

Zak

Chalovskaya (Sci. Research Inst. Aviculture), *Ibid.* 282-76.—Most effective is vitamin A of natural feeds, such as nettle and red carrots. Somewhat less effective are preps. of the vitamin. When the vitamin A content of the fodder is so low as to constitute only 35-50% of daily need its favorable effect on the birds' fertility is the lowest. The biosynthesis and accumulation of vitamin A in fowl. A. Valdmans and E. Taucijs (Inst. Zootech. and Zoohyg., Acad. Sci. Latv. S.S.R.). *Ibid.* 277-82. A biological method for determination of vitamin D activity of fish oil and of concentrates in which chicks are used. A. Valdmans (Inst. Zootech. and Zoohyg., Acad. Sci. Latv. S.S.R.). *Ibid.* 283-5. Natural sources of vitamin B₁₂. V. N. Bukin, L. S. Kutseva, and Z. I. Zaltsva (A. N. Bakh Inst. Biokhim., Acad. Sci. U.S.S.R.). *Ibid.* 280-87.—Vitamin B₁₂ content of kidneys, liver and intestines of fish considerably exceeds that of the muscle tissues.

It is recommended that the fish in its entirety be ground to a meal (flour) for use as a vitamin supplement. Salting and compressing fish prior to drying and grinding cause a considerable loss of the vitamin. It is recommended that the fish be ground into flour when it is fresh, rather than after storage, and where salting and compression are unavailable, the expressed and "cooled out" liquid be dried and reincorporated in the final flour. Sea mollusks are particularly rich in vitamin B₁₂ and in provitamin D₂. Mycelia of actinomycetes and activated sludge of water purification plants are also rich in this vitamin. Appendix. Provisional daily norms of vitamins A and D for farm animals and birds. (Author's name not given.) *Ibid.* 298-302. B. S. Levins

BERZINS, J.M., professor.

New system of feeding and raising calves (from the practices of the Institute of Animal Husbandry and Veterinary Hygiene of the Academy of Sciences of the Latvian S.S.R.). Priroda 43 no.2:49-54 F '54. (MLRA 7:3)

1. Deystvitel'nyy chlen Akademii nauk Latviyskoy SSR.
(Latvia--Calves) (Calves--Latvia)

BEYZINS, J.

U S S R .

✓ Preparation and biological testing of protein-vitamin paste. J. Beziņš, A. Valdmans, and R. Pašulis. *Latvian PSR Zinātņu Akad. Pētīj. 1955, No. 1 (Whole No. 66), 16-25* (in Russian; Latvian summary).—Protein-vitamin paste (I) was prepd. by milling a mixt. of green plants with water, sepg. the ext. by pressing, coagulating a prot-in-ferment mixt. (II) from the ext. by heating the ext. to 60°, sepg. II by pressing, mixing II with molasses, and fermenting at room temp. The product was stored in a cool location. After 8 months of storage, I had pH 4.1-4.3, and contained, in percentage: total solids 20-23; proteins 8-9; ash 3-10; Ca 0.6-1.5; P 0.11-0.33; in mg. %: riboflavin 0.7-1.3; riboflavine 1.1-6.2. Substitution of I for milk proteins in the feed of baby pigs and calves decreased the rate of their growth, and was tolerated poorly. Fed to hens at a rate of 50 g. per capita per day, I secured good yield of eggs and substituted for 8 g. of meat-bone meal. Conserved I, added in amts. of 1-6% to chicken feed, prevented A-avitaminosis and secured good growth; however, dry I, added at a rate of 12%, retarded the growth. Losses of various valuable components of the plant materials in prepn. of I were 60-85%. Author: Dravnieks.

Bergins, J. [M.]

✓ Increase of productivity of silver-black foxes (by micro-
elements). J. Bergins. *Izv. Vses. SSR Zool. Akad.*
1953, No. 1, 37-41 (in Russian).
Addn. of 0.3 to 0.6 mg. CoCl_2 per day per kg. wt. to the food
increased the no. of pups of silver black fox mothers by
approx. 10%. Combined addn. of CoCl_2 , 0.5-1.5 mg.
 MnSO_4 , and 0.5-1.5 mg. ZnCl_2 to the food of mothers had
no influence on the no. of pups, but improved the develop-
ment and fur quality of the pups born. A. D.

HERZINS, J.M.

Raising calves on a low diet of whole milk enriched with vitamins
A and D. Vit.res. i ikh isp. no.2:35-59 '54. (MLRA 8:10)

1. Institut zootekhniki i zoogigiyeny Akademii nauk Latvyskoy SSR
(Calves--Feeding and feeding stuffs) (Vitamins-A) (Vitamins-D)

Berzins, Ya. [M]

Increasing the fertility of silver-black foxes. J. Berzins
Latvian SSR Zinatnu Akad. Vestis 1955, No. 9, 31-3 (in
Russian); cf. C.A. 49, 18117i.—Tests indicated that 0.5
mg. CoCl₂/day/kg. wt. added to the feed of female foxes,
starting ten days before mating, may increase the fertility
by up to 47%.
A. Dravnieks

mark

Berzin'sh, A. F.

99-1-1/10

AUTHOR: Berzin'sh, A.F. Chief of the Main Administration of Melioration at the Ministry of Agriculture of the Latvian SSR

TITLE: Melioration of Agricultural Lands of the Latvian SSR (Melioratsiya zemel' v Latviyskoy SSR)

PERIODICAL: Gidrotehnika i Melioratsiya, 1958, # 1, pp 3-8 (USSR)

ABSTRACT: Eleven years after World War II the drained acreage in Latvia increased from 114,000 hectares to 322,000 hectares. At the present time, an annual average of 30,000 hectares are being improved. 1949 was a turning point in melioration. Seven machine-melioration stations were established, the Main Administration for Melioration at the Council of Ministers of the Latvian SSR was founded, and the Five-Year Plan for meliorative construction was accepted.

In 1951 the Latvian "Meliovodstroy", four administrative offices for the operation of meliorative systems, and 17 machine-melioration stations were founded. During 1956, 14,400 hectares were improved with sub-surface drainage systems.

Drainage of polders has been successfully practised in the Latvian SSR. Several new polders were recently put into

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Melioration of Agricultural Lands of the Latvian SSR

99-1-1/10

operation, such as the Babite polder, completed in 1957, with 720 hectares.

Construction of the Meyran canal was started in 1956 by the organization Lubanstroy, with the aim to reclaim 37,000 hectares at an expenditure of 25.7 million rubles. The Latvian Scientific-Research Institute of Hydraulic Engineering and Melioration is presently engaged in establishing a drainage combine, to promote mechanization of underground drainage systems.

There are five photographs.

ASSOCIATION: Main Melioration Office of the Ministry of Agriculture of the Latvian SSR (Glavnoye upravleniye melioratsii sel'skogo ~~khozyaistva~~ Latviyskoy SSR)

AVAILABLE: Library of Congress

Card 2/2

L 00567-67 EWT(m)/EWP(j)/T IJP(c) RM

ACC NR: AP6009867

(A)

SOURCE CODE: UR/0413/66/000/004/0065/0065

INVENTOR: Kalnin'sh, A. I.; Rakin, A. G.; Berzin'sh, G. V.; Sheydn, I. A.;
Darzin'sh, T. A.; Muzhits, V. I.; Doronin, Yu. G.; Ziyemelis, A. E.; Churina, Ye. A.

ORG: none

TITLE: Preparation of wood plastics. Class 38, No. 178971 [announced by the
Institute of Wood Chemistry AN LatSSR (Institut khimii drevesiny AN Latviyskoy SSR)
and Central Scientific-Research Institute of Plywood (Tsentral'nyy nauchno-issledovatel'skiy institut fanery)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 4, 1966, 65

TOPIC TAGS: plywood, wood chemistry, wood plastic, *forest product*

ABSTRACT: An Author Certificate has been issued describing a method of preparing wood plastics. To improve the physical and mechanical properties of the end product and lower the amount of binder for making wood plastic from veneer sheets or ground wood, the latter are treated, prior to pressing, with a 25-percent solution of ammonia for 4 hr at 18--20C. The treated sheets are combined with untreated sheets during pressing. [LD]

SUB CODE: 11/ SUBM DATE: 25Jan65

Card 1/1 vlr

UDC: 674.812.2

BERZIN'SH, U.Ya. [Berzins, U.], kand. med. nauk; ZHURAVLEV, N.N.,
kand. med. nauk; KALININA, V.D., kand. med. nauk;
SHURMIN, F.V., kand. med. nauk

Second Republic Conference of Pathoanatomists of Latvia.
Ark. Pat. 25 no.6:78-81 '63. (MIRA 17:1)

L 1982-66 EWT(1)/EEC(k)-2/T/EWA(h) IJP(c)

ACCESSION NR: AP5023291

UR/0371/65/000/004/0033/0040 27
25

AUTHOR: Berzins, J. (Berzin'sh, Ya. Ya.); Klavins, I. (Klyavin'sh, I. E.) 44 5

TITLE: Experimental determination of the cutoff time of thyristors 25 11

SOURCE: AN LatSSR. Izvestiya. Seriya fizicheskikh i tekhnicheskikh nauk, no. 4, 1965, 33-40

TOPIC TAGS: thyristor, electronic equipment, electric polarization

ABSTRACT: To cut off a thyristor it is necessary to apply a voltage with reverse polarization to the element. By the cutoff time of a thyristor is meant the interval of time required for the reestablishment of a closed condition after the direct current flow is switched off. This interval is usually measured from the moment when the direct current passes through the null point up to the moment when the direct current is applied, when the cutoff properties of the element are reestablished up to a level of 0.95, that is, when the amplitude of the voltage in the instrument is not less than 95% of the applied voltage. The experiments were carried out on a D235G thyristor with a nominal current of 2 amp. Experimental

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ACCESSION NR: AP5023291

results indicate that the cutoff time of a thyristor is a function of a multitude of factors which must be taken into account in the choice of elements for thyristor cutoff circuits. A determination was made of the dependence of cutoff time for a D235G thyristor on the amplitude of the direct current before the cutoff for different values of the amplitude of the reverse voltage in the cutoff process, all other influencing factors being constant. Orig. art. has: 5 figures

ASSOCIATION: Institut energetiki AN Latv. SSR (Energetics Institute, AN LatSSR)

SUBMITTED: 24Apr65

ENCL: 00

SUB CODE: EC

NR REF SOV: 001

OTHER: 005

Card

2/2

BERZON, A.I.

The 6L38 automatic production line. Biul.tekh.-ekon.inform.
no.6:21 '61. (MIRA 14:6)
(Ryazan—Machine-tool industry)
(Automation)

BERZIN'SH, E.A., setchnik.

Straining the stuff on circular-mesh papermaking machines. Bum.
prom. 31 no.9:23 S '56. (MLRA 9:11)

1. Bumazhnaya fabrika "Ligatne".
(Papermaking machinery)

BERZIN'SH, G.V.; MAKSIMOVA, L.T.; APATSKAYA, N.A.

Finishing furniture parts by the dipping method. Der.prom 5
no.7:25-26 JI '56. (MLRA 9:9)

1. Rishskiy mebel'nyy kombinat No.1.
(Riga--Furniture industry)

^{Yu.}
BERZIN'SH, S. Ya. Cand Med Sci -- (diss) "^{Medico-legal} ~~The~~ Importance for the legal
~~of the detection of~~ ^{of the detection of} ~~medicine of detecting the~~ plankton elements in the blood and ~~in~~ ⁱⁿ the ^{internal}
~~inner~~ organs in cases of drowning." Riga, 1958. 11 pp (Len State Order
of Lenin Institute ^{for the} of Advanced Training of ^T physicians in S.M.Kirov).
200 copies (KL, 37-58, 112).

SHAPIRO, Mikhail Semenovich; SMIRNOV, Mikhail Prokof'yevich;
SAFONOV, N.T., inzh., retsenzent; BERZON, E.M., kand.
tekhn. nauk, red.; FOMICHEV, A.G., red. izd-va;
SHCHETININA, L.V., tekhn. red.

[Equipment for asbestos-cement production] Oborudovanie as-
bestotsementnogo proizvodstva. Moskva, Gos. nauchno-tekhn.
izd-vo mashinostroit. lit-ry, 1961. 155 p. (MIRA 15:3)
(Asbestos cement)

1ST AND 2ND ORDERS 1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

41

The influence of the type of heating on the decarbonization and grain size of tools of high-speed steel. I. Sh. Askenazyan and A. S. Herginsaya. *Aukhachyannawi Nol* 1935, No. 3, 48-51; *Chem. Zvest.* 1935, II, 3572. Expts. are reported on the decarbonization of tools of high-speed steel of the compn.: C 0.7, W 18, Cr 4.5 and V 1%. The ordinary addn. of powder 45% ferrosilicon to the BaCl₂ bath eliminates the decarbonization. Hardening of the tools in a 0.001% KNO₃ bath produces a less deep decarbonized layer than quenching in oil. The grain size of the steel stands in definite relation to the depth of the decarbonized layer. W. A. Moore

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

330-110-02174

WATER-GAS INDEX

CLASSIFICATION

INDEX

INDEX

BRASERNA, A. Ya.

BRASERNA, A. Ya. - "The Interconnections among the Lateral Nerves." Riga, 1955.
Min Health Latvian SSR. Riga Medical Inst. (Dissertation for degree of Candidate of Medical Sciences.)

30: Knizhnyaya Letopis', No 40. 26 November 1955. Moscow.

Country : USSR
Category: Human and Animal Morphology (Normal and Pathological).
Nervous System. Peripheral Nervous System

S

Abs Jour: RZhBiol., No 2 1959, No 7530

Author : Berzinya, A.Ye.
Inst : ~~Institute~~ Institute of Experimental Medicine. Academy of
Sciences LatvSSR

Title : On Nerve Cells in the Trunks of Laryngeal Nerves of
Man.

Orig Pub: Tr In-ta eksperiment. med., AN LatvSSR, 1958, 17,
149-153

Abstract: 12 superior and 12 inferior laryngeal nerves (LN)
of three fetuses 2-3 month, one newborn and 2 adults
35 and 68 years of age were studied. It was shown
that nerve cells (NC) are permanent components of
LN. The amount of NC in the trunks of LN increases

Card : 1/2

Berzner V.N.

AUTHORS: Berlaga, P. Ya., Candidate of Physical and Mathematical Sciences, *32-10-18/32*
Berzner, V. N., Candidate of Physical and
Mathematical Sciences, Lebedev, A. A., Academician.

TITLE: Electron Microscopy in the Soviet Union (Elektronnaya mikroskopiya v Sovetskom Sojuz)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol 23, Nr 10, pp 1214-1219 (USSR)

ABSTRACT: Both the development and the latest achievements of electron microscopy are described in the introduction by drawing special attention to the successes achieved in England (Kenter) where the crystalline lattice with intercrystalline distances was immediately observed for the first time. In the chapter: The elaborate studies for manufacturing a Soviet electron microscope it is stated that the first electron microscopes constructed by Lebedev were produced in 1945 and that they were later (1949) to industrial purposes by M. Ivanov under the trade mark " M-3". The further developed instruments " M-3M" which, among others, were also equipped with electronographic accessories for electronic graph recording in the transitory and reflected rays and which allow an enlargement up to the 40.000 fold, were produced for the first time in 1953. Ultimate preparations are made at present for the production of the latest Soviet electron microscope "YM5-100" which "should be equal" to the

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best foreign models. Its technical data will be: 20A at an accelerating voltage of 50, 75 and 100 KW, constructed by V. Polivanov, P. Stoyanov, and G. Mikhaylovskiy. The latest type of the electron microscope " M-5" at 25 A and continuously increasing enlargement of 1000 to 50000 times at 40, 50, 60 KW, is also already being produced; it will make it possible to achieve a microdiffraction in transitory electron rays, to carry out an electronic graph, and to make stereoscopic photographs. Yanchevskiy, K. Milyutin, V. and Fetisov, D., after many years of research, also completed other plans for further electron-microscopes among which are " CM-60" and "M CM-40" of 60 and 40 KW at $\delta_1=50$ A, and $\delta_2=60$ A. Moreover, an emission electron microscope " M-75" with $\delta=500$ A and 75 KW, as well as a series of other microscopes were elaborated for special purposes (electron emission) by Rozebfel'd A., P. Zaytsev, and Yu. Zolotarevko. In the chapter: Electron-microscopical elaborate investigations it is stated that there are actually more than 400 electron microscopes in operation in the USSR, which is much fewer than in the U.S.A. where approximately 500 of these apparatus exist. Variations of elaborate investigations on cathodes, their activation, phenomena of migration and adsorption are described and mentioned in this chapter. Eventually the application of electron pro-

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Electron Microscopy in the Soviet Union.

32-10-18/32

jectors which allow a 2 million-fold enlargement (spherical projector) is practised. Electron microscopy is applied in the USSR in the fields of metallography, geology, biology, bacteriology, and medicine. (Examples are given).

AVAILABLE: Library of Congress

1. Electron microscopy-USSR
2. Electron microscopy-Development
3. Electron microscopy-Application

Card 3/3

FHL'DMAN, V.Ya.; KADIK, F.A.; KOMAROV, A.S.; BERZON, A.A.

Determining air consumption during the operation of the MPK-1
loading machine. Ugol' 35 no. 12:11 D '60. (MIRA 14:1)
(Coal mining machinery--Pneumatic driving)

BERZON, A.I.

Automatic lines for **machining and assembling** connecting rods. Biul.
tekh.-ekon.inform. no.10:36-40 '61. (MIRA 14:10)
(Machine tools) (Automation)

BERZON, A.I.

The RLOO2 and RLOO3 automatic lines for complete machining of generator frames. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst. nauch. i tekh.inform. 16 no.10:37-40 '63. (MIRA 16:11)

BERZON, E., kand.tekhn.nauk; DOLITSKIY, I., kand.tekhn.nauk; HARINSKIY,
F., kand.tekhn.nauk

Conveying equipment of the Kolpinc Housing Construction Combine.
Zhil. stroi. no.9:13-15 S '60. (MIRA 13:9)
(Leningrad--Precast concrete construction)
(Conveying machinery)

BERZON, E.M., kand.tekhn.nauk; DOLITSKIY, I.I., kand.tekhn.nauk; NARINSKIY,
F.I., kand.tekhn.nauk

Conveyer-line manufacture of elements of large-panel apartment
houses. Trudy NIIZHB no.21:163-173 '61. (MIRA 14:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po mashinam dlya
promyshlennosti stroitel'nykh materialov.
(Concrete slabs)

DERING, A.B., glav. red.; TUROV, M.G., zam. glav. red.; BERZON,
E.M., red.; BUCHKIN, N.A., red.; KOZLOV, V.K., red.;
NAYMARK, I.I., red.; NIKOLAYEV, K.N., red.; SUSHCHEV,
N.N., red.; TERESHCHENKO, Ye.I., red.; YUNMEYSTER, A.B.,
red.; PUL'KINA, Ye.A., otv. za vyp.

[Reports on the technical level of the manufacture of
reinforced concrete products] Sbornik dokladov ob urovne
tekhniki proizvodstva zhelezobetonnykh izdelii; informa-
tsionnyi material. Leningrad, Otdel tekhn. informatsii.
No.3. 1959. 81 p. (MIRA 16:11)

1. Leningrad. Vsesoyuznyy nauchno-issledovatel'skiy in-
stitut po mashinam dlya promyshlennosti stroitel'nykh
materialov.

(Reinforced concrete products)

ALATYRTSEVA, I.Ye., KOLPACHIKHIN, F.B.; AMFITEATROVA, N.F.; SHAROVSKAYA, V.N.;
DVORKINA, A.I.; MEL'NIKOVA, V.K.; BERZON, I.G.

Intranasal revaccination against diphtheria. Report No. 1. Vop.okh.
mat.i det. 7 no.4:29-32 Ap '62. (MIRA 15:11)

1. Iz Kazanskogo nauchno-issledovatel'skogo instituta epidemiologii,
mikrobiologii i gigiyeny.

(DIPHTHERIA--PREVENTIVE INOCULATION)

BERZON, I. S.

Berzon, I. S. "The Gravitational Field Above Vertical Grading in the Case of a Linear Change of the Difference in Density with Depth," In the book: *Sbornik Statei po Metodike Interpretatsii Gravitricheskikh Nabludeni. Trudy Vsesoiuznogo Tresta Geofizicheskikh Razvedok*, Moscow-Leningrad, No. 13 (20), 1968, pp. 45-53.

BERZON, I.S.

Inst. for Theoretical Geophysics, Acad. Sci., USSR, Polucheno, (-1942-)

"The Godagraphs of ~~Reiterated-Reflected~~, ~~"elected-Refracted~~ and ~~"elected-~~
~~Reflected Waves"~~

Iz. Ak. Nauk SSSR., Ser. Geograf. i Geofiz., Nos. 1-6, 1942

BERZON, I.S.

Acad. Sci., Instituted of Theoretical Geophysics. (-1945-)

"Hodographs of Reflected Waves and Their Interpretation at the Presence of a Horizontal Gradient of Velocity"

Iz. Ak. Nauk, SSSR, Ser. Geograf. i Geofiz., no. 1, 1945

BERZON, I.S.

Institute of Theoretical Geophysics, Acad. Sci. (45)

"On the Kinematic Possibilities of the Existence of Mintrop's Waves in Some Continuously Discontinuous Media"

Iz. Ak. Nauk SSSR, Ser. Geograf. i . Geofiz., no. 2, 1945

BERZON, I. S.

"A Combined Method for Seismic Prospecting," Dok, An, 51, No. 6, 1946; (Yu V. Ryznichenko, A. M. Epinatyera, G. A. Gampurtsev)

Inst-Theoretical Geophys., AS USSR

2

USSR/Nuclear Physics - Cosmic Rays Jan/Feb 1948
Nuclear Physics - Trajectories

"Determining the Trajectory of Cosmic Rays and Time
Fields in Media with Varying Speeds," I. S. BERSON,
Inst Theoretical Geophys, Acad Sci USSR, 16 pp

"Izv Akad Nauk SSSR, Ser Geog i Geofiz" Vol XII, No 1

Discusses analysis of various methods to determine
time fields, and suggests means to calculate the
trajectory of cosmic rays with assistance of yearly
graphs.

42767

BERZON, I. S.

PA 25/49T34

USSR/Geophysics
Seismology
Seismometry

Nov/Dec 48

"Determination of the Seismic Velocity Using
the Starting Points of Surface Hodographs for
Mintropovskiy's Waves," I. S. Berzon, 6 pp

"Iz Ak Nauk SSSR, Ser Geog i Geofiz" Vol XII,
No 6

Investigates the spacial problem of determin-
ing the velocity V_1 in a medium, covering the
refracting limit, and limiting velocity V_2 in
the refracting layer using the starting points
of surface hodographs for Mintropovskiy's waves.

25/49T34

BERZON, I. S.

PA 43/49T67

Mar/Apr 49

USSR/Geophysics
Seismology
Seismometry

"Indicatrices of the Average Seismic Velocity in Stratified Media," I. S. Berzon, 17 1/2 pp

"Is Ak Nauk SSSR, Ser Geog i Geofiz" No 2

Reveals that indicatrices of average velocity, corresponding to the medium which consists of uniform isotropic strata with various elastic characteristics, differ considerably from elliptic indicatrices, relative to uniform anisotropic media. It can be determined by observed velocity indicatrices, based on the differences, whether the medium to be tested is uniformly anisotropic, or stratified and isotropic. Experiments on velocity construction for various strata are in progress. Gives illustrations of experimental results. Submitted 30 Mar 48.

43/49T67

BAZON, I. S.

36624. Metod Resheniya Prostranstvennoy Zadachi Interpretatsii Hodografov Mintropovskikh Granits Proizvol'noy Formy. Izvestiya Akad. Nauk SSSR, Seriya Geogr. i Geofiz., 1949, No. 6, c. 545-55. - Bibliogr: 9 Nazv.

SO: Letopis' Zhurnal'nykh Statey, Vol. 50, Moskva, 1949

**"Method of Solving the Spatial Problem of Interpreting Hodographs of
Mintropovskiy Waves for Refracting Surfaces of Arbitrary Form,"**

Geophysics Inst., AS USSR

BERZON, I. S.

PA 233T88

USSR/Geophysics - Earthquakes

1950

"Some Problems of Kinematics Governing Propagation of Diffracted Seismic Waves," I. S. Berzon

"Trudy Geofiz Inst" No 9, (136), pp 67-83

States a method for solving the direct problem of geometric seismics for diffracted waves under the condition that the diffracting edge is a continuous curve of an arbitrary form with a continuously varying tangent.

233T88

PA 171T63

BERZON, I. S.

USSR/Geophysics - Geophysical Prospecting
Seismic Method Nov/Dec 50

"Seismic Screening," I. S. Berzon, A. M. Yepinat'yeva, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geor i Geofiz" Vol XIV, No 6, pp 473-501

Gives seismic data on screening of beds by covering strata in which elastic waves propagate with high velocity. When waves impinge on boundary of screening stratum at greater than critical angles, stratum's screening action depends upon

171T63

USSR/Geophysics - Geophysical Prospecting (Contd) Nov/Dec 50

ratio of width to wave length, medium's velocity characteristic, and incidence angle. Submitted by Acad O. Yu. Shmidt 9 May 50.

171T63

BERZÓN, I. S.

PA 187T25

USSR/Geophysics - Seismology

Jul/Aug 51

"Determining, From Experimental Data, the Exponent
of the Divergence Function of Refracted Waves," I. S.
Berzon, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geofiz" No 4, pp 1-30 *to be done*

Subject computation is based on exptl curves showing
ratio of amplitude to distance. Proved that accuracy
of absorption coeff in refracting layer essentially
depends on accuracy of detn of the exponent n of the
divergence function. Submitted 27 Mar 51.

187
187T25

BERZON, I. S.

USSR/Geophysics - Seismic Recording Nov/Dec 51

"Appearance of Dynamic Peculiarities in Seismic Records For Various Relations (Ratios) of Channel Sensitivity," I. S. Berzon, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geofiz" No 6, pp 5-10

Discusses the problem concerning the choice of the ratios of sensitivity in seismic receiver channels, for which the differences in amplitudes of different waves and in their deg of damping with distance are most clearly seen on seismograms and can most simply be utilized for construction of amplitude curves. Submitted 5 May 51.

199T71

GAMBURTSEV, G.A.; RIZNICHENKO, Yu.V.; BERZON, I.S.; YEPINAT'YEVA, A.M.;
PASECHNIK, I.P.; KOSMINSKAYA, I.P.; KARUS, Ye.V.; YEROFEYEVA, A.A.,
redaktor; KISELEVA, A.A., tekhnicheskiy redaktor

[Correlation method of refracted waves; manual for seismological
engineers] Korrelatsionnyi metod prelomlennykh voln; rukovodstvo
dlia inzhenerov-seismorazvedchikov. Moskva, Izd-vo Akad. nauk SSSR,
1952. 238 p. [Microfilm]. (MLRA 8:7)

1. Chlen-korrespondent AN SSSR (for Gamburtsev).
(Seismometry)

USSR/Geophysics - Seismic Waves May/June 52

"Seismic Waves Originating in a Vertically Laminar Medium," I. S. Berzon, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geofiz" No 3, pp 3-33

Discusses the problem of waves kinematically possible in the case of vertically laminar media, and studies the peculiarities of their surface and linear hodographs. Shows that exptl data obtained during works according to the correlation method of refracted waves under conditions of vertically laminar media agree well with results of discussion based on laws of geometric seismics. From analysis of observational data it follows 224769

that refracted waves originating in vertically laminar media are characterized by certain dynamic peculiarities which can be utilized for the study of such media. Indicates peculiarities of procedure of field operations according to the correlation method of refracted waves during the charting of vertically laminar media. Submitted 30 Dec 51.

224769

BERZON, I.S.

BERZON, I. S.

USSR/Geophysics - Seismic, Waves Jul/Aug 52

"Repeated Refracted Waves," I.S. Berzon, A.M.
Yepinat'yeva, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geofiz" No 4, pp 9-32

Discusses the problem concerning certain kinematic and dynamic peculiarities of repeated refracted waves. Presents exptl data on recording of repeated refracted waves under field conditions and shows that the observed peculiarities of these waves agree well with results of theoretical considerations. Submitted 2 Feb 52.

220750

USSR/Geophysics - Seismology, Hodographs

May/Jun 53

BERZON, I. S.

"The Delimiting of the Recording Zones of Reflected and Refracted Waves According to Combined Hodographs," I. S. Berzon, Geophys Inst, Acad Sci USSR

Iz Ak Nauk SSSR, Ser Geofiz, No 3, pp 209-214

Demonstrates a method for delimiting the zones recording the reflected and refracted waves that correspond to one and the same boundary of separation, according to the magnitudes of average velocities as determined by combined hodographs, if they are taken over the entire space as hodographs of reflected waves.

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BERZON, I.

"Review of 'Instructions for Seismic Prospecting"

Iz Ak Nauk SSSR, Ser Geofiz, no. 3, pp 271-274, May/June 1953

Review the symposium "Instruksiya po geofizicheskoy seysmorazvedke," a compilation of works contributed by A.S. Kumpan, V.N. Mitrofanov, N.A. Kobalevskaya, T.B. Sokolova, K.S. Andreyeva in participation with I.I. Gurvich, N.g. Shmidt, and G.N. Shablinskiy, and edited by I.K. Kupolov-Yaropolk. Published by the State Geology Press, Moscow, 1952, 94 pp, 5000 copies, price 2190 rubles.

248790

URUPOV, A.K.; RYABINKIN, L.A. [authors]; BERZON, I.S.; YEPINAT'YEVA, A.M. [re-
viewers].

"Short-reflected-refracted waves as a factor which reduces the quality
of seismic data of the Russian Platform." Izv.AN SSSR, Ser.geofiz. no.
4:388-390 J1-Ag '53. (MLRA 6:7)
(Russian Platform--Geophysics) (Geophysics--Russian Platform)
(Urupov, A.K.) (Riabinkin, L.A.)

BERZON, I. S.

USSR/Geophysics - Refracted waves

FD-757

Card 1/1 : Pub 44-5/11

Author : Berzon, I. S.

Title : Multiple refracted waves in vertically laminar media

Periodical : Izv. AN SSSR, Ser. geofiz., 424-442, Sep-Oct 1954

Abstract : Treats the peculiarities of the hodographs of multiple refracted-reflected and reflected-refracted waves in the presence of vertical boundaries of separation in a refracted layer. On the basis of an analysis of the hodographs and qualitative consideration of certain dynamic properties of multiple waves the author studies the problem of their correlation and identification on seismograms. Presents experimental results confirming theoretical conclusions. Seven references (A. M. Yepinat'yeva, I. P. Kosminskaya, L. P. Zaytsev, G. A. Gamburtsev), including author's own work dated 1942.

Institution : Geophysics Institute, Acad. Sci. USSR

Submitted : July 25, 1953

USSR/Geophysics - Seismic methods

FD 336

Card 1/1

Author : Berzon, I. S.

Title : The resolving capacity of seismic methods in the study of horizontal-laminar media

Periodical : Izv. AN SSSR, Ser. geofiz. 1, 26-48, Jan/Feb 1954

Abstract : Treats the problem concerning the dependence of the resolving capacity of the method of reflected waves and the correlational method of diffracted waves upon the seismological structure of the medium (the depths at which the boundaries of separation lie and the velocity characteristics) and upon the peculiarities of the procedures for investigation (the choice of the distances from the point of explosion and range of frequencies utilized).

Institution : Geophysics Institute, Academy of Sciences, USSR

Submitted : May 15, 1954

BERZON, I. S.

USSR/Geophysics - Physics of the Earth

FD-1714

Card 1/1 : Pub. 45-2/12

Author : Berzon, I. S.

Title : Boundary velocities in some metamorphic and crystalline rocks

Periodical : Izv. AN SSSR, Ser. geofiz., 101-117, Mar-Apr 1955

Abstract : The author discusses the results of the determination of boundary velocities in some vertically stratified metamorphic rocks and crystalline formations contacting them. These results were obtained in experiments based on the correlation method of refracted waves. The author then examines the question of the accuracy of the determination of the boundary velocity in thin vertical layers.

Institution : Geophysical Institute, Academy of Sciences USSR

Submitted : July 16, 1953

BERZON, I. S.
USSR/Geophysics - Seismology

FD-2572

Card 1/1 Pub. 44 - 2/19

Author : Berzon, I. S.

Title : Effective speeds in the case of continuous variation with depth of true speeds of seismic waves

Periodical : Izv. AN SSSR, Ser. geofiz. Jul-Aug 55, 299-302

Abstract : For the case of arbitrary continuous law of variation, with depth, of true speeds of seismic waves, the author examines the questions of the magnitudes of the effective speeds as determined by hodographs of the reflected waves corresponding to horizontal boundaries of separation. The deviation of the magnitudes of the effective speeds from the average speeds along the vertical were also examined.

Institution : Geophysics Institute, Academy of Sciences USSR

Submitted : February 25, 1954

BERZON, I. S.

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✓ 3454. Gamburtsev, G. A., and Berzon, I. S., High-frequency seismic prospecting (in Russian), Doklady Akad. Nauk SSSR (N.S.) 101, 5, 841-844, 1955 (translated from Russian by M. D. Friedman, 572 California St., Newtonville, Mass., 7 pp.)

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Geo

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✓ 4702
ON CHANGES IN THE DOMINANT FREQUENCIES OF SEISMIC WAVES WITH INCREASED DISTANCE FROM THE SOURCE OF VIBRATION. I. B. Berson (Inst. of Geophysics) Invest. Akad. Nauk S.S.S.R., Ser. Geofiz. No. 1, 3-22(1936) Jan. (In Russian)

1

The character of the dominant seismic wave frequency changes with the distance from the source of vibration, and the effects of absorption properties in concrete media are discussed. A possibility of step-wise changes in prevailing frequencies of straight, reflected, and refractory waves expanding into an absorption media are demonstrated. Explosion spectra effects, seismograph installation conditions, and the selection of a specific seismograph suitable to receive the wave dominant frequencies and their changes with distance are discussed. (tr-auth)

Phys

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BERZON, I.S.

Approximate methods of quantitative interpretation of isochronous maps
of reflected waves. Izv.AN SSSR.Ser.geofiz.no.3:252-262 Mr '56.

(MIRA 9:7)

1.Akademiya nauk SSSR, Geofizicheskiy institut.
(Seismology)

BERZON, I.S.; PARIYSKAYA, G.N.; STARODUBROVSKAYA, S.P.

Recording high-frequency reflected waves in the Russian Platform. Izv.
AN SSSR.Ser.geofiz.no.6:644-656 Je '56. (MLRA 9:9)

1.Akademiya nauk SSSR, Geofizicheskiy institut.
(Russian Platform--Seismometry)

BERZON, I.S.

Effective speeds and depths determined from hodographs of repeatedly reflected waves. Izv. AN SSSR, Ser. geofiz. no. 8:881-895 Ag '56.
(MLRA 10:1)

1. Akademiya nauk SSSR, Geofizicheskiy institut.
(Seismic waves)

BERZON, I.S.

Using dynamic characteristics of refracted seismic waves to trace vertical boundaries of a section. Izv.AN SSSR, Ser.geofiz. no.11:1294-1308 N '56. (MLRA 10:1)

1. Akademiya nauk SSSR Geofizicheskiy institut.
(Seismic waves)

SOV/124-58-2-2095

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 2, p 85 (USSR)

AUTHOR: Berzon, I. S.

TITLE: On Some Dynamic Peculiarities of Wave Propagation in Vertically stratified Media (O nekotorykh dinamicheskikh osobennostyakh voln rasprostranyayushchikhsya v vertikal'no-sloistykh sredakh)

PERIODICAL: Tr. Geofiz. in-ta. AN SSSR, 1956, Nr 35 (162), pp 51-87

ABSTRACT: Examination of the dynamic peculiarities of sinusoidal and quasisinusoidal seismic waves reflected and refracted upon normal impingement on a vertical boundary interface between two half-spaces and a vertical layer contained between two half-spaces. The interference phenomena are set down in a great number of theoretical seismograms, theoretical phase hodographs, and amplitude curves. An investigation is made of the character of the relationship between these phenomena and the acoustic stiffnesses and attenuation characteristics of the contacting media, also on the frequency and duration of the vibrations. Using experimental data, in conjunction with some theoretical results, it is shown that the dynamic peculiarities of waves may be utilized in the study of

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SOV/124 58-2-2095

On Some Dynamic Peculiarities of Wave Propagation (cont.)

vertically stratified structures in the presence of a covering medium.

K. I. Ogurtsov

Card 2/2

BERZON, I.S.

Horizontal gradient of the velocity in a covered medium in connection
with interpreting hodographs of refraction waves. Trudy Geofiz.no.35:258
268 '56. (MIRA 10:1)

(Seismic waves)

BERZON, IANA SOLOMONOVNA

PHASE I BOOK EXPLOITATION

380

Berzon, Iana Solomonovna

Vysokochastotnaya *seizmika* (High-frequency Seismic Exploration) Moscow, Izd-vo AN SSSR, 1957. 302 p. 2,200 copies printed.

Sponsoring agency: Akademiya nauk SSSR. Geofizicheskiy institut.

Resp. Ed.: Kosminskaya, I. P.; Ed. of Publishing House: Shebalin, N. V.;
Tech. Ed.: Kashina, P. S.

PURPOSE: This monograph is intended for students and specialists in seismic exploration and is sponsored by the Geophysical Institute, Academy of Sciences, USSR.

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High-frequency Seismic Exploration

380

COVERAGE: The book contains a detailed analysis of the methods and principles of prospecting for oil using high-frequency waves (70-500 c.p.s.) and demonstrates the advantages of this range over the middle frequencies. The author analyzes the field data obtained in solving problems of shallow seismic exploration. The possibility of checking off many more boundaries than in the mid-frequency range, and a better resolution of the traces of high-frequency waves on the seismogram, permit a better quantitative and qualitative analysis. The following personalities are mentioned: V. F. Bonchkovskiy, P. F. Fedotov and G. A. Gamburtsev. There are 155 references, of which 106 are Soviet, 36 English, 9 German, 2 French and 2 Japanese.

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2

BERZON, I. S.

AUTHORS: Berzon, I. S. and Ratnikova, L. I.

49-6-1/21

TITLE: On the nature of certain waves interfering with the production of reflected waves on the Russian Platform.
(O prirode nekotorykh voln, meshayushchikh vydeleniyu otrazhennykh voln na Russkoy Platforme).

PERIODICAL: "Izvestiya Akademii Nauk, Seriya Geofizicheskaya"
(Bulletin of the Ac.Sc., Geophysics Series), 1957, No.6,
pp.697-708. (U.S.S.R.)

ABSTRACT: In the period 1953/1954 an expedition of the Geophysical Institute of the Ac.Sc. of the U.S.S.R. worked in Western Bashkiria. Its purpose was to discover the causes of an apparent violation of the correlation between reflected waves. As a result of seismographic studies it was established that the interfering disturbances may be divided into two groups: 1. Irregular disturbances; 2. Regular disturbances consisting of waves with different apparent speed (2000 - 5000 m per sec), the most important members of which move with speeds of the order of 3000 to 3500 m/sec. At distances $\Delta > 900$ m these waves interfere with the reflected waves recorded at $t = 0.55$ to 0.6 sec (which corresponds to depths of 1200 to 1500 m) and destroy any further correlation between them. The data obtained during

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49-6-1/21

On the nature of certain waves interfering with the production of reflected waves on the Russian Platform. (Cont.)

the above expedition was used in the present paper to deduce the nature of the regular waves t_p moving with the apparent velocity of the order of 3000 to p 3500 m/sec and recorded at relatively short distances from the point of explosion (less than 2 km). The lithological section of the region can be represented in the following schematic way. The upper part consists of sandstone-clay formations with rare intercalations of limestone. The maximum depth of these rocks is 150 to 200 m. Under these rocks there are layers of anhydrites and salts, the total thickness being about 1.5 km. Seismological results indicated the existence of three reflecting and refracting boundaries:

1. Refracting boundary d_2 in the upper sandstone clay formation, and at a depth of 50 to 100 m. The speed of longitudinal waves down this boundary is about 2600 to 2800 m/sec.
2. A refracting boundary d_k , the speed of longitudinal waves down this boundary being of the order of 5000 to 5600 m/sec, and 2500 to 2600 m/sec above it.
3. Reflecting boundary r_3 at a depth of 1200 m. The mean speed of longitudinal waves above this boundary is about 5000 m/sec.

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49-6-1/21

On the nature of certain waves interfering with the production of reflected waves on the Russian Platform. (Cont.)

It is shown that the wave t , which interferes with the recording of reflected waves P is propagated as a transverse wave down the boundary d_1 , and in the medium above this boundary it covers part k of its path in the form of a longitudinal wave and part as a transverse wave. The wave probably corresponds to the type $P_1 S_{232} P_1$. The wave changes from a longitudinal into a transverse one probably at the boundary d_2 . Not enough data are available to establish these results in a completely unambiguous fashion. There are 9 figures and 12 references, all of which are Slavic.

SUBMITTED: June 18, 1956.

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

AVAILABLE: Library of Congress
Card 3/3

BERZON, I. S.

49-11-5/12

AUTHOR: Berzon, I. S.

TITLE: Development of Methods of Seismic Prospecting in the Soviet Union. (Razvitiye metodov seysmicheskoy razvedki v Sovetskom Soyuze).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1957, No.11, pp. 1347-1358 (USSR)

ABSTRACT: A brief review of the results of Soviet work relating to the development of seismic methods of prospecting carried out primarily during the last ten years. Information on the development of methods of seismic prospecting in the Soviet Union during preceding years is contained in the papers of Gamburtsev, G.A. (Ref.1), Fedynskiy, V.V. (Ref.2), and Karus, Ye. V. (Ref.3) and in the book "Seismic Prospecting" by I. I. Gurvich, Gosgeoltekhizdat, Moscow, 1954. The author deals with the development of new methods of seismic prospecting, i.e. those based on the correlation method of refracted waves, on the use of high and low frequency seismic methods, etc., with the study and utilisation of the dynamic characteristics of seismic waves for interpretation, with the study of new types of waves, with the parametric measurements of the elastic and absorption properties of

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49-11-5/12

' Development of Methods of Seismic Prospecting in the Soviet Union.

rocks and with the main tasks in this field in the near future. The methods and results are only briefly mentioned, quoting references but without giving detailed information. The author considers that the most important tasks in the near future are the study of the physics of propagation of waves of various types (longitudinal and non-longitudinal) in various media, further development of methods of interpretation of the dynamic characteristics of waves (amplitudes, frequency spectra) for the purpose of determining the absorption parameters, the coefficients of reflection and transmission waves in various media etc; a very important problem is the automation of processes of evaluation of observed results. Much importance is attached to the development of methods based on utilising the dynamic characteristics of various types of seismic waves.

There are 125 Slavic references.

ASSOCIATION: Ac.Sc. USSR Institute of Physics of the Earth.
(Akademiya Nauk SSSR Institut Fiziki Zemli)

AVAILABLE: Library of Congress.
Card 2/2

SOV-49-58-6-1/12

AUTHOR: Berzon, I. S.

TITLE: Experimental Data on the Secondary Diffracted Waves of
PSP Type (Eksperimental'nyye dannyye ob obmennykh
prelomlennykh volnakh tipa PSP)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya,
1958, Nr 6, pp 689-712 (USSR)

ABSTRACT: Due to the difficulties of obtaining true recordings of
the secondary waves, the longitudinal diffracted waves are
usually employed in seismic survey. However, experiments in
this field are increasing. This work is an attempt to anal-
yse the waves of PSP type obtained during testing on diffract-
ion of waves from a shallow crystal bed. The tests were
carried out in 1950 and 1951.

1. The character of tests. The seismo-geological cross-
section of the area of testing can be described as a layer
of Quaternary and Tertiary deposits lying on the steeply in-
clined metamorphic rocks, mixed with gneiss and granite. The
depth of the metamorphic or crystal bed extended from sever-
al to 150 m. The velocities downwards were of the magnitude
3000-6500 m/sec. The velocities in the metamorphic bed were
500-1500 m/sec, and 1500-2200 m/sec in the layers of water-
saturated sand or clay found at depths more than 40 m. The

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Experimental Data on the Secondary Diffracted Waves of PSP Type.

instruments employed were of medium and high frequency type. The secondary waves were measured with an instrument for recording frequencies up to 90 hertz. The method of registration was based on the seismograms of the longitudinal waves t_1 diffracted from the crystal bed. The waves t_2 , the determination of which is described in this work, were registered by the same seismograms. To generate the vibrations a method of detonation was applied with the holes drilled to 10-30 m deep. Sometimes the detonations were made in the water of lakes and rivers.

2. Determination of types of recorded waves. The seismograms showed mainly the diffracted wave t_1 of PPP type. But on a number of them a secondary wave t_2 could be traced having a lower velocity of 3-4 km/sec in comparison with 5-6 km/sec of wave t_1 . The predominant frequencies of t_2 (40-50 h) were lower than those of t_1 (60-80 h). The wave t_2 was

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Experimental Data on the Secondary Diffracted Waves of PSP Type.

recorded either as a longitudinal or transverse wave. Several methods were applied for identification of the t_2 waves. The boundary velocities in the observed medium were much lower than those below the diffracting bed. The correlation method showed that boundary velocities of t_1 were more variable than those of t_2 but the ratio of V_1/V_2 was found to be 1.7-1.8. The other method of identification was a travel time graph t_0 constructed for waves t_1 and t_2 from some of the longitudinal recordings. This showed that the curve t_2 has the same characteristics as the curve t_1 but the time of travel t_{o2} was always somewhat greater than that of t_{o1} . The ratio t_{o2}/t_{o1} as obtained from the graphs varied from 0.97 to 1.25, the average being about 1.07. This value agrees with the theoretical calculation of the ratio $t_0(P_1S_2P_1)/t_0(P_{121})$ derived from the Eqs.(2) and (3). Therefore it may be concluded that the wave t_2 is of $P_1S_2P_1$ type. Also the waves were determined from some ob-

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887-4-5-6-1/12

Experimental Data on the Secondary Diffracted Waves of PSP Type.

servations by means of recording them on the horizontal (X) and vertical (Z) component seismographs. The Z component seismograms showed a great intensity of the wave t_2 . The ratio of amplitudes of X component to Z component can be derived theoretically thus giving evidence that the X component amplitude for the PSS wave should be much smaller than the amplitude of Z component. The calculation shows that if the wave t_2 was to be taken as PSP type the ratio of amplitudes should be 1:3. The experimental data obtained from the recordings indicated that this was the fact. Therefore it can be stated again that the wave t_1 may be identified as PSP type. This method of identification was very useful in cases where wave t_2 was difficult to trace due to the complications arising from an interference of some additional waves, usually of PSS type. Since the wave t_2 was identified as the PSP type it will be called PSP and t_1 PPP in the rest of this work.

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Experimental Data on the Secondary Diffracted Waves of PSP Type.

3. Determination of PSP wave from seismograms and correlation graphs. The wave PSP was obtained mainly from a diffracting granitic bed situated under sedimentations. Where the bed was in the form of steep metamorphic rocks, such as gneiss, the PSP waves did not register. That could be seen on many interesting seismograms for various geological regions. It can be stated that the PSP waves can only be registered on condition that the diffracting surface is of homogeneous type. Where a PSP wave appeared on the seismogram, its spot-correlation graph was often shortened and the areas where it could be traced was different at different distances from the detonation point. The PSP wave usually appeared on the seismograms at a distance (X minim) equal to that where the PPP wave disappeared from the area of first entry. This distance was shorter where the depth of the diffracting bed was shallower. Often the PSP wave vanished abruptly at short distances (X minim, equal to 300-400 m), thus not being registered on seismograms at all. The maximum distance where PSP waves could be registered was about 1600 m.

4. Frequency characteristics of PSP wave. It was evident from the seismograms that the prevalent frequencies of the

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PPP waves were in the region of 60 to 80 h, while those of

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Experimental Data on the Secondary Diffracted Waves of PSP Type.

the PSP waves were 40-50 h. This could be seen in the spectrum of the PSP waves which showed a maximum in the region of the lower frequencies as compared with that of the PPP waves. Sometimes it was difficult to register the PSP wave frequencies with the instruments as usually they are designed for a higher range with a short scale in the range of PSP waves. The value of the relation of $T(\text{PSP})/T(\text{PPP})$ to the distance was not observed. However, it was possible to determine that when the distance from the detonation point was shorter ($X < 250$ m) it varied from 0.9 to 2.9 and from 0.9 to 1.9 for greater distances ($X > 750$ m). The value of the relation $T(\text{PSP})/T(\text{PPP})$ to the depth (in the range of 25-125 m) of a diffracting bed was not possible to observe as it was not consistent. However, it was noted that it decreased a little with greater depth. It was observed that 53% of values $T(\text{PSP})/T(\text{PPP})$ varied between 1.2 and 1.6 with the majority confined between 1.2 and 1.4. The data was obtained from 735 measurements of periods on the seismograms. It should be noted that some

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Experimental Data on the Secondary Diffracted Waves of PSP Type.

values were lower than 1. This could be explained by an interference of other types of waves such as P_{11121} type.

5. Character of PSP wave amplitude. The variation of amplitude of the PSP wave was not proportional to the distance. It decreased at first 350-600 m, then increased, and again decreased gradually. The amplitude of the PPP wave decreased slowly at the same time. The determination of the parameters n and α which control the damping of waves, and the amplitudes of advancing and returning waves was possible in the areas where the diffracting bed was horizontal. It was found that the value n_1 for PSP waves varied between 2 and 10, while n_2 for PPP waves was more evenly distributed between 2 and 3. The ratio n_2/n_1 varied between 1.4 and 5. When the damping coefficient α was defined in relation to n calculated for PSP waves its value was generally negative and n was found not to be constant but decreasing with distance. The problem to be solved was whether the value of n depends on distance. The experiments proved that $n = 2$ for the PSP waves at near distances. However, for the secondary PSP waves this was not true and a different way

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Experimental Data on the Secondary Diffracted Waves of PSP Type.

of determining the damping parameters n and α had to be found. For this reason a relation of the amplitudes to the distance was considered. The ratio $A(\text{PSP})/A(\text{PPP})$ changes at the various points from the detonation and greatly changes at the longer distances, the differences being in the range of 0.3 to 6.3. However, when the most numerous frequencies were taken into account, the ratio $A(f_2)/A(f_1)$, where f_2 and f_1 are frequencies of PSP and PPP waves, was found to be 0.5. Therefore, to find the real relation of the amplitudes of PSP and PPP waves, the value of $A(\text{PSP})/A(\text{PPP})$ should be divided by the value of $A(f_2)/A(f_1)$, i.e. to be multiplied by 2. It was found from the graphs of the relation $A(\text{PSP})/A(\text{PPP})$ for the horizontal diffracting bed and constant boundary velocity that the damping of the waves PSP was greater than that of PPP waves. The variations of $A(\text{PSP})/A(\text{PPP})$ were much greater when the diffracting bed was inclined. Then, the variable conditions

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Experimental Data on the Secondary Diffracted Waves of PSP Type.

made both waves behave differently, thus giving various values for the relation of amplitudes.

Summary. 1. Field tests were carried on and the correlation method applied for determination of waves diffracted from a crystal bed. In the sediment layer the waves were mainly of longitudinal character, although some of them were transverse. Only the PSP waves were investigated.

2. The secondary PSP waves were recorded only from the granitic bed. No diffracted waves were obtained from other foundations such as gneiss or steep metamorphic beds. This proved that such a diffracting bed is not attractive for the spread of PSP waves. That peculiarity could be utilised for investigating the composition of rocky foundation (the recorded PSP waves can distinguish the layers of granite from those of gneiss and metamorphic slates).

3. The secondary waves are more variable in their kinematic and dynamic characteristics than the diffracted longitudinal ones. This makes their registration more difficult.

4. The instruments which are usually devised for higher frequencies are not quite suitable for registration of secondary waves. (The spectrum of PSP waves is of lower frequency than that of the longitudinal PPP wave).

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Experimental Data on the Secondary Diffracted Waves of PSP Type.

5. When the diffracting bed is horizontal and the boundary velocity constant, the damping effect of the secondary waves is stronger than that of the longitudinal waves. The uneven bed makes damping variable. Often the amplitude increases with an increase of distance owing to some kind of focussing of the crystal rocks.

6. The parameters n and α which affect damping of the waves when distance is increased, were not consistent. This proved that n of the secondary wave changes differently from the n of a longitudinal wave. Therefore, a different method for determining the parameters had to be found. In view of the special character of the PSP waves it is advisable to treat them individually during various seismic-geological surveys. It should be noted that although the velocity ratio V_P/V_S is equal to 1.8 it is necessary for the identification of the PSP waves that the ratio of velocities of the longitudinal waves at the diffracting

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SOV-49-58-6-1/12

Experimental Data on the Secondary Diffracted Waves of PSP Type, surface is $V_{2P}/V_{1P} > 1.8$. Consequently PSP waves can be defined only in the medium with great differentiation of velocities. The purpose of the investigation of PSP waves was to improve the methods of seismic survey. There are 3 tables, 18 figures and 26 references, of which 21 are Soviet and 5 English.

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

SUBMITTED: February 16, 1957.

1. Seismic waves--Analysis
2. Seismic waves--Recording devices
3. Seismic waves--Propagation

Card 11/11

BERZON, Inna Solomonovna; BOKANENKO, Lev Ivanovich; ISAYEV, Vasilii
Semenovich; SHCHUKINA, Ye.P., red.; BRUZGULS, V.V., tekhn.red.

[Seismic studies on the Tuiuksu Glacier] Seismicheskie
issledovania na lednike Tuiuksu. Moskva, Izd-vo Akad.nauk
SSSR, 1959. 66 p. (Akademia nauk SSSR. Mezhdunomstvennyi
komitet po provedeniiu Mezhdunarodnogo geofizicheskogo goda
seismicheskie issledovania, no.2). (MIRA 13:2)
(Tuiuksu Glacier--Seismology--Observations)

MAJOR BOOK EXTRACTS 807/3560

Александровский институт физики земли
Сейсмологическая наука (Seismic Prospecting) Moscow, 14-vo M. SOVM, 1959,
376 p. (Series: Изд. Наука, No. 6/177) Krieva slip inserted. 1,500 copies
printed.

Dr. I. S. Barton, Doctor of Physical and Mathematical Sciences; Ed. of Publishing
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PURPOSE: The publication is intended for geologists and geophysicists, particularly
for those interested in the study of seismic waves and their use in geological
prospecting.

COMMENT: This is a collection of 17 articles published by the Academy of Sciences
USSR as transactions of the Institute of Physics of the Earth. The first four
articles present mainly an analysis of amplitude properties of waves. The
second group of four articles deals with problems of frequency analysis of
seismic waves. The remaining articles cover a wide field of problems in seis-
mology such as methods of interpretation of dynamic properties of waves,
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B.R. Zorn, L.S.

SOV/49-59-1-5/23

AUTHORS: Ber'on, I.S., Vasil'yev, Yu. I., Starodubrovskaya, S.P.

TITLE: On refracted Waves in Water-Saturated Sand. I.
(O prelomlennykh volnakh, sootvetstvuyushchikh
vodonosnym peskam. I.)

PERIODICAL: Izvestiya Akademii Nauk, SSSR, Seriya Geofizicheskaya,
1959, Nr 1, pp 32-48 + 4 plates (USSR)

ABSTRACT: The kinematic and dynamic characteristics of the refracted waves in water-saturated sand were investigated in the Institute of Earth Physics, Ac.Sc., U.S.S.R. The correlation method was applied in a region where, under 5 to 50 m of clay-loam, was a layer of water-saturated fine sand (P_g Pt) of 7 to 30 m thick. Below, there was a layer of clay (20 to 60 m thick) placed on a crystal metamorphic base. The apparatus employed were: high frequency receiver VCh-22 (Ref 26) and a medium one of "Ilay" type. The method of absorption was based on the separate longitudinal and transverse profiles. The Card 1/5 wave t_{η} corresponding to that of sand was registered at

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the distances of every 30 to 60 m along 800 m from the detonation point. For the first 350 m t_{\square} was registered as the first wave (Fig.1a,b). At greater distances ($\Delta > 350$ m) it was registered as a secondary wave (Fig.1, and Fig.2). Generally, the wave t_{\square} was always distinguished as a separate group of oscillations with two to three periods (Fig.2). Its frequency varied from 120 to 200 h (Fig.3), while the frequencies of the waves in the clay layer (t_{\square}) and the crystal base (t_k) were 70 and 50-70 h respectively. The general character of the wave t_{\square} is shown in Figs 4 and 5. The hodographs (Fig.6) show transverse profiles parallel to each other and almost straight. The boundary velocity V_{\square} and the apparent velocity V^* were determined for the longitudinal and transverse profiles. Their values varied from 1500 to 1800 m/sec. The results of this determination are shown in Fig.7 where the following notations are used: 1 and 2 - values of V_{\square} and V^* respectively, as determined from the longitudinal hodographs; 3 - V_{\square}' from transverse hodographs; 4 - isolines of error $|\delta V/V|$. The

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distribution of V_r is shown in Fig.8. The various values of V_r , together with the damping coefficient α of the wave t_{Π} , were plotted along the actual profiles (Fig.9). Figs. 10-13 show graphs of the amplitude obtained for both the longitudinal and transverse profiles, together with the appropriate values of damping coefficient α_2 or α_2^* . It can be seen that the latter value varies from 0.002-0.004 to 0.040 m^{-1} for one type of wave t_{Π} . The decrement of damping \mathfrak{D}_2 was calculated from Eq.(1), where λ_2 - mean wavelength. The value of \mathfrak{D}_2 was found to vary from 0.03 to 0.6. The variation in the damping coefficient was due to several causes. It was possible to establish a relationship between this coefficient and the frequency (Fig.14) as Eq.(3). In Fig.15 the relation is shown between the coefficient α_2 and the velocity V_r for one of the profiles. This relationship is also evident in Fig.9. The analysis shows

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that the coefficient of damping can also be defined as Eq.(2), where α_2 MCT - true damping coefficient, k - coefficient relative to the energy lost in the neighbouring strata. In general, the relationship (4) can be defined, where V_1 and V_3 - velocities in the top and the bottom neighbouring strata. It is evident then that α_2 is not related to the frequency alone. Neither the values of h , V_1/V_1 nor V_3/V_1 affect it. Therefore, it appears that the main factor affecting the total value of α_2 is the coefficient α_2 MCT which depends entirely on the condition of a refracting medium. This can be seen in Figs. 10 and 11 where the line a-a represents the cross section of the profile. There are 15 figures and 32 references, 11 of which are Soviet, 21 English.

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On Refracted Waves in Water-Saturated Sand. I. SOV/49-59-1-5/23

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

SUBMITTED: May 14, 1957

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SOV/49-59-2-1/25

AUTHORS: Berzon, I. S., Vasil'yev, Yu. I., Starodubrovskaya, S. P.

TITLE: On Refracted Waves in Water Saturated Sand. II (O prelomlennykh volnakh, sootvetstvuyushchikh vedomosnym peskam. II)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya geofizicheskaya, 1959, Nr 2, pp 177-182 (USSR)

ABSTRACT: There are two methods of determining the wave velocity: when sand lies on the surface and no pressure is considered, or when the sand layer is at a depth Z and the pressure of its weight is encountered. In both cases a 3-component velocity should be considered, i.e. composed of velocities in sand, pore water and pore air. In the case where no account of pressure is taken the 3-component velocity $V_{SC}^{(3)}$ can be calculated from Eq (1) where m_s and ρ_s are the mean compression and mean density respectively, calculated from Eqs (2) and (3), where f_i - volume part of every component ($f_1 + f_2 + f_3 = 100\%$). The value of m_i can be expressed in the values of ρ_i and V_i according to the formula (4). Therefore, the resultant velocity can be given as Eq (5), where $a = f_2 + f_3$ - volume of pores filled with liquid and gas (i.e.

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total porosity of the medium). Fig 2 illustrates the relationship of $V_{50}^{(3)}$ and the volume f_2 (water pores) in the case when $a = 20$ to 50% . The curves were determined for the following data: $V_1 = 5000$ m/sec, $V_2 = 1500$ m/sec, $V_3 = 330$ m/sec, $\rho_1 = 2.78/\text{cm}^3$, $\rho_2 = 1.0$ g/cm³, $\rho_3 = 1.29 \times 10^{-5}$ g/cm³. It can be seen from the graphs that when f_3 is negligible ($f_3 = a - f_2 = 0.1$ to 0.2%), the velocity in the sand remains the same as in the case when all pores are filled with air. The velocity in the sand and the depth z can be calculated from Eq (6) (Refs 3 and 4), where E and σ - Young modulus and the Poisson coefficient for solids respectively, ρ_1, ρ_2 - density of solid and liquid respectively, f_1, f_2 - their volumes. According to Ref 2, the formula for 2-component velocity $V_{50}^{(2)}$ in the case when $z = 0$ is calculated from Eq (7). In order to adjust this

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equation to the 3-component medium, the value of ρ_0 should be substituted by ρ_2 and ρ_3 . In the result, Eq (8) is obtained, which is substituted into Eq (6) in order to obtain the resultant velocity $v_{sz}^{(3)}$ (Eq 9). Fig.2 shows the relation of $v_{sz}^{(3)}$ (Curve 1 - at $z = 50$ m) and $v_{s0}^{(3)}$ (Curve 2) to the volume of pores filled with water (total porosity $a = 47.6\%$). It is seen that the velocity does not change much with the variations of f_2 . The relation of the velocity in the 2-component medium to the porosity can be seen in Fig.3, where the ratios $v_{s0}^{(2)}/V_2$ (V_2 - velocity in water) and α/α_{\max} (α - coefficient of absorption) are plotted against the porosity f_2 . As it is seen, when the porosity $f_2 < 30\%$, the velocity in the 2-component medium can differ from that in water by as much as 20%. Therefore, it is impossible to determine the porosity of the 2-component medium from the variations of velocity. The coefficient of absorption in the 2-component medium can be calculated from the formula (10)

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(Refs 8 and 9), where η - viscosity of liquid, r - radius of sand grain, F - frequency in h . The relationship of the coefficient α and porosity f_2 can be calculated from the expression (11). It can be seen from Fig 3 that the coefficient of absorption is more sensitive to the variations of porosity in comparison to that of velocity. Also, it is affected by the properties of sand (e.g. when the radius of the sand grain in Eq (11) increases by 2, the coefficient increases by 4). The variations in determining the velocity in sand by various methods (Refs 2-5, 8, 9) were due mainly to the different approach in calculation of the porosity and mechanical properties of sand. The seismic method proposed

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in this work will assist in better determination of the extent of the sand layer under the Earth's surface, a fact which is of interest to soil mechanics engineers. There are 3 figures and 9 references; 3 of the references are Soviet and 6 are English.

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

SUBMITTED: May 14, 1957.

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BERLON, I.

Experimental investigation of dynamic parameters of seismic waves in real media. In English. p. 232.

STUDIA GEOPHYSICA ET GEODAETICA. (Ceskoslovenska akademie ved. Geofysikalni ustav)
Praha, Czechoslovakia, Vol. 3, no. 3, 1959.

Monthly List of East European Accessions (EEAI), LC, VOL. 8, no. 11, Nov. 1959
uncl.

YEPINAT'YEVA, A.M.; HERZON, I.S., otv.red.; NIKOLAYEVA, L.K., red.isd-
va; GUS'KOV, G.G., red.izd-va; SIMKINA, G.S., tekhn.red.

[Study of longitudinal seismic waves propagating in certain real
layered media] Izuchenie prodol'nykh seismicheskikh voln,
rasprostraniayushchikhsia v nekotorykh real'nykh sloistykh
sredakh. Moskva, Izd-vo Akad.nauk SSSR, 1960. 261 p.

(Akademiia nauk SSSR. Institut fiziki Zemli. Trudy, no. 14)

(MIRA 13:12)

(Seismic waves)

GAMBURTSEV, Grigoriy Aleksandrovich, akademik [deceased]; RIZNICHENKO, Yu.V., red.; MOLODENSKIY, M.S., red.; BERZON, I.S., doktor fiz.-mat.nauk, red.; KEYLIS-BOROK, V.I., doktor fiz.-mat.nauk, red.; LYAPUNOV, A.A., doktor fiz.-mat.nauk, red.; YEPINAT'YEVA, A.M., kand.tekh.nauk, red.; KOSMINSKAYA, I.P., kand.fiz.-mat.nauk, red.; STARODUBROVSKAYA, S.P., mladshiy nauchnyy sotrudnik, red.; BERKGAUT, V.G., red.izd-va; MARKOVICH, S.G., tekhn.red.

[Selected studies] Izbrannye trudy. Moskva, Izd-vo Akad.nauk SSSR, 1960. 461 p. (MIRA 13:7)

1. Chleny-korrespondenty AN SSSR (for Riznichenko, Molodenskiy). (Prospecting--Geophysical methods)

BERZON, I.S., doktor fiz.-matem. nauk; YEPINAT'YEVA, A.M.; PARIYSKAYA, G.N.; STARODUBROVSKAYA, S.P.; FREMD, V.M., red. izd-va; GOLUB', S.P., tekhn. red.

[Dynamic characteristics of seismic waves in real media]Dinamicheskie kharakteristiki seismicheskikh voln v real'nykh sredakh. [By] I.S.Berzon i dr. Moskva, Izd-vo Akad. nauk SSSR, 1962. 511 p. (MIRA 16:2)

(Seismic waves)

KONDRAT'YEV, Oleg Konstantinovich; GAMBURTSEV, Azariy Grigor'yevich;
BERZON, I.S., otv. red.; BREUS, T.K., red.izd-va; GUS'KOVA,
O.G., tekhn. red.

[Seismic research in the coastal part of eastern Antarctica]
Seismicheskie issledovaniia v pribrezhnoi chasti Vostochnoi
Antarktidy. Moskva, Izd-vo AN SSSR, 1963. 187 p.

(MIRA 16:10)

(Antarctic regions--Seismological research)

L 18373-63 EWT(1)/EDS AFFTC/ESD-3 TF S/0049/63/000/008/1149/1170 57
ACCESSION NR: AP3005587 54

AUTHOR: Berzon, I. S.

TITLE: The ratio of amplitudes of composite supercritical reflected waves PS and head waves PPS

SOURCE: AN SSSR. Izv. Ser. geofizicheskaya, no. 8, 1963, 1149-1170

TOPIC TAGS: seismic wave, seismic-wave amplitude, reflected supercritical wave, head wave, seismic-wave identification, seismic-wave computation

ABSTRACT: Results of theoretical computations made with asymptotic formulas show that in ideally elastic media the $A(PS)/A(PPS)$ ratio of amplitudes of the horizontal components of composite supercritical reflected waves PS and head waves PPS may attain large values. Therefore, in such media, reflected waves may be much more intense than head waves within a wide range of x/H values. The values of the ratio increase as the velocity of the longitudinal waves becomes more highly differentiated (i.e., with decreased $p = V_{1P}/V_{2P}$) and as the velocity differentiation of transverse waves at the interface decreases (i.e., with increased $\delta = V_{1S}/V_{2S} \leq p$). Curves indicating the dependence of

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the $A(PS)/A(PPS)$ value on the x/H relation show a maximum which is more distinct when the velocities of the longitudinal waves are more highly differentiated. The $A(PS)/A(PPS)$ values decrease and the shape of the $A(PS)/A(PPS) \cdot x/H$ curve changes, if the absorption properties of the medium are considered. The maximum either disappears, receding monotonically with distance, or is shifted toward the region of smaller x/H values. When the absorption decrements of longitudinal waves in both the upper and the lower media converge, the absorbing medium, despite decreased $A(PS)/A(PPS)$ values, may still include a range of x/H values in which the supercritical reflected waves are much more intense than the head waves. With increased absorption in the overlying medium, the range decreases (sometimes completely disappearing) and only head waves are identified on the seismogram. When $A(PS)/A(PPS)$ values are compared with the ratio of amplitudes of the vertical components of longitudinal waves $A(PP)/A(PPP)$, for a large class of parameters of the medium, there is a relatively wide range of x/H values in which $A(PS)/A(PPS)$ values are larger than the $A(PP)/A(PPP)$ values. For a given differentiation of longitudinal wave velocities, this difference increases with the declining differentiation of transverse wave velocities. As a result, composite supercritical reflected waves are more easily

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identified on a seismic record than are supercritical reflected waves. "Appreciation is expressed to V. A. Mitronova for making the computations." The article was presented by Yu. V. Riznichenko, Member of the Editorial Board. Orig. art. has: 16 figures, 3 tables, and 20 formulas.

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

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