(s)\sqrt{(s-s_1)(s_2-s)}}, \\ w_s &= -\frac{a_1}{\pi b_1} \operatorname{Re} \int_{l_s} B(s) \frac{(1-s^2)s\, ds}{\chi(s)\sqrt{(s-s_1)(s_2-s)}} \end{aligned}\right\} \quad \text{(Eq.2'')}$$

in which s_1 and s_2 are the images of the points $W = +1$ and $W = -1$, and $\chi(s)$ is a holomorphic function which does not vanish in the plane in which there is a cut between the points s_1 and s_2. The problem

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

now arises of obtaining from Eqs.(2'') asymptotic expressions describing the field of disturbance in the region of incidence of wave PS. The required expressions are:

$$q_s = -\frac{a_1}{b_1} \frac{R(\cos\alpha)\sin\alpha\cos^2\alpha}{\tilde{R}} f'(\Delta n) ,$$

$$w_s = -\frac{a_1}{b_1} \frac{B(\cos\alpha)\cos\alpha\sin^2\alpha}{\tilde{R}} f'(\Delta n)$$

where $\tilde{R}$ is given by

$$\tilde{R} = \sqrt{\frac{r}{\sin\alpha}} \sqrt{\frac{z}{\cos\alpha} + z_0 \frac{\sin^2\beta\cos^2\alpha}{\sqrt{(\cos^2\alpha - \cos^2\beta)^3}}} \qquad \text{(Eq.14')}$$

and $\cos\alpha = s_0^*$, and s_0^* is the value of s at the vertex of the wave front, and $f(s)$ is given by:

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$f(s) \equiv r^2(1 - s^2)\sin^2\omega = \chi^2(s)(s - s_1)(s_2 - s) \qquad \text{(Eq.13)}$$

The author goes on to study the direct waves, and obtains from Eq.(2''):

$$q'_s = \frac{a_1}{2b_1} B^*_{10} \frac{\sin^2 \beta_{21} (\cos \beta_{21})^{5/2}}{\sqrt{r}\, \ell^{3/2}} f(\Delta n) \qquad \text{(Eq.22')}$$

and :

$$w'_s = \frac{a_1}{2b_1} B^*_{10} \frac{\sin^2 \hat{\beta}_{21} (\cos \beta_{21})^{3/2}}{\sqrt{r}\, \ell^{3/2}} f(\Delta n) \qquad \text{(Eq.22'')}$$

where B^*_{10} is the coefficient of the direct wave PPS,

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Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\gamma_{21} = \cos \beta_{21}, \; b_1 t - z\gamma_{21} - z_0\sqrt{\gamma_{21}^2 - \gamma^2} = r \sin \beta_{21} ,$$

$$-\Delta n = dr \sin \alpha + dz \cos \alpha, \; \ell = r \cos \alpha - (z + z_0)\sin \alpha .$$

There are 10 figures and 2 Slavic references.

ASSOCIATION: Ac. of Sciences USSR, Institute of Earth Physics (Akademiya nauk SSSR, Institut fiziki Zemli)

SUBMITTED: September 27, 1957.

AVAILABLE: Library of Congress.

Card 11/11

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ZVOLINSKIY, N. V.

AUTHOR: Zvolinskiy, N. V. 49-58-2-3/18

TITLE: Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III. (Otrazhennyye i golovnyye volny, vozniknyushchiye na ploskoy granitse razdela dvukh uprugikh sred. III.)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr. 2, pp. 165-174. (USSR)

ABSTRACT: In Refs. 1 and 2 were discussed reflected and direct waves occurring on a background previously quiescent. Of such a character are the direct waves PPP and PPS, and also the reflected waves PP and PS, in regions up to the critical angle. Beyond the critical angle the nature of the reflected wave changes markedly. A similar change takes place in the waves PSP and PSS by comparison with PPP and PPS respectively. This raises a number of questions which are discussed in the present paper. In studying the field of waves PSP and PSS we shall define only those components

Card 1/7

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49-58-2-3/18

Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

of the field which are discontinuous at the front. In order to study the wave PSP it is necessary to return to the representation of displacements in the reflected longitudinal wave which were described by Eqs.16 of Ref.1. The author then goes on to derive closed formulae for the domain in the neighbourhood of the front of the wave PSP for the case when the incident wave has the form of a step. If the wave has arbitrary form, then the result can be obtained by the method of superposition, with the additional condition that the displacements on the incident wave are non-zero only for a sufficiently small neighbourhood of the front. The wave PSS is investigated in a similar manner, and the transition to an arbitrary wave-form is made in the same way as for the wave PSP. In Section 5 of Ref.1, and Section 2 of Ref.2 were given expressions for the displacement fields in the neighbourhoods of the fronts of the waves PP and PS for those parts of the front which are situated behind the initial source

Card 2/7

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49-58-2-3/16

Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

of the direct waves. For other parts of the fronts which appear on the background ahead of the direct waves the character of the displacement field has an additional component. This component is similar to that which appears in the reflection of a plane wave beyond the critical angle. This situation can occur in four different forms: the wave PP can be observed against the background of the direct wave PPP or the direct wave PSP; the reflected wave PS can be observed against the background of PPS or PSS. Avoiding superfluous repetition, only one of these cases need be discussed in detail; for example, the case of the wave PP appearing after PPP. For the other cases only the final results are given. The general expression for displacements in the reflected longitudinal wave was given by formula 16 of Ref.2. In the three cases for which results are merely quoted, the formulae apply when the wave has

Card 3/7

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49-58-2-3/18

Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

the form of a step. The author notes some errors which have been noticed in his previous papers. In Ref.3, in the denominators in the formulae on p.48 the index 3/4 should be replaced by 3/2. This error affects some of the conclusions at the end of the paper. In the formulae for q_1 and w_1 on p.47 a logarithmic term has been omitted. In Ref. 4 an explicit expression for the reflected wave appearing after a direct wave was not deduced, and this led to an incorrect interpretation of the calculated reflection coefficients (observations on p.37 at the end of Section 2, on p.39 at the end of Section 3 and on p.45 at the end of Section 5). In his general conclusions to the three papers the author states: 1. Results of Refs. 1 and 2 and the present paper make it possible to derive approximate formulae, from general integral representations, which are valid in the neighbourhoods of the fronts of the separate waves. These formulae are sufficiently simple for practical

Card 4/7

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Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

application. They make it possible to resolve the question of the form of the oscillations and the intensity of the separate waves. These formulae are identical with those obtained earlier by authors referred to in the introduction to the first article.
2. In the reflected waves PP and PS behind the first source of the direct wave, the form of the oscillations remains the same as in the incident wave. The form and amplitude are determined from formulae 25 of Ref.1, and formulae 15 of Ref.2.
3. In the direct waves PPP and PPS the form of the oscillations is obtained by integrating functions describing the form of the incident wave. Formulae for calculating the field of these waves were deduced in Ref.2.
4. In the reflected waves PP and PS ahead of the source of the first direct wave, the form of the oscillations changes. To the component which duplicates the oscillations in the incident wave is

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added a term which has a form conjugate to the form of the incident wave. Calculation of the field is carried out from formulae (9) to (12) of the present paper.

5. The oscillations in the direct waves PSP and PSS also consist of two components. The first duplicates the form of the waves PFP and PSP, the second has a conjugate form. Calculation of a field is carried out from formulae (4), (4') and (6) of the present paper.

6. The intensity of the oscillations (amplitude) of the separate waves depends not only on their type, the properties of the media and the amplitude of the incident wave, but also on its form. This shows that regarding the amplitude of a wave as a dynamic property in the interpretation of seismological observations, it is necessary to take into account the form of the incident wave. There are 2 figures and 4 Russian references.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

49-58-2-3/18

Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

ASSOCIATION: Academy of Sciences USSR, Institute of Earth Physics. (Akademiya nauk SSSR, Institut fiziki Zemli).

SUBMITTED: September 27, 1957.

AVAILABLE: Library of Congress.

Card 7/7

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Zvolinskiy, N.V.

Dispersion of Love surface waves in a two-layered medium.
Trudy Inst.geofiz.AN Gruz.SSR 17:121-137 '58.
(MIRA 13:4)

1. Institut fiziki Zemli AN SSSR, Moskva.
(Seismic waves)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

VETCHINKIN, Vladimir Petrovich; ZVOLINSKIY, N.V., otv.red.; POLYAKHOV, N.N., otv.red.; SHAPOVALOV, I.K., red.izd-va; POLENOVA, T.P., tekhn.red.

[Selected works] Izbrannye trudy. Moskva, Izd-vo Akad.nauk SSSR. Vol.2. [Screw propellers; Strength of airplanes] Grebnye vinty. Prochnost' samoleta. 1959. 431 p. (MIRA 12:7)
(Propellers, Aerial) (Airplanes--Design and construction)

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

104. A. A. Derkachev (Saratov): Generalization of the method of steepest descent in structural mechanics.

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

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

107. G. Ia. 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. Falkovich (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. F. Blailov (Dnepropetrovsk): The stability of an obliquely bent beam.

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

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

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

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

117. G. S. Elmanovskii (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 lining 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. K. F. Erzhov (Tomsk): The elastic-plastic bending of a bar.

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

122. F. A. Zhuravlev, A. F. [illegible], K. F. Zyrianov (Leningrad): Application of the method of characteristics to the determination of the tension in the cable of a mine elevator.

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

124. Ia. I. Zaitsev (Moscow): On the surface-tied-wave.

125. B. V. Zvantsev, Sh. E. Katz (Leningrad): An experimental study of creep-rupture characteristics of tubes under combined stresses.

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

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

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

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

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

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

132. I. E. Lazov, Ia. I. Lapi (Leningrad): Plastic tension and torsion of thin-walled metal tubes that have become anisotropic through prior plastic deformations.

133. Ia. E. Ilenko, B. N. Antonov (Moscow): Investigation of elastic strains and vibrations in aircraft structures by means of electronic computers.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

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SOV/40-24-1-17/28

AUTHOR: Zvolinskiy, N. V. (Moscow)

TITLE: Propagation of an Elastic Wave Due to a Spherical Ground Explosion

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol 24, Nr 1, pp 126-133 (USSR)

ABSTRACT: This article extends some results for rigidly plastic material (obtained by the author jointly with A. Yu. Ishlinskiy and I. Z. Stepanenko (DAN, 1954, Vol 95, Nr 4)) to material which is elastic-plastic. He considers the adiabatic propagation of a spherical wave due to a blasting charge occupying a spherical cavity (the wave process inside the cavity is not considered). Several assumptions are made which the author notes are subject to empirical verification. First, the work of plastic deformation increases with increasing mean stress σ, and in passing from one state to a neighboring state, the change in work is given by:

Card 1/5

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$$\delta A = \iiint m(\sigma)\,|\delta\gamma|\,dV \qquad (1.1)$$

In writing this down, the change in elemental work is assumed to be proportional to the maximum shear $\delta\gamma$, with the proportionality factor $m(\sigma) = \sigma/2 + 2m_1/3$ and $m_1 > 0$. Secondly, the medium can exist in only two states: an initial elastic state and a packed incompressible state, the passage from the first to the second occurring instantaneously. This model is a special case of one proposed by S. S. Grigoryan (DAN, 1959, Vol 124, Nr 2) and is similar to models used by Ishlinskiy (Ukr. matem. zhurnal, 1954, Vol 6, Nr 4) and A. Kompaneyets (DAN, 1956, Vol 109, Nr 1). When the initial stress is large enough, the ground becomes packed in the neighborhood of the cavity, and this packing continues to spread. A derivation of the equations and boundary conditions is then given pertinent to four stages which are characterized by: (a) a shock due to the packing of the ground which

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spreads relative to the undisturbed medium; (b) an elastic wave propagating relative to the undisturbed medium; the packed zone following after it; the shockfront serves as a boundary, and the packing of the ground continues; (c) an elastic wave is propagating; the packed zone follows after it with a contact discontinuity as a boundary; the plastic flow continues, but additional ground packing does not occur; (d) the stoppage of the packed zone; the back front of the elastic wave breaks off, and the wave goes off to infinity. Energy considerations lead to a condition relating the radial stress σ_r and the remaining stress component $\sigma_\alpha = \sigma_\beta$:

$$\sigma_r - \sigma_\alpha = \frac{3}{2} m(\sigma) \qquad (2.3)$$

This is used in connection with the equation of motion and the incompressibility condition to obtain expressions for σ_r in the first three stages involving certain arbitrary constants and the unknown functions $r_0(t)$ and

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$r_s(t)$ for the spherical cavity and shock wave. In each case it is shown how the boundary conditions on the shock and moving cavity, as well as stability in the first stage and a simplifying assumption in the second stage, reduce the problem to determining only the function $r_s(t)$. In stage (a), a first-order linear differential equation for $z'^2 = (dr_s^3/dt)^2$ as a dependent variable and $z = r_s^3$ as independent variable is constructed. This equation shows that the shockfront speed decreases and approaches zero, i.e., the first stage cannot continue indefinitely. When the speed of the shock becomes equal and smaller than sound speed in the undisturbed medium, an elastic wave arises and the second stage begins. In stage (b), a nonlinear first-order differential equation is obtained for the same variables z' and z, which again shows that the speed of the shock dr_s/dt monotonically

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decreases to zero. However, the law of conservation of mass shows that at a certain instant, the shock ceases to exist, though the motion continues. In this third stage, the author introduces a contact discontinuity separating the packed region and elastic wave and suitable boundary conditions on it. Again an equation for the above variables is obtained which shows $z'^2 = (dr_s^3/dt)^2$ vanishes at a certain value. This corresponds to the end of the flow of the plastic layer and the start of the fourth stage. This stage can be handled by known methods. A. A. Girb and S. S. Grigoryan assisted in the preparation of the paper. There are 3 figures; and 6 Soviet references.

SUBMITTED: October 12, 1959

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

L 38700-66 EWT(1) (N)

ACC NR: AT6016916 (N) SOURCE CODE: UR/000/65/000/000/0432/0443

34
33
B+1

AUTHOR: Zvolinskiy, N. V.; Flitman, L. M.; Kostrov, B. V.; Afanas'yev, V. A.

ORG: Institute of Physics of the Earth, AN SSSR, Moscow (Institut fiziki Zemli AN SSSR); Institute of Problems of Mechanics, Academy of Sciences, SSSR (Institut problem mekhaniki Akademii nauk SSSR)

TITLE: Some problems in the diffraction of elastic waves

SOURCE: International Symposium on Applications of the Theory of Functions of Continuum Mechanics. Tiflis, 1963. Prilozheniya teorii funktsiy v mekhanike sploshnoy sredy. t. 1: Mekhanika tverdogo tela (Applications of the theory of functions in continuum mechanics. v. 1: Mechanics of solids); trudy simpoziuma. Moscow, Izd-vo Nauka, 1965, 432-443

TOPIC TAGS: elasticity theory, partial differential equation, integral equation, boundary value problem, approximate solution

ABSTRACT: Three problems are studied: (1) That of waves formed in an elastic medium as a result of momentary disturbance of the continuum along an infinitely long plane strip of finite width. The dynamic equations of elasticity theory are solved under boundary value conditions corresponding to time with initial conditions zero. The problem is shown to be reducible to the Wiener-Hopf problem; (2) The problem of motion under the action of a plane wave of a solid infinite strip in an elastic space. This

Card 1/2

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ACC NR: AT6016916

problem is a generalization of the problem of diffraction of a plane elastic wave on a screen in the form of a strip. Parameters of motion of the strip are defined to satisfy the equations of motion; (3) The problem of the "transparent prism": two elastic (acoustic) media separated by an angular boundary. An effective method is presented for computing the field diffraction for this problem. The authors thank G. F. Mandzhavidze for valuable consultation. Orig. art. has: 41 formulas, 3 figures.

SUB CODE: 20,12/ SUBM DATE: 13Aug65/ ORIG REF: 010/ OTH REF: 002

Card 2/2 SM

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3

(A) L 4041-66 EWT(d)/EWT(m)/EWP(w)/ETC(m) WW/EM

ACCESSION NR: AP5021302 UR/0040/65/029/004/0672/0680

AUTHORS: Zvolinskiy, N. V. (Moscow); Rykov, G. V. (Moscow)

TITLE: Reflection of a planar plastic wave and its refraction at the boundary of two half spaces

SOURCE: Prikladnaya matematika i mekhanika, v. 29, no. 4, 1965, 672-680

TOPIC TAGS: vibration, shock wave propagation, shock wave diffraction, shock wave reflection, plastic deformation, elastic deformation

ABSTRACT: The action of a planar plastic wave striking in a normal direction upon the boundary of two elasto-plastic half-spaces is studied. It is assumed that the initial portion of a compression diagram (see Fig. 1 on the Enclosure) corresponding to elastic deformation is a straight line (OC in Fig. 1) portion of a monotonically increasing curve. In all, six cases of the qualitative nature (elastic or plastic) of the three waves (incident, reflected, and refracted) are possible. The current study deals with two cases: 1) all three waves are plastic, and 2) the incident and reflected waves are plastic, and the refracted wave is elastic. The study is for the purpose of obtaining quantitative descriptions of the waves, and also to determine the conditions causing special cases. Lagrangian coordinates are used as expressed in the equation

$$x(h,t) = h + u(h,t)$$

Card 1/3

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L 4041-66

ACCESSION NR: AP5021302

where u is displacement, and x is an Euler coordinate. Stresses and strains are related by the equations

$$\frac{\partial \sigma}{\partial h} + \rho_0 \frac{\partial v}{\partial t} = 0, \qquad \frac{\partial x}{\partial h} = \frac{\rho_0}{\rho(h)}$$

$$x(h, t) = \int_0^h \frac{\rho_0 d\eta}{\rho(\eta)} + x_0(t), \qquad v(h, t) = \frac{\partial x}{\partial t} = x_0'(t)$$

$$\sigma(h, t) = -\rho_0 x_0''(t) h + \sigma_0(t)$$

where ρ_0 is initial density, and ρ is the density beyond the front of the incident wave ($\rho < \rho_0$). Additional equations are given describing the nature of the shock fronts leading to an equation for the shock front in Lagrangian coordinates. Each of the three wave types is described mathematically in relation to stress, strain, and propagation speed in the coordinates defined. Reflection and refraction coefficients are developed. The methods derived are applied to certain special cases. Orig. art. has: 37 equations and 2 figures.

ASSOCIATION: none

SUBMITTED: 15Dec64 ENCL: 01 SUB CODE: ME

NO REF SOV: 002 OTHER: 000

Card 2/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

L 4041-66
ACCESSION NR: AP5021302

ENCLOSURE: 01

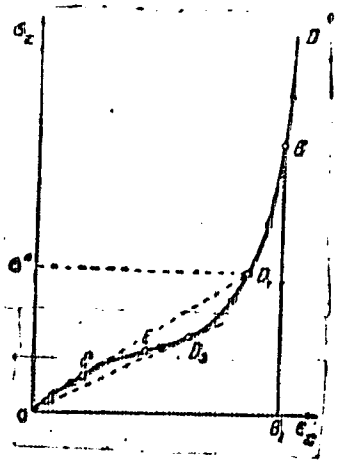

Fig. 1.

Card 3/3 BP

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V. (Moskva)

Wave problems in the theory of elasticity of a continuous medium. Izv. AN SSSR. Mekh. no.1:109-123 Ja-F '65.

(MIRA 18:5)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V.; RYKOV, G.V.

Reflection and refraction of plane plastic waves. Dokl. AN SSSR 161 no.5:1041-1043 Ap '65. (MIRA 18:5)

1. Institut fiziki Zemli im. O.Yu.Shmidta AN SSSR. Submitted November 11, 1964.

ZVOLINSKIY, N.V. (Moskva); KIKOV, G.V. (Moskva)

Reflection of a plastic wave from a barrier. Prikl. mat. i mekh. 27 no.1:91-108 Ja-F '63. (MIRA 16:11)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V. (Moscow)

"Wave propagation in an elastic medium"

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

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

"Dynamics of plastic media"

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

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

GRIGORYAN, S.S.; GRIB, A.A.; ZVOLINSKIY, N.V.; KACHANOV, L.M.; PETROSHEN, G.I.

E.I.Shemiakin's article "Expansion of a gas cavity on a noncompressible elastoplastic medium; study of the action of an explosion on the ground" and N.S.Medvedeva and E.I.Shemiakin's article "Strain waves caused by underground explosion in rocks. Izv.AN SSSR.Otd.tekh.nauk. Mekh.i mashinostr. no.5:173-177 S-O '62. (MIRA 15:10)
(Explosions) (Shemiakin, E.I.) (Medvedva, N.S.)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3

S/040/63/027/001/011/027
[illegible]

AUTHORS: Zvolinskiy, N.V. and Sytov, A.V. [illegible]

TITLE: The reflection of a plastic wave from a barrier

PERIODICAL: Prikladnaya matematika i mekhanika, v. 27, no. 1, 1963, 91-100

TEXT: The authors consider the model proposed by S.S. Grigoryan (PMM, v. 24, no. 6, 1960) for soils. The propagation of a plane wave in a plane medium in which a homogeneous isotropic [illegible] [illegible] the [illegible] [illegible] the [illegible] [illegible] the [illegible] [illegible] stresses and strains [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

S/040/63/027/001/011/027
B151/B50

The reflection of a plastic wave ...

time, the wave front propagates uniformly for an unlimited time, with a velocity that tends asymptotically to zero. 2. the stress varies linearly [illegible] 3. the velocity [illegible] start. Such a wave is taken as the incident wave [illegible]

[illegible]

external stress distribution [illegible]

Card 2/3

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a finite interval of time, after which it instantaneously becomes zero. The case of reflection from an [illegible] capable of [illegible] for the velocity, [illegible] in the case when the incident wave [illegible] are derived in figures.

ASSOCIATION: Institut fiziki zemli AN SSSR (Institute of Earth Physics of the AN USSR)

SUBMITTED: October 24, 1962

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V., RYKOV, G.V.

"Reflection of a plastic wave at an obstacle."

Report submitted to the Intl. Sym. on Stress Waves in Anelastic Solids, Providence, Rhode Island 3-5 April 1963

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

SEDLACEK, B.A.J.; VAVRIKOVA, J.; ZVOLANKOVA, K.

Problems of excessive heating of fats in communal catering. Cesk. hyg. 10 no.1:18-26 F '65.

1. Ustav pro vyzkum vyzivy lidu, Praha.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

KRONDL, A.; MICHALEC, C.; VAVERKOVA, H.; VOKRO, V.; statisticke zhodnoceni ZVOLANKOVA, K.

Effect of the concentration of bile acids for metabolism of lipids. 1. The degree and emulsion of lipids in man. Cesk. gastroent. vyz. 15 no.1:31-38 F '61.

1. Ustav pro vyzkum vyzivy lidu v Praze, reditel doc. MUDr. Josef Masek Laborator pro proteosyntezu University Karlovy v Praze, prednosta prof. Jar. Horejsi.

(BILE ACIDS AND SALTS physiol.)
(LIPIDS metabolism)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

HATLE, J.; ZVOLANKOVA, K.; ROBKOVA, J.

The applicability of food table coefficients in nutritional evaluation. Cesk; gastroent. vyz. 15 no.7:546-563 N '61.

1. Ustav pro vyzkum vyzivy lidu v Praze, reditel doc. MUDr. J. Masek, Dr. Sc.

(FOOD)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

FACHR, J.; SVOLASKOVA, V.

Influence of personal factors in the collection of data on food consumption. Cesk. gastroent. vyz. 15 no.8:576-583 D '62.

1. Ustav pro vyzkum vyzivy lidu v Praze, reditel doc. MUDr. J. Masek, Dr. Sc.

(NUTRITION SURVEYS)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

MASEK, Josef; KRIKAVA, Louis; OSANCOVA, Katerina; statisticke zpracovani
ZVOLANKOVA, K.; HATLE, J.

The level of blood cholesterol and phospholipids in the population II. Cholesterol level in the Czechoslovakian population and seasonal variations. Cas lek. cesk. 101 no.51:1489-1494 21 D '62.

1. Ustav pro vyzkum vyzivy lidu, Praha - Krc, reditel prof. dr. J. Masek.
(BLOOD CHOLESTEROL) (SEASONS)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

HATLE, J.; ZVOLANKOVA, K.

Seasonal variations in nutritional characteristics. 2. Cesk. gastroent. vyz. 17 no.6:367-370 S '63.

1. Ustav pro vyzkum vyzivy lidu v Praze, reditel prof. dr. J. Masek, DrSc.

(NUTRITION SURVEYS) (SEASONS)
(DIETARY PROTEINS) (DIETARY FATS)
(DIETARY CARBOHYDRATES) (VITAMINS)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

KRONDL, A.; VAVRINKOVA, H.; MICHALEC, C.; stat. zhodnocent: ZVOLANKOVA, K.

Role of the concentration of bile acids in the metabolism of fats. 3. Absorption of fats in man. Cesk. gastroent. vyz. 15 no.4:282-289 Je '61.

1. Ustav pro vyzkum vyzivy lidu v Praze, reditel doc. MUDr. Josef Masek.

(FATS metab) (BILE ACIDS AND SALTS metab)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

MASEK, J.; KRIKAVA, L.; OSANCOVA, K.; statisticke zpracovani ZVOLANKOVA, K.; HATLE, J.

Blood levels of cholesterol and phospholipids in the population. III. Influence of diet and physical work (population studies). Cas. lek. cesk. 102 no.8:198-204 22 F '63.

1. Ustav pro vyzkum vyzivy lidu, Praha-Krc, reditel prof. dr. J.Masek.
(BLOOD CHOLESTEROL) (PHOSPHOLIPIDS) (BLOOD LIPIDS)
(EXERTION) (FATS) (DIETARY PROTEINS) (ASCORBIC ACID)
(BLOOD CHEMICAL ANALYSIS)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

RATH, R.; PLACER, Z.; SLABOCHOVA, Z.; Technicka spoluprace: HRADILOVA, L.; MUNCLINGEROVA, M.; Statisticka spoluprace: ZVOLANKOVA, K., inz.

Body water space. Part 8. Cesk. gastroent. vyz. 19 no.6:335-339 S '65.

1. Ustav pro vyzkum vyzivy lidu v Praze (reditel prof. dr. J. Masek, DrSc.).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

RATH, R. (Praha-Krc, Budejovicka 800); MASEK, J.; PETRASEK, R.; Technicka spoluprace: MUNCLINGEROVA, M.; Statisticka spoluprace: ZVOLANKOVA, K., inz.

Some problems in obesity and body composition. Cas. lek. Cesk. 104 no.51:1386-1389 17 D '65.

1. Ustav pro vyzkum vyzivy lidu v Praze (reditel prof. dr. J. Masek, DrSc.). Submitted January 1965.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLANKOVA, M.

ZVOLANKOVA, M: Study of the formation of the structure of a pine in a stand and in the open. p. 37.

No. 1/4, 1953
SBORNIK. RADA C: SPISY FAKULTY LESNICKE
AGRICULTURE
Brno, Czechoslovakia

So: East European Accessions, Vol. 5, no. 5, May 1956

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

VOJTECHOVSKY, M.; HORACKOVA, E.; KUHN, E.; se statistickou spoluprací inž. ZVOLANKOVE, K.

Neuroticism in peptic ulcer. Cas. Lek. Cesk. 101 no.5:142-149 2 F '62.

1. Ustav pro vyzkum vyzivy lidu, Praha, reditel doc. Drc. MUDr. J. Masek.

(PEPTIC ULCER psychol) (NEUROSES)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVARA, V.; KOTULA, V.; ZVOLENSKY, M.

Ureterocele and its clinical significance. Cesk. radiol. 19 no.2:130-136 Mr '65.

1. Urologicka klinika (Prednosta: MUDr.F.Jakes); II. detska klinika (prednosta: prof. dr. J. Michalickova) Lekarskej fakulty University Karlovy v Bratislave.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

MICHALICKOVA, J.; ZVOLENSKY, M.

Staphylococcal pyopneumothorax in infants and young children. (Frequency and therapy). Cesk. pediat. 16 no.10:890-898 O '61.

1. II detska klinika lek. fak. UK v Bratislave, prednosta prof. MUDr. J. Michalickova.

(STAPHYLOCOCCAL INFECTIONS in inf & child)
(PNEUMOTHORAX in inf & child)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLENSKY, M.; KAPELLEROVA, A.; STEFANOVICOVA, V.

Recurrent and chronic respiratory disease in infants. Cesk. pediat. 19 no.8:688-692 Ag '64.

1. II. Detska klinika Lekarskej fakulty University Komenskeho v Bratislave (prednostka prof. dr. J. Michalickova).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

S/128/60/000/010/008/016/XX
A033/A133

AUTHORS: Gel'perin, N. V.; Zvolinskaya, V. V.; Parfenov, V. S., and Sherman, A. D.

TITLE: Technological process of casting crankshafts for the ДВ-30 (DV-30) engine at the Vladimorovskiy traktornyy zavod (Vladimirov Tractor Plant)

PERIODICAL: Liteynoye proizvodstvo, no. 10, 1960, 16 - 17

TEXT: Based on the experience of the Khar'kov "Serp i molot" Plant, the Vladimirov Tractor Plant started the casting of crankshafts for the DV-30 engine. The authors enumerate the deficiencies occurring during the casting of the crankshaft for the СМД-7 (SMD-7) engine at the "Serp i molot" Plant and point out that the elimination of black spots by increasing the machining tolerances is not expedient; therefore, it is necessary to prevent the origination of black spots which can be attained by the desulfurization of the cast iron, bringing the S-content down to 0.008 - 0.005%. This is possible if the cast iron is smelted in a basic electric furnace. Attempts were made to eliminate the technical difficulties connected with the

Card 1/3

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production of magnesium-modified cast iron by using other modifiers, like cerium, tellurium, calcium, strontium, lithium, etc. Tests proved cerium and foundry alloys on the base of cerium to be the most suitable modifiers. In comparison with magnesium, cerium offers the following advantages: no metal ejection during modification; the assimilability of cerium amounts to not less than 30%; lower sensitivity of the cast iron to demodifiers; insignificant cast iron temperature drop during the modification process (between 20 and 40°C); uniform distribution of sulfur over the casting and absence of black spots on its surface. In order to maintain a constant chemical cast iron composition during the investigations basic cast iron of the following chemical composition (in %) was smelted in a 3-ton acid electric furnace: 3.5 - 3.8 C; 2.0 - 2.2 Si; 0.8 - 1.0 Mn; not more than 0.04 S. Then this cast iron was remelted in a 50-kg capacity acid induction furnace. The metal was heated to 1,480 - 1,450°C, the modifiers (composition: 5 - 7% Mg, 10% Fe, 40 - 50% Ce, the rest rare earths) amounting to 0.4 - 0.35% of the liquid metal weight was put on the ladle bottom. To remove cementite formations and increase the mechanical properties, the cast iron was subjected to additional modification by 0.3 - 0.4% Cu (Si) 75 ferrosilicium. After two minutes holding in the ladle the metal was poured into the crankshaft

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shell molds. Besides, specimens were cast to determine the macro- and microstructure and the mechanical properties. Table 1 shows the results obtained. The sand-resin mixture was prepared in a mixer of NIILITMASh design, model 821, the shell mold was made on a model 830 machine of NIILITMASh design. The cast crankshaft structure contained ledeburite cementite. The crankshafts were annealed as to the following conditions: holding at 950°C for 2 - 5 hours, cooling in the furnace to 630°C, holding at 630°C for 1 hour, cooling in the furnace to 450°C, further cooling in the air. In comparison to die-forged crankshafts 22 kg metal were saved with each cast crankshaft. The economic effect amounts to 15% of the crankshaft cost price. There are 4 figures, 2 tables and 4 Soviet-bloc references.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZHUKOV, A.A.; ZVOLINSKAYA, V.V.

Certain problems in the geometry of the structural diagrams of iron-carbon-sulfur alloys. Zhur. fiz. khim. 38 no.2:483-485 F '64. (MIRA 17:8)

1. Institut tekstil'nogo mashinostroyeniya.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

GEL'PERIN, N.V.; ZVOLINSKAYA, V.V.; PARFENOV, V.S.; SHERMAN, A.D.

Crankshaft founding procedure at the Vladimir Tractor Plant for DV-30 engines. Lit. proizv. no.10:15-16 O '60. (MIRA 13:10)
(Vladimir--Founding) (Cranks and crankshafts)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

MIKHALEV, I.P.; ZVOLINSKAYA, V.V.; KUROCHKIN, P.D.

Casting and stand testing of cerium cast iron crankshafts. Lit. proizv. no.9:40-41 S '64. (MIRA 18:10)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ADRIANOVA, V.P.; ANDREYEV, T.V.; ARANOVICH, M.S.; BARSKIY, B.S.; GROMOV, N.P.; GUREVICH, B.Ye.; DVORIN, S.S.; YERMOLAYEV, N.F.; ZVOLINSKIY, I.S.; KABLUKOVSKIY, A.F.; KAPELOVICH, A.P.; KASHCHENKO, D.S.; KLIMOVITSKIY, M.D.; KOLOSOV, M.I.; KOROLEV, A.A.; KOCHINEV, Ye.V.; LESKOV, A.V.; LIVSHITS, M.A.; MATYUSHINA, N.V.; MOROZOV, A.N.; POLUKAROV, D.I.; RAVDEL', P.G.; ROKOTYAN, Ye.S.; SMOLYARENKO, D.A.; SOKOLOV, A.N.; USHKIN, I.N.; SHAPIRO, B.S.; EPSHTEYN, Z.D.; AVRUTSKAYA, R.F., red. izd-va; KARASEV, A.I., tekhn.red.

[Brief handbook on metallurgy, 1960] Kratkii spravochnik metallurga, 1960. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1960. 369 p. (MIRA 13:7)
(Metallurgy)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, M.V. and ZAITSEV, L.P.

"Study of the "Head Wave" Developed at the Interface Between Two Elastic Fluids." Izv. Akad. Nauk SSSR, 15 (1951), 1, 20-39.

SO: Translation-2524467, 30 Apr 1954.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

VOLKOV, Yu.I., inzh.; GAFANOVICH, A.A., kand.tekhn.nauk; GLADKOV, N.G., kand.sel'skokhoz.nauk; GORKUSHA, A.Ye., agr.; ZHITNEV, N.P., inzh.; ZANIN, A.V., kand.tekhn.nauk; ZAUSHITSYN, V.Ye., kand.tekhn.nauk; ZVOLINSKIY, N.P.; ZEL'TSERMAN, I.M., kand.tekhn.nauk; KAIPOV, A.N., kand.tekhn.nauk; KASPAROVA, S.A., kand.sel'skokhoz.nauk; KOLOTUSHKINA, A.P., kand.ekon.nauk; KRUGLYAKOV, A.M., inzh.; KURNIKOV, I.I., inzh.; LAVRENT'YEV, L.N., inzh.; LEBEDEV, B.M., kand.tekhn.nauk; LEVITIN, Yu.I., inzh.; MAKHLIN, Ye.A., inzh.; NIKOLAYEV, G.S., inzh.; POLESHCHENKO, P.V., kand.tekhn.nauk; POLUNOCHEV, I.M., agr.; P'YANKOV, I.P., kand.sel'skokhoz.nauk; RABINOVICH, I.P., kand.tekhn.nauk; SOKOLOV, A.F., kand.sel'skokhoz.nauk; STISHKOVSKIY, A.A., inzh.; TURBIN, B.G., kand.tekhn.nauk; CHABAN, I.V., inzh.; CHAPKEVICH, A.A., kand.tekhn.nauk; CHERNOV, G.G., kand.tekhn.nauk; SHMKLEV, B.M., kand. tekhn.nauk; KRASNICHENKO, A.V., inzh., red.; KLETSKIN, M.I., inzh., red.; MOLYUKOV, G.A., inzh., red.; BLAGOSKLONOVA, N.Yu., inzh., red.; UVAROVA, A.F., tekhn.red.

[Reference book for the designer of agricultural machinery in two volumes] Spravochnik konstruktora sel'skokhoziaistvennykh mashin v dvukh tomakh. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry. Vol.1. 1960. 655 p. (MIRA 13:11)
(Agricultural machinery--Design and construction)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.P., inzhener.

Cultivators for taking care of tilled crops. Sel'khozmashina no.10:14-20 O '53. (MLRA 6:11)
(Cultivators)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

LAYKHTER, E.G.; CHUMAK, A.V., inzh., red.; BEZHUCHKIN, I.P., kand.tekhn. nauk, red.; ZANIN, A.V., kand.tekhn.nauk, red.; ZVOLINSKIY, N.P., inzh., red.; IVANOV, I.S., inzh., red.; KLETSKIN, M.I., inzh., red.; PETROV, G.D., kand.tekhn.nauk, red.; PUSTYGIN, M.A., doktor tekhn. nauk, red.; RABINOVICH, I.P., kand.tekhn.nauk, red.; RUDASHEVSKIY, D.Sh., kand.tekhn.nauk, red.; SINEOKOV, G.N., doktor tekhn.nauk, red.; SYSOYEV, N.I., kand.tekhn.nauk, red.; FEDOROV, V.A., inzh., red.; CHAPKEVICH, A.A., kand.tekhn.nauk, red.; PONOMAREVA, A.A., tekhn.red.

[Bibliographic manual on tillage machinery and implements] Bibliograficheskii spravochnik po pochvoobrabatyvaiushchim mashinam i orudiiam. Moskva, Gosplanizdat. No.2. [Literature in the Russian language from 1730-1955] Literatura na russkom iazyke za 1730-1955 gg. Pod red. G.N.Sineokova. 1959. 263 p. (MIRA 13:9)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya.
(Bibliography--Agricultural machinery)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.P., inzh.

New row crop cultivators. Trakt. i sel'khozmash. no.1:34-35 Ja '65. (MIRA 18:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.P.

Mounted agricultural machinery. Trakt. i sel'khozmash. no. 6:7-24 Je '58. (MIRA 11:7)

(Agricultural machinery)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.P.

Mounted three-section units. Biul.tekh.-ekon.inform. no.1:52-59 '59. (MIRA 12:2)

(Agricultural machinery)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.P.

Combining mounted implements with tractors. Trakt. i sel'khozmash no. 7:9-17 Jl '58. (MIRA 11:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya.

(Agricultural machinery)

ZVOLINSKIY, N.V.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

VETCHINKIN, VLADIMIR PETROVICH, and N.V. ZVOLINSKIY

Kriticheskaia uglovaia skorost' rastianutogo vala. Sposoby opredeleniia natiazheniia v trossakh i kanatakh. Moskva, 1931. 32p., illus. (TSAGI. Trudy, no.75)

Summary in English.

Title tr.: The critical speed of a rotating shaft under tension. Methods of determining tension on wire ropes and cables.

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V.

Nekotorye sluchai tochnogo reshenii a probiemy o tsentre izgiba. Moskva, 1936. 48 p., diagrs. (TSAGI. Trudy, no. 245)

Summary in English.

Title tr.: Some cases of an exact solution of the problem of center of bending.

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V.

Priblizhennoe reshenie nekotorykh zadach ustoichivosti tsilindricheskoi obolochki. Moskva, 1936. 56 p., diagrs. (TSAGI. Trudy, no. 246)

Summary in English.

Bibliographical footnotes.

Title tr.: Approximate solution of several problems of the stability of a cylindrical shell.

QA911.M65 no. 246

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V.

Prilozhenie metoda integral'nykh uravnenii k odnoi zadache ustoichivosti tsilindricheskoi obolochki. Moskva, 1937. 17 p. (TSAGI. Trudy, no. 320)

Summary in English.

Title tr.: Application of the integral equation method to the solution of a problem of stability of a cylindrical shell.

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

5A

A 53
B

65. Torsion of Bar under Tension. P. M. Riz and N. V. Zvolinsky. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 30, 2-3. *pp.* 101-104, 1938. *In English.*—According to the linear theory of elasticity, the state of stress of a prism subjected to combined torsion and tension is obtained by superposing the two sets of stresses for torsion and tension acting separately, and this result does not accord with experiment. In this paper, second-order terms are retained in the expression for the strains, and the law relating principal stresses σ_i with principal elongations e_i is assumed to be, for finite displacements not exceeding the limit of proportionality, $\sigma_i = \lambda \sum_{a=1}^{3} e_a + 2Ge_i$. An expression is then worked out for the torsional stiffness T of the prism, which provides a correcting factor to T_0, the stiffness in the absence of tension. J. P. A.

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V.

"On the State of Stress of a Stretched and Twisted Bar,"

Dok. AN, 22, no. 9, 1939

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V.

Szhatie priamougol'noi plastinki za predelom ustoichivosti. Moskva, 1940. 28 p., illus. (TSAGI. Trudy, no. 505)

Title tr.: Compression of a rectangular plate beyond the buckling point.

NCF

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V.

"Rayleigh's Waves in an Inhomogeneous Elastic Half-Space of Special Type,"

Iz. Ak. Nauk SSSR, Ser. Geograf. i Geofiz., No. 3, 1945

ZVOLINSKIY, N. Ya.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

"Problem of Strain in a Floating Ice Layer," Works of Sci-Res Institution of the Main Administration of the Hydrometeorological Service SSSR, Series IV, No 20, 1946 (16-28). (Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

SO: U-3218, 3 Apr 1953

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3

A.T.R

Wave Motion, Propert, Seismology 36

317. N. V. Zvolinskiy, "Plane waves in an elastic semispace covered with a liquid layer" (in English), *C. R. Acad. Sci. URSS*, Apr. 10, 1947, vol. 56, no. 1, pp. 19-22.

This paper deals with the propagation of plane waves in an elastic semispace covered with a layer of inviscid compressible liquid. The surface of the liquid is assumed parallel to the plane boundary of the elastic medium, while the wave fronts are normal to it. Two cases are considered, depending on the relative magnitude of the velocity of propagation of the plane waves, and of the two specific velocities of propagation of waves in the solid. By the use of the boundary conditions, the velocity potential of the motion in the liquid and the potentials of displacement in the solid are expressed as infinite series involving two arbitrary functions.

The paper is clearly motivated by a geophysical problem, but no applications or numerical results are given. It may be compared with work by V. Gogoladze [*C. R. Acad. Sci. URSS*, 1945, vol. 49, nos. 5 and 7] on reflection and refraction of nonstationary waves. See also S. L. Sobolev [*Trans. Seism. Inst. Acad. Sci. USSR*, 1933, no. 18 (in Russian)] and D. J. Slatman [*Trans. Seism. Inst. Acad. Sci. USSR*, 1945, no. 115 (in Russian)].

A. Robinson, England

Jan 48

SB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

USSR/Geophysics 1 May 1947
Seismology

"Surface Plane Waves in an Elastic Semi-space and a Liquid Layer Covering It," N V Zvolinskiy, 4 pp

"Dok Akad Nauk USSR Nov Ser" Vol LVI, No 4

Purely theoretical treatment

1T92

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.B.

Svobodnye kolebaniia trekhlopastnogo vozdushnogo vinta (propellera). (Akademiia Nauk SSSR. Institut mekhaniki. Inzhenernyi sbornik, 1948, v.4, no.2, p. 61-79, tables, diagrs.)

Title tr.: Free oscillations of a three-blade propeller.

TA4.A37 1948, v.4.

SO: Aeronautical Siences and Aviation in the Soviet Union, Library of Congress. 1955

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

"Diffusion of Shock from a Point Impulse in an Elastic Semi-Space Covered by a Liquid Layer," Dokl AN, 59, No. 6, 1948

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V.

DOC PHYSICOMATH SCI

Dissertation: "Certain Problems of Vibration Propagation in an elastic Medium with Plane-Parallel Boundaries."

18 May 49

Geophysics Inst, Acad Sci USSR

SO Vecheryaya Moskva
Sum 71

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

USSR/Nuclear Physics - Disintegration 14Mar 49
Nuclear Physics - Fission

"The Rules of Selection for Beta-Disintegration," N. V. Zvolinskiy, Geophys Inst, Acad Sci USSR, 2 pp

"Dok Ak Nauk SSSR" Vol LXV, No 2

Establishes that beta-transformation is possible if no realignment occurs in the nucleus, and that beta-transformation is always forbidden when realignment does occur. Submitted by Acad P. I. Lukirskiy, 13 Jan 48.

[redacted]

39/49T95

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N. V.

USSR/Geophysics - Head Waves, Properties of — Sep/Oct 51

"Investigation of Head Wave With Axial Symmetry, Originating in Plane Boundary of Separation Between Two Elastic Fluids," L. P. Zaytsev, N. V. Zvolinskiy, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk, Ser Geofiz" No 5, pp 40-50

Authors had discussed this problem in 2-dimensional space (ibid. No 1, 1951). Here they study properties of head wave produced from incident wave having no plane front, excited by point source on plane boundary between 2 elastic fluids. For soln

193T35

USSR/Geophysics - Head Waves, Properties of (Contd) — Sep/Oct 51

they utilize results obtained for plane polarized oscillations. Submitted 20 Jun 51.

193T35

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3

USSR/Geophysics - Seismography 176T43

Jan/Feb 51

"Analysis of Head Wave Occurring in the Boundary Between Two Elastic Liquids," L. P. Zaytsev, N. V. Zovlinskiy, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geog i Geofiz" Vol XV, No 1, pp 20-39

Dynamic properties of head wave produced by incidence of wave with nonplanar front on boundary between 2 elastic media. Properties of this wave are of interest for analysis of seismographic observations. Wave analysis is processed by function-invariant soln suggested by V. I. Smirnov and S. L. Sobolev, assuming plane-polarized oscillations in boundary plane between the 2 media. Oscillator is assumed to be point source of cen propagation type.

PA 176T43

USSR/Geophysics - Tectonics Nov/Dec

"Review of V.V. Belousov's Book 'Tectonic Faults, Their Types and Mechanism of Formation'," P.N. Kropotkin, Dr of Geol-Min Sci, N.V. Zvolinskiy and Yu.V. Riznickenko, Drs of Phys-Math Sci, reviewers

Iz Ak Nauk SSSR, Ser Geofiz, No 6, pp 561-568

Favorably review V.V. Belousov's book "Tektonicheskiye razryvy, ikh Tipy i Mekhanizm Obrazovaniya," which is No 17 (144) of the series entitled 'Trudy Geofizicheskogo Instituta AN SSSR' (Works of th Geophys Inst Acad Sci USSR), Izdatel'stvo AN SSSR (Publishing House of Acad Sci USSR), Moscow, 1952, 147 pp with illustrations, 1000 copies, price 8 rubles.

273T63

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Card 1/1

Author : Zvolinskiy, N. V., Dr. Phys-Math. Sci.;
Levin, B. Yu., Cand Phys-Math. Sci.;
Molodenskiy, M. S., Corr. Mem. Acad. Sci. USSR.

Title : Vnutrenneye stroyeniye zemli [Internal structure of the Earth], by V. F. Bonchkovskiy

Periodical : Izv. AN SSSR, Ser geofiz. 3, p 299, May/Jun 1954

Abstract : Favorable review of geophysics book, belonging to the popular-science series put out by the Acad. Sci. USSR. The book contains a large amount of material in the form of numerous graphs, maps, and tables.

Institution :

Submitted :

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZYUZIN, A.I. Ref.

Multiple reflections of elastic waves in a layer. Trudy Geofiz.inst. no.22:26-49 '54. (MIRA 8:4)
(Seismology)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ISHLINSKIY, A.Yu.; ZVOLINSKIY, N.V.; STEPANENKO, I.Z.

Theory of elasticity. Dokl.AN SSSR 95 no.4:729-731 Ap '54. (MLRA 7:3)

1. Deystvitel'nyy chlen Akademii nauk USSR (for Ishlinskiy).
(Soil mechanics) (Blasting)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

LEYBENZON, Leonid Samuilovich, 1879-1951 (deceased); NEKRASOV, A.I., akademik; TIKHONOV, A.N.; IL'YUSHIN, A.A.; SOKOLOVSKIY, V.V.; GALIN, L.A.; SHCHELKACHEV, V.N., doktor tekhnicheskikh nauk; TREBIN, F.A., doktor tekhnicheskikh nauk; GRIGOR'YEV, A.S., kandidat tekhnicheskikh nauk; SEDOV, L.I., akademik, redaktor; ZVOLINSKIY, N.V., professor, redaktor; ALEKSEYEVA, T.V., tekhnicheskiy redaktor.

[Collected works] Sobranie trudov. Moskva, Izd-vo Akademii nauk SSSR. Vol.4[Hydroaerodynamics. Geophysics] Gidroaerodinamika, Geofizika, 1955. 398 p. (MLRA 8:11)

1. Chlen-korrespondent AN SSSR (for Tikhonov, Il'yushin, Sokolovskiy, Galin)

(Geophysics) (Fluid dynamics)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

USSR/Physics
Mechanics

Card 1/1 Pub. 85 - 6/16 FD-3091

Author : Zvolinskiy, N. V.; Ishlinskiy, A. Yu.; Stepanenko, I. Z.

Title : Remarks on S. S. Grigoryan's article "Stating of dynamic problems for ideal plastic media"

Periodical : Prikl. mat. i mekh., 19, Nov-Dec 1955, 733

Abstract : The present authors remark that S. S. Grigoryan carried out interesting investigations of the equation of state of plastic medium, which equation was proposed by them ("Dynamics of ground masses," DAN SSSR, 95, No 4, 1954), and his results deserve attention. Grigoryan pointed out that the energy condition on the surface of strong discontinuity is fulfilled during the entire time of the process only if in the external region the pressure equals the critical pressure, as was assumed in the authors' work, and he also made a conclusion concerning the impossibility of the existence of a certain zone III etc. As a result Grigoryan concludes categorically that the stated problem cannot be solved by means of the authors' equation of state. The present authors cannot agree with the categorical character of this conclusion. The authors consider their scheme as a limiting scheme and not as completely solving the problem of deformation of densification of grounds. The entire problem consists in whether their description gives the main outlines of the phenomenon of dynamic densification of grounds. The problem remains open.

Submitted :

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

FOLDNSKIY, N.V.; SKORIDIN, G.A.

Asymptotic solution of dynamic problems on the theory of elasticity. Izv.AN SSSR.Ser.geofiz.no.2:134-143 F '56. (MLRA 9:7)

1.Akademiya nauk SSSR, Geofizicheskiy institut.
(Elasticity) (Waves)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

SOV/124-57-9-10813

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 9, p 140 (USSR)

AUTHORS: Antsyferov, M. S., Zvolinskiy, N. V., Konstantinova, A. G.

TITLE: On the Emission and Propagation of Quasi-harmonic Elastic Waves Under the Conditions Obtaining in Underground Mines (Ob izuchenii i raspostranenii kvazigarmonicheskikh uprugikh voln v usloviyakh podzemnykh vyrabotok)

PERIODICAL: Tr. Geofiz. in-ta. AN SSSR, 1956, Nr 34 (161), pp 280-295

ABSTRACT: The authors examine problems relating to the emission and propagation of quasi-harmonic stationary elastic waves under conditions obtaining in underground mines. For the purposes of their examination of these problems the medium is considered to be ideally homogeneous. They examine two types of driving forces: 1) Forces acting from within the elastic medium [three-dimensional (spherical; Transl. Ed. Note)] waves and 2) forces acting on the free boundary of a semi-infinite medium (surface waves). It is established that the driving power needed to excite surface waves having a given amplitude is approximately two orders of magnitude smaller than the driving power needed to excite three-dimensional waves having that same amplitude.

Card 1/2

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SOV/124-57-9-10813

On the Emission and Propagation of Quasi-harmonic Elastic Waves Under the (cont.)

Also, the authors elucidate the law whereby the intensity of the emissive power must increase with the observer's distance from the emitter. An account is given of observation methods used, and the results obtained thereby, in coal mines of the Donbass. While, in general, the author's experimental findings do support their theoretical conclusions, the wave-attenuation picture as traced by them is rendered more complicated in some respects by the operation of interference and resonance factors. Included are experimental data on the propagation distance of elastic waves (in the 300-1,000 cps frequency range) in Donbass coal seams and in the rock enclosing them.

Authors' résumé

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V.

AUTHOR: Zvolinskiy, N. V. 49-10-1/10

TITLE: Reflected and primary waves occurring at a plane boundary of division of two elastic media. Part I. (Otrazhennyye i golovnyye volny, voznikayushchiye na ploskoy granitse razdela dvukh uprugikh sred. I)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1957, No.10, pp.1201-1218 (USSR)

ABSTRACT: In 1933 Smirnov, V. and Sobolev, S. (Ref.1) published a paper (in French) in which they expounded a new method of integration of the wave equation by means of the functional-invariant solution. In earlier work, the author of this paper and Zaytsev, L.P. (Refs.2 and 3) found that this method is very suitable for studying the near front zone of the wave and leads to physically clear results but they studied only very simple problems. G. S. Markhasev, G.S. (Ref.4) also considered the reflection and refraction of spherical waves on a plane boundary of two elastic media; he developed a method of separating the asymptotic part of the wave field. However, he did not consider important features of the wave field and his final results are in a too general form which makes their practical utilisation difficult.

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

49-10-1/10

Reflected and primary waves occurring at a plane boundary of division of two elastic media. Part I.

In this paper the author shows that the method of functionally invariant solutions can be applied for the near front zone of the waves entering on the background of the preceding wave field in addition to the first entries of the reflected waves and primary waves. Using the method of functionally invariant solutions, the author studies the reflected and the main waves forming at a plane boundary of division of two elastic media. The author also describes a method of separating the asymptotic part of the field in a different formulation which gives clearer results and the final form of which is convenient for practical application. The problem of reflection and refraction of elastic waves on a plane boundary has also been studied by other authors (Refs.5-8) who used different variants of the method of sub-division of the variables. However, for the given problem, the method of functionally invariant solutions leads to the same final formulae as the sub-division of the variables and, therefore, the formulae arrived at in this paper are not new; they approach closely those published by Ogurtsov, K. I. (Ref.8). The derived final formulae for

Card 2/3

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the incident and the reflected waves, eqs.(26''') and (25''') are given on p.1217; these are based on the assumption that the duration of the action of the source is so small that all the caused disturbances are located within the near front zone.
There are 8 figures and 10 references, 7 of which are Slavic.

SUBMITTED: February 7, 1957.

ASSOCIATION: Ac.Sc., U.S.S.R. Institute of Physics of the Earth. (Akademiya Nauk SSSR Institut Fiziki Zemli).

AVAILABLE: Library of Congress

Card 3/3

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V.

49-1-1/16

AUTHOR: Zvolinskiy, N.V.

TITLE: Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II (Otrazhennyye i golovnyye volny, voznikayushchiye na ploskoy granitse razdela dvukh uprugikh sred. II)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 1, pp.3-16 (USSR).

ABSTRACT: The problem was investigated in Ref.(1) of the reflection and the refraction of spherical waves at a plane boundary between two elastic half-spaces. The solution of this problem was derived by the method of functionally invariant solutions, and the possibility of approximately describing the reflected wave PP in the region of incidence was indicated. In the present paper the author considers the approximate description of the reflected wave PS and the direct waves in the region of incidence. The statement of the problem, the choice of a frame of reference and the choice of symbols are as in Ref.(1). It is assumed that at a distance, z_0, from the plane boundary division there consists a point source of disturbance emitting a spherical, longitudinal wave. The source strength is given by:

Card 1/11

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\varphi_0 (r, z, t) = \begin{cases} \dfrac{a_1 (a_1 t - R_0)}{R} & \text{when } a_1 t > R_0 , \\ 0 & \text{when } a_1 t < R_0 . \end{cases} \quad \text{(Eq.1)}$$

The velocities of propagation of the waves in the two half-spaces are assumed to satisfy the inequality

$$b_1 < a_1 < b_2 < a_2 . \quad \text{(Eq.1')}$$

Under these conditions there are two reflected waves PP and PS, two refracted waves PP_1 and PS_1, and five direct waves PPP, PPS, PSP, PSS, PP_1S_1. The radial and axial components of the disturbance specified by the wave PS are expressed by the formulae (Ref.1):

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Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\left.\begin{aligned} q_s &= \frac{-a_1^2}{\pi} \operatorname{Re}\int_0^{\pi} B(\vartheta_1) \frac{\vartheta_1\sqrt{\frac{1}{b_1^2} - \vartheta_1^2}}{\sqrt{1 - a_1^2\vartheta_1^2}} \frac{\cos\omega d\omega}{\Delta_1'} \\ w_s &= \frac{a_1^2}{\pi} \operatorname{Re}\int_0^{\pi} B(\vartheta_1) \frac{\vartheta_1^2 d\omega}{\sqrt{1 - a_1^2\vartheta_1^2\Delta_1'}} \end{aligned}\right\} \quad \text{(Eq.2)}$$

Here ϑ_1 is a function of r, z, t, ω, defined by :

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\Delta_1 \equiv t - r \cos \omega \vartheta_1 - z\sqrt{\frac{1}{b_1^2} - \vartheta_1^2} - z_0\sqrt{\frac{1}{a_1^2} - \vartheta_1^2} = 0. \qquad \text{(Eq.3)}$$

$B(\vartheta_1)$ is the coefficient of reflection of the reflected transverse wave (Ref.1). A new variable is introduced by the relation

$$s = \sqrt{1 - b_1^2 \vartheta_1^2} \quad ;$$

In terms of the new variable Eq.(3) takes the form

$$b_1 t - r\sqrt{1 - s^2} \cos \omega - zs - z_0\sqrt{s^2 - \gamma^2} = 0, \qquad \text{(Eq.3'')}$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

where

$$\gamma^2 = 1 - \frac{b_1^2}{a_1^2}$$

The integral expressions (Eq.2) are transformed to

$$\left.\begin{aligned} q_s &= \frac{a_1}{\pi b_1 r} \operatorname{Re} \int_{l_s} \frac{B(s)}{\sqrt{s^2-\gamma^2}\sqrt{1-s^2}} \frac{[b_1 t - zs - z_0\sqrt{s^2-\gamma^2}]s^2 ds}{r\sqrt{1-s^2}\sin\omega}, \\ w_s &= -\frac{a_1}{\pi b_1} \operatorname{Re} \int_{l_s} \frac{B(s)}{\sqrt{s^2-\gamma^2}\sqrt{1-s^2}} \frac{(1-s^2)s\, ds}{r\sqrt{1-s^2}\sin\omega} \end{aligned}\right\} \quad (2')$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

$B(s)$ denotes the coefficient of reflection of the transverse wave regarded as a function of the new variable s. The path of integration obtained by transforming the straight line segment $(0, \gamma)$ in the plane ω is denoted by l_s. In order to clarify the characteristic properties of the line l_s and the possibility of transforming the path of integration, it is necessary to study the transformation of the plane of the complex variable s described by the function

$$W = \cos \omega = \frac{b_1 t - zs - z_0 \sqrt{s^2 - \gamma^2}}{r\sqrt{1 - s^2}} \qquad \text{(Eq.4)}$$

It is proved that the equation $dW/ds = 0$ has a single root which lies on the real axis to the right of the point γ. The zeros of dW/ds lying in the finite part of the plane are given by

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$W_1 \equiv z + z_0(1 - \gamma^2)\frac{s}{\sqrt{s^2 - \gamma^2}} - b_1 ts = 0 . \qquad \text{(Eq.5)}$$

By considering the change in $\arg W_1$ round a closed contour in which $W_1(s)$ is regular, it is seen that there is one real root. If $W_1(1) < 0$, then the root lies in the interval $(\gamma, 1)$. The author considers the contour l_s under the supposition that the above inequality holds, and derives:

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Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\left.\begin{aligned} q_s &= \frac{a_1}{\pi b_1 r} \operatorname{Re} \int_{l_s} B(s) \frac{(zs + z_0\sqrt{s^2-\gamma^2} - b_1 t)s^2 ds}{\chi(s)\sqrt{(s-s_1)(s_2-s)}}, \\ w_s &= -\frac{a_1}{\pi b_1} \operatorname{Re} \int_{l_s} B(s) \frac{(1-s^2)s\, ds}{\chi(s)\sqrt{(s-s_1)(s_2-s)}} \end{aligned}\right\} \quad \text{(Eq.2'')}$$

in which s_1 and s_2 are the images of the points $W = +1$ and $W = -1$, and $\chi(s)$ is a holomorphic function which does not vanish in the plane in which there is a cut between the points s_1 and s_2. The problem

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Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

now arises of obtaining from Eqs.(2'') asymptotic expressions describing the field of disturbance in the region of incidence of wave PS. The required expressions are:

$$q_s = -\frac{a_1}{b_1} \frac{R(\cos\alpha)\sin\alpha\cos^2\alpha}{\tilde{R}} f'(\Delta n) ,$$

$$w_s = -\frac{a_1}{b_1} \frac{B(\cos\alpha)\cos\alpha\sin^2\alpha}{\tilde{R}} f'(\Delta n)$$

where $\tilde{R}$ is given by

$$\tilde{R} = \sqrt{\frac{r}{\sin\alpha}} \sqrt{\frac{z}{\cos\alpha} + z_0 \frac{\sin^2\beta\cos^2\alpha}{\sqrt{(\cos^2\alpha - \cos^2\beta)^3}}} \qquad \text{(Eq.14')}$$

and $\cos\alpha = s_0^*$, and s_0^* is the value of s at the vertex of the wave front, and $f(s)$ is given by:

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Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$f(s) \equiv r^2(1 - s^2)\sin^2\omega = \chi^2(s)(s - s_1)(s_2 - s) \qquad \text{(Eq.13)}$$

The author goes on to study the direct waves, and obtains from Eq.(2''):

$$q'_s = \frac{a_1}{2b_1} B^*_{10} \frac{\sin^2 \beta_{21} (\cos \beta_{21})^{5/2}}{\sqrt{r}\, \ell^{3/2}} f(\Delta n) \qquad \text{(Eq.22')}$$

and :

$$w'_s = \frac{a_1}{2b_1} B^*_{10} \frac{\sin^2 \hat{\beta}_{21} (\cos \beta_{21})^{3/2}}{\sqrt{r}\, \ell^{3/2}} f(\Delta n) \qquad \text{(Eq.22'')}$$

where B^*_{10} is the coefficient of the direct wave PPS,

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Reflected and Direct Waves Occurring at the Plane Boundary of Division Between Two Elastic Media. II.

$$\gamma_{21} = \cos \beta_{21}, \; b_1 t - z\gamma_{21} - z_0\sqrt{\gamma_{21}^2 - \gamma^2} = r \sin \beta_{21} ,$$

$$-\Delta n = dr \sin \alpha + dz \cos \alpha, \; \ell = r \cos \alpha - (z + z_0)\sin \alpha .$$

There are 10 figures and 2 Slavic references.

ASSOCIATION: Ac. of Sciences USSR, Institute of Earth Physics (Akademiya nauk SSSR, Institut fiziki Zemli)

SUBMITTED: September 27, 1957.

AVAILABLE: Library of Congress.

Card 11/11

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ZVOLINSKIY, N. V.

AUTHOR: Zvolinskiy, N. V. 49-58-2-3/18

TITLE: Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III. (Otrazhennyye i golovnyye volny, vozniknyushchiye na ploskoy granitse razdela dvukh uprugikh sred. III.)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr. 2, pp. 165-174. (USSR)

ABSTRACT: In Refs. 1 and 2 were discussed reflected and direct waves occurring on a background previously quiescent. Of such a character are the direct waves PPP and PPS, and also the reflected waves PP and PS, in regions up to the critical angle. Beyond the critical angle the nature of the reflected wave changes markedly. A similar change takes place in the waves PSP and PSS by comparison with PPP and PPS respectively. This raises a number of questions which are discussed in the present paper. In studying the field of waves PSP and PSS we shall define only those components

Card 1/7

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49-58-2-3/18

Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

of the field which are discontinuous at the front. In order to study the wave PSP it is necessary to return to the representation of displacements in the reflected longitudinal wave which were described by Eqs.16 of Ref.1. The author then goes on to derive closed formulae for the domain in the neighbourhood of the front of the wave PSP for the case when the incident wave has the form of a step. If the wave has arbitrary form, then the result can be obtained by the method of superposition, with the additional condition that the displacements on the incident wave are non-zero only for a sufficiently small neighbourhood of the front. The wave PSS is investigated in a similar manner, and the transition to an arbitrary wave-form is made in the same way as for the wave PSP. In Section 5 of Ref.1, and Section 2 of Ref.2 were given expressions for the displacement fields in the neighbourhoods of the fronts of the waves PP and PS for those parts of the front which are situated behind the initial source

Card 2/7

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49-58-2-3/16

Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

of the direct waves. For other parts of the fronts which appear on the background ahead of the direct waves the character of the displacement field has an additional component. This component is similar to that which appears in the reflection of a plane wave beyond the critical angle. This situation can occur in four different forms: the wave PP can be observed against the background of the direct wave PPP or the direct wave PSP; the reflected wave PS can be observed against the background of PPS or PSS. Avoiding superfluous repetition, only one of these cases need be discussed in detail; for example, the case of the wave PP appearing after PPP. For the other cases only the final results are given. The general expression for displacements in the reflected longitudinal wave was given by formula 16 of Ref.2. In the three cases for which results are merely quoted, the formulae apply when the wave has

Card 3/7

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49-58-2-3/18

Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

the form of a step. The author notes some errors which have been noticed in his previous papers. In Ref.3, in the denominators in the formulae on p.48 the index 3/4 should be replaced by 3/2. This error affects some of the conclusions at the end of the paper. In the formulae for q_1 and w_1 on p.47 a logarithmic term has been omitted. In Ref. 4 an explicit expression for the reflected wave appearing after a direct wave was not deduced, and this led to an incorrect interpretation of the calculated reflection coefficients (observations on p.37 at the end of Section 2, on p.39 at the end of Section 3 and on p.45 at the end of Section 5). In his general conclusions to the three papers the author states: 1. Results of Refs. 1 and 2 and the present paper make it possible to derive approximate formulae, from general integral representations, which are valid in the neighbourhoods of the fronts of the separate waves. These formulae are sufficiently simple for practical

Card 4/7

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Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

application. They make it possible to resolve the question of the form of the oscillations and the intensity of the separate waves. These formulae are identical with those obtained earlier by authors referred to in the introduction to the first article.
2. In the reflected waves PP and PS behind the first source of the direct wave, the form of the oscillations remains the same as in the incident wave. The form and amplitude are determined from formulae 25 of Ref.1, and formulae 15 of Ref.2.
3. In the direct waves PPP and PPS the form of the oscillations is obtained by integrating functions describing the form of the incident wave. Formulae for calculating the field of these waves were deduced in Ref.2.
4. In the reflected waves PP and PS ahead of the source of the first direct wave, the form of the oscillations changes. To the component which duplicates the oscillations in the incident wave is

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added a term which has a form conjugate to the form of the incident wave. Calculation of the field is carried out from formulae (9) to (12) of the present paper.

5. The oscillations in the direct waves PSP and PSS also consist of two components. The first duplicates the form of the waves PFP and PSP, the second has a conjugate form. Calculation of a field is carried out from formulae (4), (4') and (6) of the present paper.

6. The intensity of the oscillations (amplitude) of the separate waves depends not only on their type, the properties of the media and the amplitude of the incident wave, but also on its form. This shows that regarding the amplitude of a wave as a dynamic property in the interpretation of seismological observations, it is necessary to take into account the form of the incident wave. There are 2 figures and 4 Russian references.

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49-58-2-3/18

Reflected and Direct Waves Occurring at the Plane Boundary Between Two Elastic Media. III.

ASSOCIATION: Academy of Sciences USSR, Institute of Earth Physics. (Akademiya nauk SSSR, Institut fiziki Zemli).

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AVAILABLE: Library of Congress.

Card 7/7

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Zvolinskiy, N.V.

Dispersion of Love surface waves in a two-layered medium.
Trudy Inst.geofiz.AN Gruz.SSR 17:121-137 '58.
(MIRA 13:4)

1. Institut fiziki Zemli AN SSSR, Moskva.
(Seismic waves)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

VETCHINKIN, Vladimir Petrovich; ZVOLINSKIY, N.V., otv.red.; POLYAKHOV, N.N., otv.red.; SHAPOVALOV, I.K., red.izd-va; POLENOVA, T.P., tekhn.red.

[Selected works] Izbrannye trudy. Moskva, Izd-vo Akad.nauk SSSR. Vol.2. [Screw propellers; Strength of airplanes] Grebnye vinty. Prochnost' samoleta. 1959. 431 p. (MIRA 12:7)
(Propellers, Aerial) (Airplanes--Design and construction)

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

104. A. A. Derkachev (Saratov): Generalization of the method of steepest descent in structural mechanics.

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

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

107. G. Ia. 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. Falkovich (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. F. Blailov (Dnepropetrovsk): The stability of an obliquely bent beam.

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

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

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

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

117. G. S. Elmanovskii (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 lining 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. K. F. Erzhov (Tomsk): The elastic-plastic bending of a bar.

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

122. F. A. Zhuravlev, A. F. [illegible], K. F. Zyrianov (Leningrad): Application of the method of characteristics to the determination of the tension in the cable of a mine elevator.

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

124. Ia. I. Zaitsev (Moscow): On the surface-tied-wave.

125. B. V. Zvantsev, Sh. E. Katz (Leningrad): An experimental study of creep-rupture characteristics of tubes under combined stresses.

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

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

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

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

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

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

132. I. E. Lazov, Ia. I. Lapi (Leningrad): Plastic tension and torsion of thin-walled metal tubes that have become anisotropic through prior plastic deformations.

133. Ia. E. Ilenko, B. N. Antonov (Moscow): Investigation of elastic strains and vibrations in aircraft structures by means of electronic computers.

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77989
SOV/40-24-1-17/28

AUTHOR: Zvolinskiy, N. V. (Moscow)

TITLE: Propagation of an Elastic Wave Due to a Spherical Ground Explosion

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol 24, Nr 1, pp 126-133 (USSR)

ABSTRACT: This article extends some results for rigidly plastic material (obtained by the author jointly with A. Yu. Ishlinskiy and I. Z. Stepanenko (DAN, 1954, Vol 95, Nr 4)) to material which is elastic-plastic. He considers the adiabatic propagation of a spherical wave due to a blasting charge occupying a spherical cavity (the wave process inside the cavity is not considered). Several assumptions are made which the author notes are subject to empirical verification. First, the work of plastic deformation increases with increasing mean stress σ, and in passing from one state to a neighboring state, the change in work is given by:

Card 1/5

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$$\delta A = \iiint m(\sigma)\,|\delta\gamma|\,dV \qquad (1.1)$$

In writing this down, the change in elemental work is assumed to be proportional to the maximum shear $\delta\gamma$, with the proportionality factor $m(\sigma) = \sigma/2 + 2m_1/3$ and $m_1 > 0$. Secondly, the medium can exist in only two states: an initial elastic state and a packed incompressible state, the passage from the first to the second occurring instantaneously. This model is a special case of one proposed by S. S. Grigoryan (DAN, 1959, Vol 124, Nr 2) and is similar to models used by Ishlinskiy (Ukr. matem. zhurnal, 1954, Vol 6, Nr 4) and A. Kompaneyets (DAN, 1956, Vol 109, Nr 1). When the initial stress is large enough, the ground becomes packed in the neighborhood of the cavity, and this packing continues to spread. A derivation of the equations and boundary conditions is then given pertinent to four stages which are characterized by: (a) a shock due to the packing of the ground which

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spreads relative to the undisturbed medium; (b) an elastic wave propagating relative to the undisturbed medium; the packed zone following after it; the shockfront serves as a boundary, and the packing of the ground continues; (c) an elastic wave is propagating; the packed zone follows after it with a contact discontinuity as a boundary; the plastic flow continues, but additional ground packing does not occur; (d) the stoppage of the packed zone; the back front of the elastic wave breaks off, and the wave goes off to infinity. Energy considerations lead to a condition relating the radial stress σ_r and the remaining stress component $\sigma_\alpha = \sigma_\beta$:

$$\sigma_r - \sigma_\alpha = \frac{3}{2} m(\sigma) \qquad (2.3)$$

This is used in connection with the equation of motion and the incompressibility condition to obtain expressions for σ_r in the first three stages involving certain arbitrary constants and the unknown functions $r_0(t)$ and

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$r_s(t)$ for the spherical cavity and shock wave. In each case it is shown how the boundary conditions on the shock and moving cavity, as well as stability in the first stage and a simplifying assumption in the second stage, reduce the problem to determining only the function $r_s(t)$. In stage (a), a first-order linear differential equation for $z'^2 = (dr_s^3/dt)^2$ as a dependent variable and $z = r_s^3$ as independent variable is constructed. This equation shows that the shockfront speed decreases and approaches zero, i.e., the first stage cannot continue indefinitely. When the speed of the shock becomes equal and smaller than sound speed in the undisturbed medium, an elastic wave arises and the second stage begins. In stage (b), a nonlinear first-order differential equation is obtained for the same variables z' and z, which again shows that the speed of the shock dr_s/dt monotonically

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decreases to zero. However, the law of conservation of mass shows that at a certain instant, the shock ceases to exist, though the motion continues. In this third stage, the author introduces a contact discontinuity separating the packed region and elastic wave and suitable boundary conditions on it. Again an equation for the above variables is obtained which shows $z'^2 = (dr_s^3/dt)^2$ vanishes at a certain value. This corresponds to the end of the flow of the plastic layer and the start of the fourth stage. This stage can be handled by known methods. A. A. Girb and S. S. Grigoryan assisted in the preparation of the paper. There are 3 figures; and 6 Soviet references.

SUBMITTED: October 12, 1959

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L 38700-66 EWT(1) (N)

ACC NR: AT6016916 (N) SOURCE CODE: UR/000/65/000/000/0432/0443

34
33
B+1

AUTHOR: Zvolinskiy, N. V.; Flitman, L. M.; Kostrov, B. V.; Afanas'yev, V. A.

ORG: Institute of Physics of the Earth, AN SSSR, Moscow (Institut fiziki Zemli AN SSSR); Institute of Problems of Mechanics, Academy of Sciences, SSSR (Institut problem mekhaniki Akademii nauk SSSR)

TITLE: Some problems in the diffraction of elastic waves

SOURCE: International Symposium on Applications of the Theory of Functions of Continuum Mechanics. Tiflis, 1963. Prilozheniya teorii funktsiy v mekhanike sploshnoy sredy. t. 1: Mekhanika tverdogo tela (Applications of the theory of functions in continuum mechanics. v. 1: Mechanics of solids); trudy simpoziuma. Moscow, Izd-vo Nauka, 1965, 432-443

TOPIC TAGS: elasticity theory, partial differential equation, integral equation, boundary value problem, approximate solution

ABSTRACT: Three problems are studied: (1) That of waves formed in an elastic medium as a result of momentary disturbance of the continuum along an infinitely long plane strip of finite width. The dynamic equations of elasticity theory are solved under boundary value conditions corresponding to time with initial conditions zero. The problem is shown to be reducible to the Wiener-Hopf problem; (2) The problem of motion under the action of a plane wave of a solid infinite strip in an elastic space. This

Card 1/2

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

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problem is a generalization of the problem of diffraction of a plane elastic wave on a screen in the form of a strip. Parameters of motion of the strip are defined to satisfy the equations of motion; (3) The problem of the "transparent prism": two elastic (acoustic) media separated by an angular boundary. An effective method is presented for computing the field diffraction for this problem. The authors thank G. F. Mandzhavidze for valuable consultation. Orig. art. has: 41 formulas, 3 figures.

SUB CODE: 20,12/ SUBM DATE: 13Aug65/ ORIG REF: 010/ OTH REF: 002

Card 2/2 SM

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(A) L 4041-66 EWT(d)/EWT(m)/EWP(w)/ETC(m) WW/EM

ACCESSION NR: AP5021302 UR/0040/65/029/004/0672/0680

AUTHORS: Zvolinskiy, N. V. (Moscow); Rykov, G. V. (Moscow)

TITLE: Reflection of a planar plastic wave and its refraction at the boundary of two half spaces

SOURCE: Prikladnaya matematika i mekhanika, v. 29, no. 4, 1965, 672-680

TOPIC TAGS: vibration, shock wave propagation, shock wave diffraction, shock wave reflection, plastic deformation, elastic deformation

ABSTRACT: The action of a planar plastic wave striking in a normal direction upon the boundary of two elasto-plastic half-spaces is studied. It is assumed that the initial portion of a compression diagram (see Fig. 1 on the Enclosure) corresponding to elastic deformation is a straight line (OC in Fig. 1) portion of a monotonically increasing curve. In all, six cases of the qualitative nature (elastic or plastic) of the three waves (incident, reflected, and refracted) are possible. The current study deals with two cases: 1) all three waves are plastic, and 2) the incident and reflected waves are plastic, and the refracted wave is elastic. The study is for the purpose of obtaining quantitative descriptions of the waves, and also to determine the conditions causing special cases. Lagrangian coordinates are used as expressed in the equation

$$x(h,t) = h + u(h,t)$$

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

L 4041-66

ACCESSION NR: AP5021302

where u is displacement, and x is an Euler coordinate. Stresses and strains are related by the equations

$$\frac{\partial \sigma}{\partial h} + \rho_0 \frac{\partial v}{\partial t} = 0, \qquad \frac{\partial x}{\partial h} = \frac{\rho_0}{\rho(h)}$$

$$x(h, t) = \int_0^h \frac{\rho_0 d\eta}{\rho(\eta)} + x_0(t), \qquad v(h, t) = \frac{\partial x}{\partial t} = x_0'(t)$$

$$\sigma(h, t) = -\rho_0 x_0''(t) h + \sigma_0(t)$$

where ρ_0 is initial density, and ρ is the density beyond the front of the incident wave ($\rho < \rho_0$). Additional equations are given describing the nature of the shock fronts leading to an equation for the shock front in Lagrangian coordinates. Each of the three wave types is described mathematically in relation to stress, strain, and propagation speed in the coordinates defined. Reflection and refraction coefficients are developed. The methods derived are applied to certain special cases. Orig. art. has: 37 equations and 2 figures.

ASSOCIATION: none

SUBMITTED: 15Dec64 ENCL: 01 SUB CODE: ME

NO REF SOV: 002 OTHER: 000

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ENCLOSURE: 01

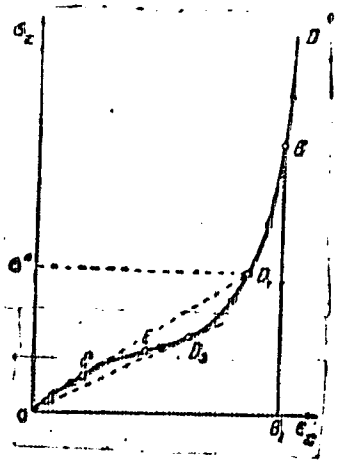

Fig. 1.

Card 3/3 BP

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V. (Moskva)

Wave problems in the theory of elasticity of a continuous medium. Izv. AN SSSR. Mekh. no.1:109-123 Ja-F '65.

(MIRA 18:5)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V.; RYKOV, G.V.

Reflection and refraction of plane plastic waves. Dokl. AN SSSR 161 no.5:1041-1043 Ap '65. (MIRA 18:5)

1. Institut fiziki Zemli im. O.Yu.Shmidta AN SSSR. Submitted November 11, 1964.

ZVOLINSKIY, N.V. (Moskva); KIKOV, G.V. (Moskva)

Reflection of a plastic wave from a barrier. Prikl. mat. i mekh. 27 no.1:91-108 Ja-F '63. (MIRA 16:11)

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ZVOLINSKIY, N. V. (Moscow)

"Wave propagation in an elastic medium"

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

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"Dynamics of plastic media"

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

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GRIGORYAN, S.S.; GRIB, A.A.; ZVOLINSKIY, N.V.; KACHANOV, L.M.; PETROSHEN, G.I.

E.I.Shemiakin's article "Expansion of a gas cavity on a noncompressible elastoplastic medium; study of the action of an explosion on the ground" and N.S.Medvedeva and E.I.Shemiakin's article "Strain waves caused by underground explosion in rocks. Izv.AN SSSR.Otd.tekh.nauk. Mekh.i mashinostr. no.5:173-177 S-O '62. (MIRA 15:10)
(Explosions) (Shemiakin, E.I.) (Medvedva, N.S.)

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S/040/63/027/001/011/027
[illegible]

AUTHORS: Zvolinskiy, N.V. and Sytov, A.V. [illegible]

TITLE: The reflection of a plastic wave from a barrier

PERIODICAL: Prikladnaya matematika i mekhanika, v. 27, no. 1, 1963, 91-100

TEXT: The authors consider the model proposed by S.S. Grigoryan (PMM, v. 24, no. 6, 1960) for soils. The propagation of a plane wave in a plane medium in which a homogeneous isotropic [illegible] [illegible] the [illegible] [illegible] the [illegible] [illegible] the [illegible] [illegible] stresses and strains [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Card 1/3

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The reflection of a plastic wave ...

time, the wave front propagates uniformly for an unlimited time, with a velocity that tends asymptotically to zero. 2. the stress varies linearly [illegible] 3. the velocity [illegible] start. Such a wave is taken as the incident wave [illegible]

[illegible]

external stress distribution [illegible]

Card 2/3

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a finite interval of time, after which it instantaneously becomes zero. The case of reflection from an [illegible] capable of [illegible] for the velocity, [illegible] in the case when the incident wave [illegible] are derived in figures.

ASSOCIATION: Institut fiziki zemli AN SSSR (Institute of Earth Physics of the AN USSR)

SUBMITTED: October 24, 1962

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710016-3"

ZVOLINSKIY, N.V., RYKOV, G.V.

"Reflection of a plastic wave at an obstacle."

Report submitted to the Intl. Sym. on Stress Waves in Anelastic Solids, Providence, Rhode Island 3-5 April 1963