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86391

A Contribution to the Waveguide in the Earth Crust and Its Physical Properties

S/020/60/135/002/015/036
B019/B077

taken into consideration, the waveguide can be explained as a thermal effect. 100 km below the continent the calculated temperature gradient is 18°/km, while at the same depth under the ocean it is 15°/km. The authors check the hypothesis of a velocity reduction due to an amorphization of the material. The value obtained for the rate of change in the velocity of the elastic waves, $dv/v \approx 6$ %, agrees with the observed data. V. N. Zharkov is mentioned. There are 2 figures, 1 table, and 9 references: 3 Soviet, 3 US, 1 Italian, and 1 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov). Institut fiziki Zemli im. O. Yu. Shmidta Akademii nauk SSSR (Institute of Physics of the Earth imeni O. Yu. Shmidt of the Academy of Sciences USSR)

PRESENTED: June 7, 1960, by V. V. Shuleykin, Academician

SUBMITTED: June 5, 1960

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3,9300
9,9865

AUTHORS: Magnitskiy, V. A. and Khorosheva, V. V.

TITLE: A Contribution to the Waveguide in the Earth Crust and Its Physical Properties

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 2, pp. 305 - 307

TEXT: The results of an investigation of the waveguide in the upper regions of the earth crust, based on data of Soviet seismic stations, are presented in this paper. The data in Table 1 were obtained by evaluating 9 earthquakes. The hodograph equation applied to the P_a wave is $t = 0.85(\pm 0.08) + 0.223(\pm 0.001)\Delta$, where Δ is given in degrees and t in minutes; for the S_a wave it reads $t = 0.96(\pm 0.03) + 0.403(\pm 0.002)\Delta$. The velocities are calculated to be $8.30(\pm 0.03)$ km/sec (P_a) and $4.57(\pm 0.03)$ km/sec (S_a). It is found that the waves examined are cylindrical. If the temperature dependence of thermal conductivity is

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On interpretation of main...

sufficient to produce the effect required. A particular scheme is proposed in which such density variations are due to fluctuations in concentration of radioactive elements in the mantle. Calculations show that an excess of radioactive sources with heat liberation $\delta P \sim 0.15 \times 10^{-14}$ cal/cm^3 is sufficient to explain gravitational anomalies. Such a value of δP corresponds to approximately 5% of the presumed content of radioactive elements in the mantle. On the basis of calculations carried out the author draws the conclusion that the non-uniform distribution of radioactive elements in the Earth's body may be a source of great irregularities in the Earth's gravitational field.

V. Zharkov

[Abstracter's note: Complete translation]

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35253
S/035/59/000/008/043/052
A001/A101

3,4000 (1106)

AUTHOR: Magnitskiy, V. A.

TITLE: On interpretation of main irregularities in the Earth's gravitational field.

PERIODICAL: Referativnyy zhurnal, Astronomiya, i Geodeziya, no. 2, 1962, 27, abstract 2G167 ("Tr. In-ta fiz. Zemli. AN SSSR", 1960, no. 11(178), 79 - 85)

TEXT: Using the Zhongolovich data (RZhAstr, 1954, no. 2, 2130) for gravity anomalies, the author determined the density of equivalent layer $\bar{\delta}$ by Gelmert's formula in order to estimate the magnitude of perturbing masses. The results are presented on a map in the form of isolines. The charts of equivalent layer densities reveal the absence of any noticeable correlation with the main elements of the Earth's relief and with distribution of regions of continental and oceanic type of the Earth's crust. These anomalous masses can not be located in the Earth's crust; according to the author, they pertain to great depths e.g., to the transitional layer C (depths from 400 to 1,000 km). Thus for a layer of about 400 km thick, variations in density of 0.01 g/cm^3 of regional nature are

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MAGNITSKIY, V. A., prof.

Drift of continents. IUn. tekh. 5 no.10:52-54 O '60. (MIRA 13:12)
(Continents)

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distinguishing the crust from the eclogite mantle are proposed. In conclusion it is shown that the hypothesis of the solution of part of the crust in the mantle (the conversion of continental crust into oceanic crust) encounters difficulties from the point of view of contemporary data. [Abstracter's note: Complete translation.]

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(of the order of thousands of kilometers) horizontal displacements of large crustal blocks like those proposed in the mobilism hypotheses; the continents and oceans arose approximately in the places where they are situated at the present time. This also leads to the deduction about the different structure and chemical composition of the mantle's upper part beneath continents and oceans: the differentiation of material is more complete beneath the continents. The widely-held opinion that the mantle consists of dunite or peridotite encounters a number of difficulties. In particular, it is impossible to derive the crust from a mantle of such a composition. The author inclines to the proposal about the eclogite composition of the mantle put forward by Lovering (Ref. zh., geofiz., no. 6, 1959, 5582). To the series of advantages of the latter hypothesis the author adds the abrupt increase in the density of gabbro detected experimentally under pressures corresponding to depths of 400 - 600 km; gabbro and eclogite are chemically equivalent and differ only in their mineralogic composition, eclogite minerals having a higher density in accordance with their denser lattice. In the same tests, dunite did not show a corresponding increase in density. Two concrete variants for

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S/169/61/000/009/008/056
D228/D304

AUTHOR: Magnitskiy, V. A.

TITLE: The correlation of the crust with material of the earth's mantle according to geophysical data

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 9, 1961, 11, abstract 9A84 (V sb. Struktura zemnoy kory i deformatsii gornykh porod, M., AN SSSR, 1960, 32-38)

TEXT: The author proceeds from the following facts: (1) The congruence of the heat flow from the bowels of the earth in continental and oceanic areas; (2) the presence in the earth of two different types of crust--continental and oceanic; (3) the approximate isostatic equilibrium for sufficiently large sections of the crust; (4) the velocity of seismic waves in the crust and in the upper parts of the mantle to depths of several hundred kilometers. Since the crust was separated from the mantle in the process of the earth's development, it follows from the congruence of the heat flows on the continents and oceans that there were no major

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PHASE I BOOK EXPLOITATION SOV/4490.

Akademiya nauk SSSR. Institut fiziki Zemli

Voprosy teoreticheskoy seysmologii i fiziki zemnykh nedr (Problems in the Theory of Seismology and Physics of the Earth's Interior) Moscow, 1960. 172 p. (Series: Its: Trudy, no. 11 (178)) Errata slip inserted. 1,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut fiziki Zemli imeni O. Yu. Shmidta

Resp. Ed.: V.A. Magnitskiy, Doctor of Technical Sciences; Ed. of Publishing House: V.A. Kalinin; Tech. Ed.: S.G. Tikhomirova.

PURPOSE: This collection of articles is intended for astrophysicists, geophysicists, and seismologists.

COVERAGE: This issue of the Transactions of the Institute of Physics of the Earth imeni O. Yu. Shmidt contains articles on theoretical problems in seismology and on recent investigations in the field of earthquake mechanics. Four out of fourteen articles in the collection have been abstracted. References accompany individual articles.

Lyubimova, Ye. A. Heat Transport by Excitons in the Earth's Mantle [illegible]

Magnitskiy, V.A. Problem of Interpretation of Principal Irregularities in the Gravitational Field of the Earth 79

The author discusses the basic deviations of the earth's gravitational field from the normal values, and reports on the calculation of the densities of the equivalent layer made by the well-known Helmert formula in order to evaluate the magnitude of the disturbing masses. It is pointed out that similar calculations made by E. Niskanen and L. Tanni in 1951 [ref. given] are not entirely acceptable since they are based on geoid altitudes obtained by L. Tanni in 1948 [ref. [illegible]].

The present article gives values of equivalent layer density [illegible] ten-degree sector from data by I.D. Zhongolovich. The [illegible] shown graphically. The error in the calculation of equivalent [illegible] density is 10% of the maximum value. The errors in geoid elevation [illegible] much smaller. Several theories as to the nonuniform mass distribution [illegible] the mantle are advanced. The author concludes that uneven distribution [illegible] radioactive elements in the earth, causing temperature variations in the solid mantle, nonuniform mass distribution, and other factors can be the cause of extensive perturbations in the gravitational field.

[illegible]tsyn, V.P. Transition of Solid Helium to the Metallic Phase Under High Pressures 56

[illegible], B.M. Some Functional Methods in the Ideal Linear Theory of Elasticity 90

[illegible]-Borok, V.I., and G.I. Pavlova. Generalization of Data on the Mechanism of Earthquakes 121

A method for reducing the characteristics of observations to some generalized parameters of the mechanics of earthquakes is [illegible]. Analysis was made of systems of observations for the Gazli [illegible], Northern Tyan'-Shan', the Caucasus, and for the region situated [illegible] northwest of the Bol'shoy Balkhan mountain range (Turkmeniya). The author concludes that the method described is cumbersome, but that it is [illegible] by the resulting simplification of nodal line plotting for which there have been no formal rules. The results of this study, based on observations of the Tadzhikskaya Kompleksnaya Seysmologicheskaya ekspeditsiya (Tadzhik Combined Seismological Expedition) network of stations, and on data from the literature, indicate that without preliminary analysis of a [illegible] observations there is no reason for overall study in a new region of the mechanics of earthquakes, or the mass processing of any system of observations for any purpose whatsoever. The principle at the base of the proposed method for studying the prevalent strikes and dips, shifts of discontinuities, etc., can be applied in the solution of a number of other problems. No personalities are mentioned.

MAGNITSKIY, V.A.

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SOV/49-59-1-10/23

Properties of the Earth's Crust and the Physical Nature of the Transition Layer

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

SUBMITTED: October 18, 1957

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Properties of the Earth's Crust and the Physical Nature of the Transition Layer

temperatures and pressures and transition from one bond type to another. The authors examine in detail the existing geophysical and physical-chemical data on the Earth's crust and show that these data are in qualitative agreement with the authors' hypothesis on the nature of the C-layer. This hypothesis makes it possible to explain the increase in hardness on transition from the B to the D-layer since covalent crystals are generally harder. Increase of electrical conductivity observed in the C-layer may be due to deformation of the energy spectrum of electrons and to a transition from ionic to semiconducting electron conduction. Acknowledgments are made to B.I.Davydov and V. N. Zharkov for their advice.
There are 6 figures and 33 references, 11 of which are Soviet, 17 English, 1 Italian, 1 Japanese, 1 Dutch, 1 Swiss and one a translation from English into Russian.

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Properties of the Earth's Crust and the Physical Nature of the Transition Layer

figure shows clearly the rapid rise of the seismic wave velocities in the transition layer near 500 km. This change of velocity is due to a rapid change in the elastic coefficients such as K (bulk modulus) in the transition layer C. Fig.2 gives the ratio K/ρ, where ρ is the density as a function of depth. The authors suggest that it is possible to explain the properties of the C-layer by a transition from the predominantly ionic structure in the B-layer to predominantly covalent bonds in the D-layer. No assumptions are made about the chemical properties of the Earth's crust. This hypothesis has already been discussed by one of the authors (Ref 21). It is based on the following ideas. Ionic and covalent crystals predominate in the Earth's crust. Transition from the ionic to the covalent state is in principle possible by change of pressure and temperature, as shown by Pauling (Ref 22). There are practically no experimental data on ionic-covalent transitions because of great difficulties in distinguishing between the usual polymorphic transitions at high

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AUTHORS: Magnitskiy, V. A. and Kalinin, V. A. SOV/49-59-1-10/23

TITLE: Properties of the Earth's Crust and the Physical Nature of the Transition Layer (Svoystva obolochki zemli i fizicheskaya priroda perekhodnogo sloya)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1959, Nr 1, pp 87-95 (USSR)

ABSTRACT: The Earth's crust is divided into three layers: an upper layer B, a transition layer C and a lower layer D. The whole crust is assumed to be in the solid state. Studies of the rate of change of the bulk modulus K with pressure p showed that the B- and D-layers may be regarded as uniform in structure. The exact nature of the transition layer C is not known, although it is of great importance in the theory of formation of the Earth's crust. It is known that the velocity of seismic waves rises rapidly with depth in the region of the transition layer C, i.e. between 400 and 900 km. Fig.1 shows the velocity of longitudinal waves at depths from 100 to 1400 km obtained by Jeffreys (Ref 12) and the velocity obtained by a different method by Gutenberg (Ref 13) down to depths of 600 km (dashed curve). This

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formulas and tables the author explains the views held on this question by B. Gutenberg, Kh.S. Ioder, D. Khaggs, **D. Cross and D. Gilvarry.**
There are 3 diagrams, 1 graph 1 table and 22 references, 6 of which are Soviet, 14 English and 2 Italian.

1. Earth 2. Geophysics 3. Seismic waves--Distribution
4. Seismic waves--Velocity

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

SOV/5-58-4-3/43

AUTHOR: Magnitskiy, V.A.

TITLE: Wave Guides in the Earth's Crust and Sub-Crust Layer (O volnovodakh v zemnoy kore i podkorovom sloye)

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody, Otdel geologicheskiy, 1958, Nr 4, pp 15-23 (USSR)

ABSTRACT: The article deals with wave guides in the Earth's crust and sub-crust layer and the causes of these wave guides, with the heterogeneity of the sub-crust layer and the relation of the Earth's crust to the underlying layers. The author states that the study of these problems is in its infancy, and that all data given have only preliminary validity which might undergo considerable changes in the near future. Graph 1 shows a scheme of the distribution of the velocities of seismic waves in the Earth's crust and in the upper sections of the shell according to B. Gutenberg. The first wave guides in the Earth's crust were discovered in 1952 by F. Press and M. Jung. There are various explanations given for the origin of these wave guides. Quoting different

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SOV-26-58-3-7/51

The International Congress of Geophysicists at the XI General Assembly of the International Geodesical and Geophysical Union in Canada

of turbulence of the atmosphere; M.N. Koshlyakov, on the general circulation of the oceans; V.G. Kort, on the work of the sea section of the Soviet Antarctic expedition; G.A. Avsyuk, on Soviet achievements in the field of glaciology. There are 4 photographs.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

1. Geophysics--USSR 2. Scientific reports--USSR

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

AUTHOR: Magnitskiy, V.A., Professor SOV-26-58-3-7/51

TITLE: The International Congress of Geophysicists (Mezhdunarodnyy kongress geofizikov) at the XI General Assembly of the International Geodesical and Geophysical Union in Canada (na XI general'noy assambleye mezhdunarodnogo geodezicheskogo i geofizicheskogo soyuza v Kanade)

PERIODICAL: Priroda, 1958, Nr 3, pp 44-49 (USSR)

ABSTRACT: A total of 41 Soviet delegates attended the congress. The assembly heard the following reports: Yu.V. Riznichenko, on the method of deep seismic sounding developed in the USSR on the suggestion of academician G.A. Gamburtsev; V.V. Byelousov, on the development of the geosynclines and foldings; V.I. Keylis-Borok, on a better investigation method of earthquake origination; Ye.P. Fedorov, on the influence of the earth structure on the nutation of its axis; B.I. Davydov and V.A. Magnitskiy, on the condition of matter at high pressure and the physical nature of the earth crust; on the shape of the earth and the development of large-scale geodesic networks based on the research of member correspondents of the AS USSR, F.N. Krasovskiy (deceased) and M.S. Molodenskiy; Professor B.M. Yanovskiy, on work in the field of geomagnetism in the USSR; G.S. Gorshkov, on the depth of the hearth of the Klyuchevskiy Volcano; A.M. Obukhov and A.S. Monin, on problems

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Problems in Cosmogony SOV/1415

Ruskol, Ye. L. Conference of the Committee on Cosmogony Devoted to Examining the Possibilities of the Development of Extragalactic Astronomy and Cosmogony 359

Tsitsin, F.A. The Sixth Cosmogonical Conference 361

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Problems in Cosmogony SOV/1415

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by the Armenian Academy of Sciences; the Conference on the Physics of Planetary Nebulae held February 1957 in Leningrad, sponsored by the Committee on Cosmogony of the Astronomical Union of the Academy of Sciences of the USSR; a conference held in Moscow, December 1956, by the Committee on Cosmogony of the Astronomical Union of the AN SSSR, to discuss propects of studies in the USSR in cosmology and extragalactic astronomy; and, the Sixth Conference on Cosmogony, held in Moscow in June 1957, devoted to problems of extragalactic astronomy and cosmology. The articles are accompanied by brief summaries in English, German or French, and diagrams and bibliographic references.

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atoms from simpler ones and the efforts in search of non-equilibrium reactions. G.I. Naan reviews and analyzes cosmological paradoxes (gravitational, photometric, thermodynamic, expansion) pointing out that these are due to a tendency to attribute finite properties to infinity. Certain possibilities due to various mechanisms are offered, such as the coversion of a gravitational field into matter. On the whole the evolution of the Metagalaxy is seen as an "attenuated oscillation of the second order." Latest data on extragalactic astronomy open a way to these conclusions through observations. In addition to the articles, reports of the following conferences are given: the Conference on Variable Stars held in Budapest, August 1956, sponsored by the Hungarian Academy of Sciences; the Symposium on Electromagnetic Phenomena in Cosmic Physics at Stockholm, sponsored by the International Astronomical Union in conjunction with the International Union of Pure and Applied Physics and the International Union of Geodesy and Geophysics; the Conference on Fixed Stars held September, 1956 at the Byurakan Astrophysical Observatory (near Yerevan), sponsored

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given for the formation of two-envelope nebulae. T.A. Agekyan develops an equation to express the acceleration of a star due to its interaction with a system of fixed dust clouds which takes into account gravity and light pressure. S.A. Kaplan presents the basic principles developed and the results obtained in magnetic gas dynamics, i.e., the existence of the "adherence" integral, magnetic line forces of "entanglement" and "unentanglement," the increase of magnetic energy in gasomagnetic shock waves, and the concept of gasomagnetic turbulence. P.G. Parkhomenko, discussing the preservation of continuance (abundances) in the formation of elements, contends that in a thermonuclear medium, at temperatures higher than 10^8K, photodisintegration will obstruct radiative capture of nucleons by the nuclei of light elements so that these nuclei will remain in a state of "freezing." He demonstrates that if the temperature falls to 10^8K the lifetime of the nucleus between two adjacent captures will be in the order of 10^4 years. During this interval total rarefaction and cooling of the medium may occur. In another article Parkhomenko evaluates the mass of a cosmic body in equilibrium in which observed continuance (abundances) of elements and isotopes could arise. Pikel'ner underlines the importance of studying the synthesis of complex

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discusses the role of electromagnetic forces in the origin and development of the solar system. Kipper and Tiyt examine the significance of the bi-quantum transition 2P $\longrightarrow$ 1S in a hydrogen atom in relation to the physics of planetary nebulae with the theory supported by the discovery of radio emission of 2.74 cm waves by optically thick planetary nebulae. The state of modern physics of planetary nebulae is briefly reviewed by V.V. Sobolev. G.A. Gurzadyan states that the dynamics of planetary nebulae are concerned with 1) planetary origin and 2) the evolution of its form and structure under the forces acting upon the gaseous envelope surrounding a hot star. He shows that two-envelope nebulae cannot form as a result of repeated outbursts of the central nucleus, thus proving the existence of one-envelope planetary nebulae. He provides a summary for the quantitative theory of the origin of the second envelope due to tearing-off by $L\alpha$ radiation pressure. I.N. Minin examines the field of $L\alpha$ - radiation in planetary nebulae which expands with the velocity gradient and is divided into 2 parts: the ionized and non-ionized. A theoretical interpretation is

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Problems in Cosmogony SOV/1415

COVERAGE: This book, consisting of articles and conference reports, is devoted to a discussion of intragalactic formations and phenomena, and speculations on approaches to extragalactic investigations. Individual articles discuss the origin and development of stars, planets and nebulae, and the forces and phenomena affecting them, the terrestrial planets, the solar system as a whole, gaseous nebulae, the origin of elements, magnetism, and other natural phenomena and problems of cosmogony. According to V.A. Magnitskiy, the evolution of the Earth's continents and oceans is not due to oceanic expansion and the subsidence of continents but rather the reverse. V.I. Baranov evaluates the age of the Earth to be between 4-5 billion years, basing this estimate on a determination of the absolute age of the oldest minerals, rocks, meteorites and chemical elements by radioactive methods. B. Yu. Levin finds that the deviation of the Moon from an equilibrium shape is due to an essential oblateness and not to the presence of large tidal bulges; and that the Moon's oblateness definitely indicates its solidification in a state of free rotation. V.S. Safronov submits a theory that planetary growth is due to the simultaneous accretion of small particles and large bodies falling on planets. H. Alfven, the Swedish scientist,

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MAGNITSKIY, V.A.

3(1) P7 PHASE I BOOK EXPLOITATION SOV/1415

Voprosy kosmogonii, t. 6 (Problems in Cosmogony, Vol. 6) Moscow, Izd-vo AN SSSR, 1958. 367 p. 2,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Astronomicheskiy sovet.

Ed. of Publishing House: Rakhlin, I. Ye.; Tech. Ed.: Polenova, T.P.; Editorial Board: Kukarkin, B.V. (Resp. Ed.) Doctor of Physical and Mathematical Sciences, Pariyskiy, N.N. (Deputy Resp. Ed.) Candidate of Physical and Mathematical Sciences, Baranov, V.I., Doctor of Physical and Mathematical Sciences, Belousov, V.V., Doctor of Geological and Mineralogical Sciences, Levin, B. Yu., Doctor of Physical and Mathematical Sciences, Masevich, A.G., Candidate of Physical and Mathematical Sciences, Safronov, V.S. (Scientific Secretary) Candidate of Physical and Mathematical Sciences.

PURPOSE: This book is intended for students and scientists of cosmogony and cosmic physics.

Card 1/9

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

KROPOTKIN, Petr Nikolayevich,; LYUSTIKH, Yevgeniy Nikolayevich,; POVALO-SHVEYKOVSKAYA, Nina Nikolayevna,; MAGNITSKIY, V.A., prof., otv. red.; PERMYAKOVA, A.I., red.;GUR'YANOV, V.P., tekhn. red.

[Gravity anomalies on continents and oceans and their significance for geotectonics; outline of the gravimetry of foreign countries] Anomalii sily tiazhesti na materikakh i okeanakh i ikh znachenie dlia geotektoniki; ocherk po gravimetrii zarubezhnykh stran. [Moskva] Izd-vo Mosk. univ., 1958. 75 p. (MIRA 11:11)
(Gravity)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

LYUSTIKH, Yevgeniy Nikolayevich; MAGNITSKIY, V.A., doktor tekhn.nauk, otv. red.; REZANOV, I.A., red.izd-va; NOVICHKOVA, N.D., tekhn.red.

[Criticism of the geotectonic contraction hypothesis] Kritika geotektonicheskoi kontraktsionnoy gipotezy. Moskva, Izd-vo Akd.nauk SSSR, 1958. 44 p. (Akademii anuk SSSR. Institut fiziki Zemli. Trudy, no.3) (MIRA 12:2)
(Geology, Structural)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V.A.; FEDYNS'KIY, V.V.

Geophysical problems at the 22d session of the International Geological Congress in Mexico. Vest. Mosk. un. Ser. biol., pochv., geol., geog. 12 no.1:25-34 '57. (MLRA 10:11)
(Mexico (City)--Geophysics--Congresses)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V. A., LYUBIMOVA, Ye. A., KEYLIS-BOROK, V. I., REZNICHENKO, Yu. V., and BELOUSOV, V. V.

"Seismological Problems and Questions Concerning the Physical Structure of the Earth's Depostis."

paper presented at the XIth General Assembly of the Int'l. Union of Geodesy and Geophysics, Tornoto, Canada, 3-14 Sept. 1957 (Izv. Ak Nauk SSSR - Ser Geog. 1958, No. 2, pp 3-8 [USSR]).

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V.A.

BALAKINA, L.M.

3(10)

PHASE I BOOK EXPLOITATION SOV/1663

Akademiya nauk SSSR, Komitet po geodezii i geofizike.

Tezisy dokladov na XI General'noy assamblyee Mezhdunarodnogo geodezicheskogo i geofizicheskogo soyuza. Mezhdunarodnaya assotsiatsiya seysmologii i fiziki nedr zemli (Abstracts of Reports Submitted to the XI General Assembly of the International Union of Geodesy and Geophysics. The International Association of Seismology and Physics of the Earth's Interior) Moscow, 1957. 102 p. /Parallel texts in Russian and English/ 1,500 copies printed.

No additional contributors mentioned

PURPOSE: This booklet is intended for geophysicists, especially those specializing in seismology.

COVERAGE: This collection of articles deals with the structure and composition of the Earth and phenomena related thereto. The majority of the articles concern studies of earthquakes and seismic waves. Other articles cover the structure of the Earth's crust and mountain roots; the elastic properties of rocks at high pressures; the piezoelectric effect of rocks and the method of modelling in tectonophysics. The collection also contains articles on the Earth's thermal history, the microseismic method of tracing storms and others.

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Kondorskaya, N.V. Travel Times and Some Dynamic Characteristics of Seismic Waves 58

Lyubimova, Ye.A. The Earth's Thermal History and Its Geophysical Consequences 63

Medvedev, S.V., and B.A. Petrushevskiy. Methods and Experience in Zoning USSR Territory According to Seismic Intensity 66

Magnitskiy, V.A. Properties of the Earth's Mantle and the Physical Nature of the Intermediate Layer (Layer C) 70

Monakhov, F.I. Development of the Microseismic Method of Tracing Storms at Sea 74

Rykunov, L.N. Study of the Character of Decrease of P-Wave Amplitudes in the Shadow Zone on a Model 78

Solov'yev, S.L. The Energy and Intensity of Earthquakes 81

Savarenskiy, Ye.F. Results of Seismic Studies in the USSR

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V.A., professor.

Internal structure of the earth. Priroda 45 no.7:3-15 Jl '56.
(Earth--Internal structure) (MLRA 9:9)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

Magnitskiy, V.A.

MAGNITSKIY, V.A.

Melting point in the earth's crust. Vest.Mosk.un.Ser.biol.,pochv., geol.,geog. 11 no.2:3-9 '56. (MIRA 10:10)

1. Kafedra geofizicheskikh metodov issledovaniya.
(Melting points) (Geochemistry)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V.A.

The nature of the transitional layer of the earth's shell at a depth of 400-900 kilometers. Izv.AN SSSR Ser.geofiz.no.6:700-703 Je '56. (MLRA 9:9)

1.Akademiya nauk SSSR, Geofizicheskiy institut.
(Earth--Internal structure)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

60-55-26-6/16

AUTHOR: Magnitskiy, V. A.

TITLE: Physical State of Matter at Great Depths in the Earth's Interior (O fizicheskom sostoyanii veshchestva v glubokikh oblastyakh zemnogo shara)

PERIODICAL: Trudy Geofizicheskogo instituta Akademii nauk SSSR, 1955, Nr 26, pp 61-85 (USSR)

ABSTRACT: An analysis of the basic physical properties and the possible physical state of matter at great depths in the Earth's interior leads to hypotheses on the nature of the basic physico-chemical processes occuring in the Earth's mantle which may have given rise to the two types of the Earth's crust, the continental and the oceanic. This is still one of the basic unsolved problems of geology and geophysics. There are 13 figures and 50 references of which 27 are Soviet, 19 English, 3 German, and 1 Italian.

AVAILABLE: Library of Congress

Card 1/1

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

FD-2778

Card 2/2

Abstract : and D. P. Kirnos, Gravimetriya i gravimetricheskaya razvedka [Gravimetry and gravimetric prospecting] by Sorokin, Zemnoy magnetizm [Terrestrial magnetism] by B. M. Yanovskiy cannot be replaced by a general course of geophysics. The reviewed book admitted as a textbook by the Ministry of Higher Education does tend to fill the gaps in Soviet geophysical literature and gives a fuller notion of the Earth's structure.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

USSR/Geophysics - Physics of the earth (book review) FD-2778

Card 1/2 Pub 45 - 12/13

Author : Yanovskiy, B. M., Dr. Phys.-Math. Sci. (reviewer)

Title : Book review. Osnovy fiziki Zemli [Principles of the physics of the Earth], by V. A. Magnitskiy; Geodesic Press, Moscow, 1953, 290 pages

Periodical : Izv. AN SSSR, Ser. geofiz., Sep-Oct 1955, 485-487

Abstract : Fifteen years have passed since the appearance of the last edition of P. N. Tverskiy's Kurs geofiziki [Course of geophysics], in which time many problems in the discipline of the physical processes occurring in the Earth's sphere have obtained new clarification and a whole new series of phenomena employed for practical purposes has been discovered; notions on the structure of the terrestrial sphere differ considerably from the notions of thirty years ago, and new hypotheses on the origin of the solar system, which influence opinions on the Earth's structure, have appeared, especially in connection with the structure of the Earth's mantle or crust, thanks to new methods of its investigation unknown earlier. Existing courses on individual branches of geophysics such as Osnovy seysmologii i seysmometrii [Principles of seismology and seismometry] by Ye. F. Savarenskiy

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V.A.

USSR/ Geology Literature

Card : 1/1 Pub. 46 - 13/16

Authors : Kropotkin, P. N.

Title : About V. A. Magnitskiy's book entitled "The Bases of the Physics of the Earth"

Periodical : Izv. AN SSSR. Ser. geol. 4, 133, July - August 1954

Abstract : Critique of the book by V. A. Magnitskiy entitled "The Bases of the Physics of the Earth", also used as an astronomical-geodetic handbook in higher educational institutions.

Institution : ....

Submitted : March 9, 1954

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V.A.

Conference on the connection between the problems of geology and geophysics and those of cosmogony. Izv.AN SSSR. Ser.geofiz. no.3:285-286 My-Je '53. (MLRA 6:6)

(Geology) (Geophysics) (Cosmogony)

Conference was held during the first part of Feb 53 by the Leningrad Branch of the All-Union Astronomical-Geodetical Society, Geographical Society of the USSR, and the Leningrad House of Scientists. Reports on geology and cosmogony were presented by S. Yu. Levin, B. L. Lichkov, D. G. Panov, O. YU. Shmidtm and V. I. Lebedev.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

ZAKATOV, P.S.; MAGNITSKIY, V.A.

[Advanced course in geodesy; spheroid geodesy, principles of gravimetry and practical astronomy] Kurs vysshei geodezii; sferoidicheskaia geodeziia s osnovami gravimetrii i prakticheskoi astronomii. Izd.2., ispr.i dop. Moskva, Izd-vo geodezicheskoi i kartograficheskoi lit-ry, 1953. 405 p. (MLRA 7:3)
(Geodesy)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V. A.

V. A. Magnitskiy, Osnovy fiziki zemli [Principles of Earth Physics], Geodezizdat, 22 sheets, 10,000 copies - 1953 - 290pp.

This book gives an exposition of the current ideas on the internal structure of the earth, the physical properties of the substances in the interior of the earth, and on the nature of the principal processes that occur there. The exposition is based on an interpretation of the main data of seismology, geothermics, theory of the shape of the earth, and gravimetry, in the light of the fundamental achievements of contemporary physics. In this connection the book also gives the necessary auxiliary information from the mechanics of continuous mediums, the kinematic theory of matter, and the modern theory of the solid body.

This is a textbook of the physics of the earth for students of the upper grades of the astronomical-geodesic specialty of geodesic institutes, and students of the geodesic specialties of state universities; it will be of interest for postgraduate trainee-students and scientific workers specializing in the field of geophysics and geology.

SO: U-6472, 23, Nov 1954

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V.A.

Problem of the density and compressibility of the earth's crust. Vop.kosm.1:15-33 '52. (MLRA 7:2)

(Earth--Internal structure)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V. A.

23917 MAGNITSKIY, V. A. Uravneniya Gradusnykh Izmereniy V Rasshirennom Ponimanii. Sbornik Nauch. - Tekhn. I Proizvod. Stateyi Po Geodezii, Kartografii, Aeroc'emke I Gravimetrii, VIP. 24, 1949, S. 21-27.

SO: Letopis, No. 32, 1949.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V. A.

"The Problem of Classifying Local Gravitational Anomalies", Izvestiya AN SSSR, Seriya Geograficheskaya i Geofizicheskaya, Vol. 13, No 6, No./Dec 1949.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V. A.

Magnitskiy, V. A. "On the reduction of gravity," Trudy Tsentr. nauch.-issled. in-ta geodezii, aerosyemki i kartografii, Issue 51, 1948, p. 46-61

SO: U-3264, 10 April 1953, (Letopis 'Zhurnal 'nykh Statey, No.e, 1949)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

USSR/Geology Mar/Apr 1948
Tectonics
Stratification

"On the Possible Character of Deformations in the Deep Layers of the Earth's Crust and the Layers Below the Crust," V. A. Magnitskiy, 20 pp

"Byul Mosk Obsh Ispy Prirod, Otdel Geolog" Vol XXIII, No 2

Tests conducted to compare gravimetric and seismic data on the nature of the deformations deep in the layers of the earth. Tests were based on Maxwell's theory on elastic-viscous deformations, tests conducted by Indian scientists to determine the

[redacted]

66T55

USSR/Geology (Contd) Mar/Apr 1948

propagation of ultrahigh-frequency waves through liquid, tests on the deformation of materials due to high pressures and prolonged tensions, and analyses of data collected by gravimetric means from past data.

[redacted]

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PA 66T55

MAGNITSKIY, V. A.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V. A.

Magnitskiy, V. A. - "On degree measurement equations", Sbornik nauch.-tekhn. i priozvod. statey po geodezii, kartografii, topografii, aeros"yemke i gravimetrii, Issue 21, 1948, p. 76-79.

SO: L-4110, 17 July 53, (Letipis 'Zhurnal 'nykh Statey, No. 19, 1949).

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

PA 66T64

USSR/Geophysics
Gravimetry

May/Jun 1948

"Research on the Extensive Undulations of a Geoid by Joint Utilization of Geodesic and Gravimetric Data," V A. Magnitskiy, Geophys Inst, Acad Sci USSR, 4 pp

"Iz Ak Nauk SSSR, Ser Geograf i Geofiz" Vol XII, No 3

Discusses problem of obtaining the height of geoid by simultaneous use of data obtained by geodesic and gravimetric means. Submitted method permits obtaining wide waves of geoid without use of any

66T64

[redacted]

USSR/Geophysics (Contd)

May/Jun 1948

type of hypothesis on the structure of the earth's crust. Submitted by Academician L. S. Leybenzon 24 Apr 1947.

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[redacted]

MAGNITSKIY, V. A.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V. A.

"Reductions of Gravitational Force, in Order to Study the Geological Structure of the Earth's Crust," Works of the Central Scientific-Research Institute of Geodesy, Aerial Surveying, and Cartography. No. 51. Gravimetric Studies, 1948, p. 46.

Abstract, W-13387, 7 Sep 50

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V. A.

Acad. Sci., Inst Theor. Geophysics (-1945-)

"About one of the possible ways of the deformation of the earth's crust,"

Iz. Ak. Nauk SSSR, Ser. Geograf. i Geofiz. No. 5-6, 1945

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, V.A.; LAVRENT'YEVA, L.L.

Effectiveness of antibacterial therapy in tuberculosis without hormonal preparations and combined with these preparations.
Sov. med. 27 no.12:37-40 D'63 (MIRA 17:4)

1. Iz kafedry tuberkuleza (z av. - prof. I. Ye. Kochnova) II Moskovskogo meditsinskogo instituta imeni Pirogova.

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MAGNITSKIY, S. V.

SAVEL'YEVA, L.; MAGNITSKIY, S.V., inzhener, tekhnicheskiy konsul'tant; KORNILOVA, M., redaktor; KIRSNAOVA, N., tekhnicheskiy redaktor

[Excellent shoes for the buyer!] Pokupateliu - otlichnuiu obuv' ! [Moskva] Izd-vo VTsSPS Profizdat, 1954. 63 p. (MLRA 8:4)

1. Master 3-go tufel'nogo tsekha Moskovskoy obuvnoy fabriki "Parizhskaya Kommuna."
(Shoe industry)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

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ACC NR: AR6035410

Ti spread in such a thin layer that the contact angle could not be measured. If difficulties are encountered when using graphite as a molding material, it is necessary to employ magnesite. The most effective means of overcoming the surface tension, which hinders the filling of the molds, is centrifugal casting of the metal. 4 illustrations, 2 tables. Bibliography, 7 titles. (From RZh Mash.) [Translation of abstract]

SUB CODE: 11

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

ACC NR: AR6035410 SOURCE CODE: UR/0137/66/000/009/A010/A010

AUTHOR: Magnitskiy, O. N.; Bronzova, N. I.

TITLE: Role of surface phenomena when filling thin-wall castings of titanium alloys

SOURCE: Ref. zh. Metallurgiya, Abs. 9A64

REF SOURCE: Sb. Poverkhnostn. yavleniya v rasplavakh i voznikayushchikh iz nikh tverd. fazakh. Nal'chik, 1965, 613-619

TOPIC TAGS: titanium alloy, metal surface, surface property, metal casting, refractory product

ABSTRACT: The authors studied the regularities of the variation of the surface properties of titanium alloys when alloying elements Al, Sn, Nb, and Zr are introduced and when the alloys are in contact with various refractory materials. To study the wetting ability and the surface tension, the falling-drop method was used: a sample placed in a vacuum chamber was molten by means of a magnetic field, and the resultant drop was allowed to fall on a substrate made of refractory material. The contact angle and the surface tension σ were determined from the contour of the solidifying drop. When alloying elements are introduced into the titanium, the value of σ increases and the wetting ability becomes worse, that is, the conditions for filling thin-wall castings become worse. From among the refractory materials used for casting titanium alloys (graphite, magnesite, electrocorundum, and zirconium), graphite has the best wetting ability and zirconium the worst. On a preheated graphite substrate

UDC: 669.295.5-154: 531.61

Card 1/2

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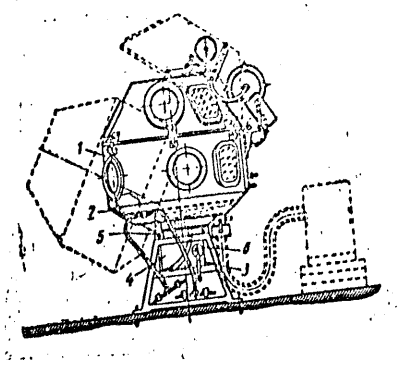
ACC NR: AP6021798

Fig. 1. 1 - casing of the chamber; 2 - holders; 3 - hand-operated reducer; 4 - worm gear sector; 5 - axle; 6 - handle



Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 21May64

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

ACC NR: AP6021798 (A) SOURCE CODE: UR/0413/66/000/012/0062/0062

INVENTORS: Mikhaylov, A. S.; Oleshchuk, M. F.; Slonimskiy, Ye. V.; Magnitskiy, O. N.

ORG: none

TITLE: A chamber for hand welding in a controlled atmosphere. Class 21, No. 182810

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 12, 1966, 62

TOPIC TAGS: welding, metal welding, welding equipment, welding technology

ABSTRACT: This Author Certificate presents a chamber for hand welding of chemically active materials in a controlled atmosphere. The chamber consists of a casing with a lid (see Fig. 1). To provide for turning the welded product into a position (necessitated by the technical requirements and the shape of the object) without opening the lid, the chamber is provided with a mechanism for turning the welded object horizontally, and also with a mechanism for turning the casing through a certain angle in respect to the vertical axis.

Card 1/2 UDC: 621.791.753.9.039.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

L 21523-65
ACCESSION NR AM4040600

Ch. I. General characteristics of refractory metals -- 5
Ch. II. Interaction of refractory metals with the surrounding medium at high temperatures -- 31
Ch. III. Equipment for melting and pouring refractory metals -- 100
Ch. IV. Technology of preparing castings from refractory metals -- 165
Ch. V. Properties of castings based on refractory metals -- 249

SUB CODE: MM SUBMITTED: 14Feb64 NR REF SOV: 103

OTHER: 096

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

L 24523-65 EWT(m)/EPF(n)-2/EWP(t)/EWP(b) Pu-4 IJP(c)/AS(mp)-2/AFWL/SSD/AFETR/ASD(f)-2/ASD(m)-3 JD/JG

ACCESSION NR AM4040600 BOOK EXPLOITATION S/

Gulyayev, B. B.; Magnitskiy, O. N.; Demidova, A. A. B+1

Refractory metal casting (Lit'ye iz tugoplavkikh metallov), Moscow, Izd-vo "Mashinostroyeniye", 1964, 291 p. illus., biblio. 2,800 copies printed.

TOPIC TAGS: metallurgy, refractory metal casting, chromium, titanium, molybdenum, niobium, refractory metal

PURPOSE AND COVERAGE: This book covers Soviet and foreign experience and results of research in the casting of refractory metals. Casting from chromium, titanium, molybdenum, niobium and other refractory metals is examined. The basic sections of the book deal with melting and pouring, interaction of metals with gases, refractory and molding materials, design of vacuum equipment, development of casting processes, cast mechanical and service properties of cast refractory metals. The book is intended for engineers and technicians in industry and research organizations. It can also be useful to students in casting specialties.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

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ACCESSION NR: AT4048345

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molds of different refractory materials, and a table is given in the article illustrating the dependence of the oxygen content in the castings on the mold material used. The authors indicate that the microhardness of the chromium is not changed by the mold material. The use of rare-earth elements to enhance the mechanical properties of cast chromium is discussed in some detail. Data are presented which indicate that the content of non-metallic inclusions in cast chromium without admixtures reaches 0.061%, while an analysis of the non-metallic inclusions showed the presence of oxides of the Cr_2O_3 type and oxides of the rare-earth elements. In this way, the rare-earth elements are found to have a refining effect. The article concludes with a brief discussion of a special study which was made to determine the optimal argon pressure for high-quality stock. The authors show that the structure of chromium, smelted and teemed at an argon pressure of 600 mm Hg, is finer than that of chromium poured at 300, 60-90, and 1.2 mm. According to some writers, a fine-grain structure reduces the temperature threshold of chromium brittleness. Orig. art. has: 3 figures and 3 tables.

ASSOCIATION: None

SUBMITTED: 20May64 ENCL: 00 SUB CODE: MM

NO REF SOV: 002 OTHER: 000

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

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0.002-0.050% N_2. The experimental melts were made in an inert argon atmosphere, since due to the high chromium vapor pressure at the melting temperature (63.5 mm Hg), it is not possible to melt the metal in a vacuum. For the purpose of decomposing the nitrides and removing the adsorbed gases, the chromium was aged at 750, 1200 and 1400C for 30 minutes at each temperature, and also in the melted state. The chromium was poured into a metal mold in order to exclude any effect of the mold material on the gas content in the castings. Further details regarding the technique of the experiment are given in the paper. Conditions which ensure the absence of coronal discharge in the vacuum at high voltages were also determined during the development of specific smelting conditions. The process of melting 5 kg of chromium lasted up to 5 minutes. A table is given showing the content of oxygen and nitrogen in the cast chromium as a function of temperature and duration of exposure. Oxygen content was found to increase somewhat, in comparison with the base content, together with the time of aging. The nitrogen content decreased with aging for 30 minutes at 750-1200C. Experiments showed that the optimal aging regime for chromium is 1200C and 30 minutes. In the cast metal the hydrogen content stood at 0.0004-0.0009%. It was also found that, all other conditions being equal, the content of non-metallic admixtures of the oxide type is approximately half as high (0.30%) after the fourth melting as after the first (0.66%). For the purpose of studying the effect of the material of the mold on the gas-saturation of the chromium, samples were poured into

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L 39758-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG/ MLK

ACCESSION NR: AT4048345 S/0000/64/000/000/0167/0171 8

AUTHOR: Kaplunovskiy, G. A.; Kukkonen, E. Ya.; Demidova, A. A.; Magnitskiy, O. N.; Gulyayev, B. B. (Doctor of technical sciences, Professor)

TITLE: The effect of a gaseous medium during melting and teeming on the quality of cast chromium 18

SOURCE: AN SSSR. Komissiya po tekhnologii mashinostroyeniya. Gazy* v litom metalle (Gases in cast Metals). Moscow, Izd-vo Nauka, 1964, 167-171

TOPIC TAGS: cast chromium, gas saturation, chromium melting, chromium teeming, chromium brittleness, oxygen adsorption, hydrogen adsorption, nitrogen adsorption, rare earth admixture

ABSTRACT: After noting that the principle cause of chromium brittleness is gaseous impurities, the authors report the results of studies aimed at selecting the optimal technological conditions for the smelting of chromium, from the point of view of ensuring a minimum gas content in the cast metal. The metal was smelted in an OKB-498m high-vacuum induction furnace in a rammed crucible of zirconium dioxide. As the basic material, unrefined chromium was employed with the following composition: 0.024-0.030% H_2, 0.3% O_2,

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ACCESSION NR: AT4048344

SUBMITTED: 20May64 ENCL: 00 SUB CODE: MM

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

L 19750-65
ACCESSION NR: AT4048344

elimination of absorbed gases. Total removal of gases from the form is possible only with high-temperature firing (i.e., calcination) in a vacuum. However, if the mold is transported, after such firing, to the site of melting and pouring and comes into contact with the atmosphere, the positive results of this technique may be completely negated. This is true even in the case of graphite molds. The combining of the firing and pouring arrangements in a single unit is, therefore, very desirable. It is shown in the article that crystallization under excess pressure leads to no liberation of gases. Two methods are found to be possible for the elimination of gas porosity in titanium castings: 1) prevention of the gases from entering the metal during all stages of metallurgical processing; 2) use of excess pressure in the crystallization of the castings. Centrifugal teeming is to be used for complex (i.e., irregularly shaped) thin-walled titanium castings. The use of a vacuum-compression arrangement is also recommended. In this set-up the titanium is melted in a vacuumn, with teeming and crystallization effected under an excess pressure of several atmospheres. The final section of the paper deals with the determination of the pressure value necessary for the complete elimination of gas porosity in titanium castings. Orig. art. has: 4 figures and 5 formulas.

ASSOCIATION: None

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

L 19750-65
ACCESSION NR: AT4048344

rigs. In this article, an effort is made to analyze the conditions underlying the formation of gas pores in titanium castings and to establish techniques directed at the total elimination of gas porosity. The view is advanced that melted metals may be regarded as liquid bodies laced with a large number of shock fronts. An expression is proposed for the intensity of gas blister origination, an analysis of which shows clearly that melting and teeming of metal in a vacuum have a favorable effect on the possibility that such gas holes will develop. It is also shown that when castings are prepared in a vacuum there are better chances for the formation of stable gas holes, all other conditions being equal, than when the metal is air-melted. A metal smelted under the most ideal conditions and containing a minimal quantity of gases may be affected by gas inclusions which penetrate into the metal from the mold. The reactions possible with the mold materials normally used in the SSSR (electrocorundum, magnesite and, occasionally, zirconium dioxide) are considered. High-refractory materials which contain no oxygen are recommended by the author for use as mold materials. Particular attention, in this regard, is called to graphite, widely used for this purpose abroad. Additional heating (and not merely the placing of the substance in a vacuum) is seen as necessary if the gases are to be completely removed. It is established in the paper that firing and vacuuming of the mold, when carried out separately, cannot result in a complete

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L 19750-65 EWG(j)/EWT(m)/EPF(c)/EPR/EWP(t)/EWP(b)/EWP(e) Pr-4/Ps-4 IJP(c)
WH/WW/JD/MLK

ACCESSION NR: AT4048344 S/0000/64/000/000/0154/0159

AUTHOR: Magnitskiy, O. N.

TITLE: Conditions for the formation of gas porosity in titanium castings

SOURCE: AN SSSR. Komissiya po tekhnologii mashinostroyeniya. Gazy* v litom metalle (Gases in cast metals). Moscow, Izd-vo Nauka, 1964, 154-159

TOPIC TAGS: cast titanium, gas saturation, titanium porosity, titanium pouring, gas blister, mold material, centrifugal teeming

ABSTRACT: The author notes that gas porosity is one of the most common defects encountered in titanium casting. This defect is caused by the high chemical activity of the titanium and its ability to absorb a considerable amount of gas. Thin-walled castings are particularly subject to the effects of gas-originated The author finds, moreover, that the specific peculiarities in the production of titanium castings greatly limit the possibility of employing effective means of combatting gas-orignated defects, and that, while certain techniques commonly employed in the pouring of ferrous and non-ferrous metals (allowances, lapping, directional crystallization, mold ventilation, rational method of metal feed, etc.) are of some aid in reducing porosity, experience shows that the complete elimination of gas defects requires the elaboration of special measures which involve, as a rule, the creation of new casting

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ACCESSION NR: AT4048343

vacuum degasification indicated that the basic charge has a considerable effect on the formation of blowholes in the castings: with degasified metal, the quantity of blowholes decreases noticeably. In disks without blowholes, defects in the form of shrinkage porosity are observed, while this type of defect is absent when blowholes are present. The authors also state that the number of blowholes in the casting depends on the configuration of the casting and the method employed in filling the mold. Those factors were found to be favorable which promote an upward direction in the filling of the mold and the crystallization of the metal. Still further details are discussed in the article. "I. P. Bashkov took part in the work." Orig. art. has: 2 tables and 2 figures.

ASSOCIATION: none

SUBMITTED: 20May64 ENCL: 00 SUB CODE: MM

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L 19740-65
ACCESSION NR: AT4048343

the gas content and the mechanical properties of the metal of the castings; 2) the effect of the metal of the consumed electrode and of other factors on the development of blowholes in thin-walled titanium castings. The effect of the mold materials was studied on the basis of castings prepared by the melted model method, with the gas content in the castings determined by the vacuum-smelting method. The basic titanium contained 0.0150% oxygen. The mold material of lowest quality, from the point of view of minimal oxygen contamination of the metal, was found to be zirconium dioxide and melted magnesite. The higher the temperature at the metal - mold boundary, the more intensive the interaction, the increase in the oxygen content in the casting metal as the temperature of molds of different refractory materials was increased being extremely significant. The authors give 150 - 250C as the optimal mold temperature. The distribution of gases throughout the section of the casting was investigated by measuring the microhardness, with the discovery that the surface layers of the casting showed the highest degree of contamination. A study was made of the effect of different technological factors on the susceptibility of the casting to the development of blowholes by means of casting disks of varying thickness, with the disks so obtained checked for the presence of blowholes by γ-ray. Thin-walled castings were found to be especially vulnerable to this type of gas-originated surface flaw. This statement is developed in detail in the article. A comparison of disks obtained from metal smelted in a vacuum at $1 \cdot 10^{-1}$ and at $1 \cdot 10^{-3}$ mm Hg or from metal which had undergone special

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L 29740-65 EWP(e)/EWT(m)/EWP(v)/EWP(t)/EWP(b) IJP(c) JD/MLK

ACCESSION NR: AT4048343 S/0000/64/000/000/0150/0153

AUTHOR: Kukkonen, E. Ya.; Kaplunovskiy, G. A.; Demidova, A. A.; Magnitskiy, O. N.

TITLE: The effect of gases on the quality of titanium alloy castings

SOURCE: AN SSSR. Komissiya po tekhnologii mashinostroyeniya. Gazy* v litom metalle (Gases in cast metals). Moscow, Izd-vo Nauka, 1964, 150-153

TOPIC TAGS: cast titanium, titanium alloy casting, blowhole formation, gas saturation, titanium porosity, oxygen adsorption, nitrogen adsorption, hydrogen adsorption, mold material, mold temperature

ABSTRACT: The authors note that the principal requirement in the production of titanium castings is to safeguard the metal against contamination, particularly by oxygen, hydrogen and nitrogen. This requirement predetermines the basic specifications of the entire technological process of the production of titanium alloy castings. As mold materials only the most chemically stable oxides can be used: zirconium dioxide, electrocorundum and magnesite. The binding materials must contain a minimum amount of those components which react actively with titanium. The metal is melted in a vacuum in a cooled crucible with a lining of the same alloy as that which is being melted. Particularly attention was paid in this article to: 1) the effect of the mold materials and the mold temperature during teeming on

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GULYAYEV, B.B.; MAGNITSKIY, O.N.; DEMIDOVA. A.A.; Prinimali uchastiye: KAPLUNOVSKIY, G.A.; KUKKONEN, E.Ya.; BUTALOV, L.V., kand. tekhn. nauk, retsenzent

[Castings of high-melting metals] Lit'e iz mugoplavkikh metallov. Moskva, Izd-vo "Mashinostroenie," 1964. 291 p. (MIRA 17:5)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

ACCESSION NR: AT4016066 S/2698/63/000/000/0223/0228

AUTHOR: Kukkonen, E. Ya.; Kaplunovskiy, G. A.; Magnitskiy, O. N.; Gulyayev, B. B.

TITLE: Effect of the characteristics of the technological process on the properties of heat-resistant metal castings

SOURCE: Soveshchaniye po teorii liteyny*kh protsessov. 8th, 1962. Mekhanicheskiye svoystva litogo metalla (Mechanical properties of cast metal). Trudy* soveshchaniya. Moscow, Izd-vo AN SSSR, 1963, 223-228

TOPIC TAGS: refractory metal, heat resistant alloy, alloy casting, molybdenum alloy, tungsten alloy, carbon containing alloy, titanium alloy, cast metal property

ABSTRACT: The lack of industrial flow processes for manufacturing heat-resistant metals has led to insufficient knowledge of the properties of these castings. The authors investigated the influence of the methods of melting, casting parameters and other features on the properties of alloy castings containing titanium and molybdenum. The metals were cast in a DVP-15 vacuum electric oven with an electric arc in a carbon crucible. Parts are currently made of molybdenum by plastic bending of castings obtained by electric arc fusion of special packs of molybdenum and crystallization in water-cooled copper molds. Melting of molybdenum with a tungsten electrode and casting in centrifugal copper molds ensures the highest quality of dense molybdenum castings with fine structures. Orig. art has: 6 figures and 3 tables.

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ENCLOSURE: 01

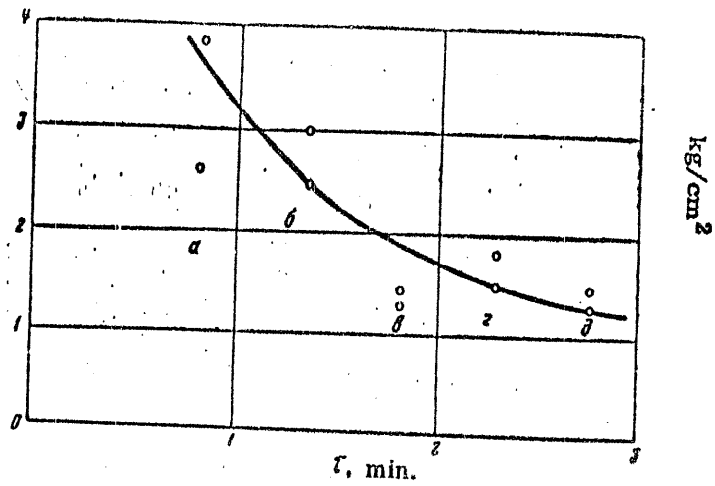

Fig. 1 - The effect of the duration of casting on the impact strength of Kh10N20T2 steel.

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The metallographic analysis of grade Kh10N20T2 steel melted in a 5-ton electric oven showed the presence of coarse nitrides and carbides at the grain boundaries and a gradual decrease in impact strength with time (see Figure 1 of the Enclosure). The decrease in plasticity is explained by contact with the atmosphere. Attempts were therefore made at the "Bol'shevik" plant to isolate the metal from the air using argon. However, this did not change the properties of the casting, probably because of deficiencies in the method. The author suggests that vacuum ovens should be used. Orig. art. has: 3 figures and 3 tables.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 27Dec63 ENCL: 01

SUB CODE: MM NO REF SOV: 000 OTHER: 000

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ACCESSION NR: AT4016064 S/2698/63/000/000/0172/0176

AUTHOR: Magnitskiy, O. N.

TITLE: The influence of technological factors in improving the properties of stainless non-magnetic steel castings

SOURCE: Soveshchaniye po teorii liteyny*kh protsessov. 8th, 1962. Mekhanicheskiye svoystva litogo metalla (Mechanical properties of cast metal). Trudy* soveshchaniya. Moscow, Izd-vo AN SSSR, 1963, 172-176

TOPIC TAGS: stainless steel, cast stainless steel, steel Kh10N20T2, non-magnetic steel, steel casting, steel, steel Kh20N4G10

ABSTRACT: Up to now, only forgings and rolled stock have been made of stainless, non-magnetic steel, the most commonly used being grades Kh10N20T2 and Kh20N4G10. Depending on the flow process, castings of these steels may vary considerably, with low yield points and a tendency to intercrystaline corrosion. Since Nb forms undesirable carbides, grade Kh20N4G10 steel may be used for casting only when up to 1% vanadium is added. Grade Kh10N20T2 steel may be used for casting without any changes. However, the plasticity of this metal decreases when it is melted in a large furnace.

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A004/A104

The effect of solidification conditions ...

find calculation dependencies to determine the diameter of internal and external coolers. There are 12 figures and 4 references.

Yu. Stepanov

[Abstractor's note: Complete translation]

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

S/123/61/000/003/014/023
A004/A104

AUTHORS: Magnitskiy, O. N., and Gulyayev, B. B.

TITLE: The effect of solidification conditions on the formation of shrinkage cavities in steel castings

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 3, 1961, 21, abstract 3G177 (V sb. "Usadochn. protsessy v metallakh". Moscow, AN SSSR, 1960, 19-31)

TEXT: The authors have investigated the solidification conditions and the nature of shrinkage cavity formation in castings of stearine and palmitic acid alloys, alloys of the Al-Si and Al-Zn systems, iron-carbon alloys and 35Л (35L) steel. By adding radioactive isotopes and by X-raying the basic regularities of the kinetics of shrinkage defect formation were found, depending on the solidification conditions and chemical composition of the castings, and the processes of the formation of shrinkage cavities in foundry heads were investigated. A dimensional foundry head-to-casting ratio is recommended. The investigation of the formation of shrinkage defects in X-, T- and L-shaped wall unions of various thickness by the method of pouring off the liquid residue made it possible to

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GULYAYEV, Boris Borisovich. Prinimali uchastiye: SHAPRANOV, I.A., kand.tekhn. nauk; MAGNITSKIY, O.N., kand.tekhn.nauk; POSTNOV, L.M., kand.tekhn. nauk; BOROVSKIY, Yu.F., kand.tekhn.nauk; KOLACHEVA, O.V., kand. tekhn.nauk. BERG, P.O., prof., doktor tekhn.nauk, zasluzhennyy deyatel' nauki i tekhniki, retsenzent; PROZHOGIN, A.A., nauchnyy red.; CHFAS, M.A., red.izd-va; KONTOROVICH, A.I., tekhn.red.; SPERANSKAYA, O.V., tekhn.red.

[Founding processes] Liteinye protsessy. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 415 p. (MIRA 13:7)

(Founding)

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PHASE I BOOK EXPLOITATION SOV/4199

Leningrad. Politekhnicheskiy institut

Sovremennyye dostizheniya liteynogo proizvodstva; trudy mezhvuzovskoy nauchno-tekhnicheskoy konferentsii (Recent Achievements in Founding: Transactions of the Scientific and Technical Conference of Schools of Higher Education) Moscow, Mashgiz, 1960. 336 p. Errata slip inserted. 4,000 copies printed.

Resp. Ed.: Yu. A. Nekhendzi, Doctor of Technical Sciences, Professor; Eds.: N. G. Girshovich, Doctor of Technical Sciences, Professor, and K. P. Lebedev, Docent; Managing Ed. for Literature on Heavy Machine Building (Leningrad Department, Mashgiz): Ye. P. Naumov, Engineer; Tech. Eds.: Ye. A. Dlugokanskaya, and L. V. Shchetinina.

PURPOSE: This book is intended for the technical personnel of foundries. It may be used by students of the field.

COVERAGE: This collection of articles discusses problems in founding processes. Individual articles treat the melting of metals and their alloys, mechanization and automation of casting processes, aspects of the manufacture of steel, cast iron, and nonferrous metal castings. No personalities are mentioned. References accompany individual articles.

4. Mamitskiy, O. N., and B. B. Gulyarev. Investigation of the Motion of Solidification in Castings 25

5. Pikunov, M. V. Behavior of Suspended Admixtures During Crystallization 32

6. Rabinovich, Ye. Z. Mechanism of Molten Metal Flow 35

7. Khafuz, I. M. Casting Properties and the Selection of the Method of Pouring the ZhS Type (Oxide) Film-Forming Alloys 41

8. Rabinovich, B. V. Hydraulics in Gating Systems 46

9. Postnov, L. M. Theory of Shrinkage Porosity 61

II. MECHANIZATION AND AUTOMATION IN FOUNDING

10. Shestopal, V. M. New Methods in Planning Casting Shops and Plants 77

11. Yegorenkov, I. P. Development of the Manufacture of Founding Machinery 91

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Magnitskiy, O. N., A. A. Demidova, and B. B. Gulyayev. Influence of Alloy Composition on Conditions of the Primary Crystallization of Castings 49

Kamenetskaya, D. S., E. P. Rakhmanova, and Ye. Z. Spektor. Investigation of the Crystallization of Iron and Its Alloys 57

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Salli, I. V. Crystallization of Binary Alloys Subjected to Deep Supercooling 69

Ovsiyenko, D. Ye. Influence of Insoluble Admixtures on the Crystallization and Structure of Metals 76

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alloy steels with special properties, cast iron, and of nonferrous alloys, are discussed. Recognition is given to D. K. Chernov and N. T. Gudtsov and their students, B. B. Gulyayev and A. G. Spasskiy, for their contributions to the understanding of the basic problems involved in the theory of crystallization of ferrous and nonferrous metals and alloys. Academician A. V. Shubnikov is also mentioned in connection with his work on the planning of research on crystal formation. References accompany several of the articles.

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MAGNITSKIY, ON.

p. 3

PHASE I BOOK EXPLOITATION SOV/4344

Soveshchaniye po teorii liteynykh protsessov, 4th

Kristallizatsiya metallov; trudy soveshchaniya (Crystallization of Metals; Transactions of the Fourth Conference on the Theory of Casting Processes) Moscow, izd-vo AN SSSR, 1960. 325 p. 3,200 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: B. B. Gulyayev, Doctor of Technical Sciences, Professor; Ed. of Publishing House: V. S. Rzheznikov; Tech. Ed.: S. G. Tikhomirova.

PURPOSE: This book is intended for metallurgists and scientific workers. It may also be useful to technical personnel at foundries.

COVERAGE: The book contains the transactions of the Fourth Conference (1958) on the Theory of Casting Processes. [The previous 3 conferences dealt with hydrodynamics of molten metals (1955), solidification of metals (1956), and shrinkage processes in castings (1957)]. General problems in the crystallization of metals, including the crystallization of constructional steels,

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AN SSSR (Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR). The most serious defects in castings, ingots, and welds as a result of metal shrinkage are reviewed. Factors contributing to the formation of shrinkage cavities, porosity, cracks, fissures, distortion, and internal stresses are analyzed along with measures taken to prevent and remedy them. The hydrodynamics of molten metals and the process of solidification of metals are discussed. Also presented are resolutions adopted at the Conference with regard to the problem of shrinkage in metals. No personalities are mentioned. Most papers are accompanied by bibliographic references, the majority of which are Soviet.

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MAGNITSKIY, O.A.

PHASE I BOOK EXPLOITATION SOV/4343

Soveshchaniye po teorii liteynykh protsessov, 3d

Usadochnyye protsessy v metallakh; trudy soveshchaniya (Shrinkage Processes in Metals; Transactions of the Third Conference on the Theory of Casting Processes) Moscow, AN SSSR, 1960. 281 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: B.B. Gulyayev, Doctor of Technical Sciences, Professor; Ed. of Publishing House: V.S. Rzheznikov; Tech. Ed.: T.V. Polyakova.

PURPOSE: This collection of articles is intended for scientific workers, engineers, technicians of scientific research institutes and industrial plants, and for faculty members of schools of higher education.

COVERAGE: The collection contains technical papers presented at the Third Conference on the Theory of Casting Processes, organized by Liteynaya sektsiya Komissii po tekhnologii mashinostroyeniya Instituta mashinovedeniya AN SSSR (Casting Section of the Commission for Machine-Building Technology of the Institute of Science of Machines, Academy of Sciences USSR) and by Institut metallurgii imeni Baykova

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S/137/60/000/009/023/029
A006/A001

The Effect of Rare-Earth Elements on Crystallization and Mechanical Properties of Cast Steel

Addition of 0.2 - 0.5% misch metal to 30KhN3M1 steel raises plasticity and ductility of cast steel almost to the level of forged steel. Properties of forged steel, however, are scarcely affected by the introduction of misch metal.

T.F.

Translator's note: This is the full translation of the original Russian abstract.

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A006/A001

Translation from: Referativnyy zhurnal, Metallurgiya, 1960, No. 9, p. 261, # 21628

AUTHORS: Gulyayev, B.B., Shapranov, I.A., Magnitskiy, O.N., Nevzorova, Z.D.

TITLE: The Effect of Rare-Earth Elements on Crystallization and Mechanical Properties of Cast Steel

PERIODICAL: V sb.: Redkozemel'n, elementy v shalyakh i splavakh, Moscow, Metallurgizdat, 1959, pp. 93-117

TEXT: The authors studied the effect of rare earth elements introduced to the steel in the form of misch metal in an amount of 0.01 - 1.0%, on the S content; macrostructure and mechanical properties (σ_b, σ_s, δ, a_k) of commercial Fe and steel with 0.04 - 0.40% C, alloyed with various admixtures (including Cu, Ni, Cr, Si, Mo, Ti, Nb) and also of steels of the following grades: 20Л (20L), У12 (U12), 40ХЛ (40KhL), 30ХН3М (30KhN3M), 1Х18Н9 (1Kh18N9), Х24Н20 (Kh24N20). It was established that treatment with misch metal without changing the properties of non-alloyed Fe, increases the plasticity and ductility of alloyed Fe and steel.

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24(8) PHASE I BOOK EXPLOITATION SOV/2117

Soveshchaniye po eksperimental'noy tekhnike i metodam vysokotemperaturnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody issledovaniy pri vysokikh temperaturakh; trudy soveshchaniya (Experimental Techniques and Methods of Investigation at High Temperatures; Transactions of the Conference on Experimental Techniques and Methods of Investigation at High Temperatures) Moscow, AN SSSR, 1959. 789 p. (Series: Akademiya nauk SSSR. Institut metallurgii. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.L. Bankvitser.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This collection of scientific papers is divided into six parts: 1) thermodynamic activity and kinetics of high-temperature processes 2) constitution diagram studies 3) physical properties of liquid metals and slags 4) new analytical methods and production of pure metals 5) pyrometry, and 6) general questions. For more specific coverage, see Table of Contents.

Magnitskiy, O.N. Methods of Measuring Temperature During the Solidification of Steel Ingots 669

It was established that three types of motion take place in the molten steel bath: a) molecular diffusion b) turbulent motion linked with significant changes in magnitude and direction of speed over small distances (this motion being expressed by the effective coefficient of turbulent diffusion whose magnitude under the experimental conditions amounted to 100-1200 cm^2/sec), and c) directed convection currents, moving over large distances in the surface layers of the metal (the speed of these currents during the boil varying within the limits of 1-5 m/min). Studies were made of agitation of the bath at various periods during the production of steel in basic open-hearth furnaces of various capacities (25-370 metric tons). Optimum boil periods for obtaining uniform composition of the steel were established for the various furnace sizes. Auxiliary agitation by means of a compressed-air blast or a steel agitator is recommended for accelerating the homogenization process during the boil. Data were also obtained on the rate of solution of ferrochrome in the steel bath, conditions for uniform distribution of chrome throughout the metal, and the motion of metal in a 25-t acid open-hearth furnace.

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AUTHOR: Gulyayev, B.B. SOV/24-58-4-37/39

TITLE: Conference on Crystallisation of Metals (Soveshchaniye po kristallizatsii metallov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 153 - 155 (USSR)

ABSTRACT: This conference was held at the Institut Mashinovedeniya AN SSSR (Institute of Mechanical Engineering of the Ac.Sc. USSR) on June 28-31, 1958. About 400 people participated and the participants included specialists in the fields of foundry, metallurgy, crystallography, physics, welding, heat, physical chemistry, mathematical physics and other related subjects. In addition to Soviet participants, foreign visitors included Professor D. Czikl (East Germany) and M.I. Chvorinov (Czechoslovakia). This conference on crystallisation of metals was the fourth conference relating to the general problem of the theory of foundry processes.

Conference on Crystallisation of Metals SOV/24-58-4-37/39

General Problems of Crystallisation of Metals

Member of the Ac.Sc. Belorussian SSR N.N. Sirota, in his paper "On the Mechanism of the Process of Crystallisation", proposed a general physico-mathematical theory on germination and the growth of crystals and described its application to problems of crystallisation of metals.

Corresponding Member of the Ac.Sc. Ukrainian SSR K.P. Bunin and Yu.N. Taran, in their paper "Eutectic Crystallisation of Grey Irons", considered the features of formation of graphite separations in eutectic alloys from the point of view of the general theory of crystallisation of iron.

B.Ya. Lyubov, in his paper "Calculation of the Speed of Solidification of Metals in Large Volumes", proposed a synthesis of the molecular-kinetic and of the thermal theories of crystallisation of metallic castings.

A.G. Spasskiy, in the paper "Fundamental Factors Influencing the Structure of Castings" and M.V. Mal'tsev in the paper "Methods of Improving the Quality of Cast Metal", described results of their investigations of crystallisation of castings from various alloys and considered methods of controlling such processes.

I.L. Mirkin dealt with the influence of fluctuations in the concentration on the formation of crystallisation nuclei and formation of crystals in complex alloys.

G.P. Ivantsov gave a review of the present concepts on germination and the growth of crystals. O.N. Magnitskiy, A.A. Denidova and B.B. Gulyayev considered the influence of the speed of crystallisation and the composition of the alloys on the quantitative characteristics of the structure and the mechanical properties of castings of the systems iron-carbon and aluminium-silicon. D.S. Kamenetskaya, E.P. Rakhmanova and Ye.Z. Spektor dealt with the results of investigation of the kinetics of crystallisation of iron and its alloys. G.F. Balandin proposed a mathematical theory of formation of the structure of castings and applied it for elucidating the features of crystallisation of iron. Ya.V. Grechnyy dealt with the features of crystallisation of binary alloys of various types.

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21(8) [illegible] SOV/1764

Vsesoyuznaya nauchno-[illegible] konferentsiya po [illegible] i [illegible] v [illegible] i [illegible], 1957.

Trudy... [illegible] i priborostroyeniye (Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science; Machine and Instrument Manufacturing) Moscow, Izd-vo AN SSSR, 1958. 358 p. 4,500 copies printed.

Sponsoring Agencies: USSR. Glavnoye upravleniye po ispol'zovaniyu atomnoy energii, and Akademiya nauk SSSR.

Editorial Board of Set: V.I. Dikushin, Academicain (Resp. Ed.), N.N. Shumilovskiy (Deputy Resp. Ed.), Yu. S. Zaslavskiy (Deputy Resp. Ed.), L.K. Tatochenko, B.I. Verkhovskiy, S.T. Nazarov, L.I. Petrenko, and N.G. Zelevinskaya (Secretary).

Ed. of Publishing House: P.N. Belyanin; Tech. Ed.: T.P. Polenova.

PURPOSE: This book is intended for specialists in the field of machine and instrument manufacture who use radioactive isotopes in the study of materials and processes.

COVERAGE: This collection of papers covers a very wide field of the utilization of tracer methods in industrial research and control techniques. The topic of this volume is the use of radioisotopes in the machine- and instrument-manufacturing industry. The individual papers discuss the applications of radioisotope techniques in the study of metals and alloys, problems of friction and lubrication, metal cutting, engine performance, and defects in metals. Several papers are devoted to the use of radioisotopes in the automation of industrial processes, recording and measuring devices, quality control, flowmeters, level gauges, safety devices, radiation counters, etc. These papers represent contributions of various Soviet institutes and laboratories. They were published as Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, April 4-12, 1957. No personalities are mentioned. References are given at the end of most of the papers.

Chernyakova, R.B. Method for Estimating the Degrees of Degreasing of Metals 108

Gulyayev, B.B., Yu.F. Boroyskiy, L.M. Postnov, O.N. Magnitskiy. Study of the Processes of Cast Formation in Sand Molds 112

Vitkin, A.I. (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii — Central Scientific Research Institute of Ferrous Metallurgy). Study of the Mechanism of the Basic Processes in Hot Tin Plating 119

Iordan, G.G., and K.S. Furman (Nauchno-issledovatel'skiy institut teploenergeticheskogo priborostroyeniya — Scientific Research Institute of Heat-Power Instruments). Use of Nuclear Radiation for the Measurement of Heat-Power Parameters 124

Verkhovskiy, B.I., V.A. Sotnikov, and V.V. Yakushin (Fizicheskiy institut imeni P.N. Lebedeva — Institute of Physics imeni P.N. Lebedev, Academy of Sciences, USSR). Reduction of Errors in Measurements Performed With Scintillation Counters 127

Korotkova, V.A. (Fizicheskiy institut imeni P.N. Lebedeva — Institute of Physics, Academy of Sciences, USSR). Radiation in Analytical Methods 134

Afanas'yev, V.N. Automation of Measurements and Recording of Radioactive Radiation Intensity 140

Telichkin, V.G. Study of the Electrical Properties of Ionization Resistors 146

Segalin, V.G., and A.A. Rudanovskiy (Vsesoyuznyy ugol'nyy nauchno-issledovatel'skiy institut — All-Union Coal Research Institute). Use of Radioactive Isotopes in the Automation of Excavating and Drifting Machines 150

Iordan, G.G., and K.S. Furman (Nauchno-issledovatel'skiy institut teploenergeticheskogo priborostroyeniya — Scientific Research Institute for Heat-Power Instrument Making). Measuring the Density of Liquids With Gamma Radiation 153

MAGNITSKIY, O.N.

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SOV/137-58-9-18674

Physicochemical Processes in the Solidification of an Ingot

of crystallization through the metal previously solidified, while in the case of alloys hardening over a temperature interval this occurs via a liquid phase. It is noted that the mechanism of solidification is the same for all metals and alloys. A law of successive crystallization is formulated: All processes of transformation occurring in the solidification of ingots or castings of metals and their alloys begin at the surface and gradually progress toward the axis. The boundary of each transformation moves at its own speed, but in a rigorous order of succession.

V.N.

1. Metals--Processing 2. Metals--Crystallization 3. Metals--Temperature factors 4. Thermocouples--Performance 5. Metals--Phase studies

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Physicochemical Processes in the Solidification of an Ingot

reached the level of the thermocouples, reheating was stopped completely and the process of solidification began practically at the liquidus temperature. No supercooling of the metal was observed. The liquidus and the peritectic and eutectic transformation points were recorded. The solidus point is weakly defined in Al-Zn alloys. The pouring experiments were run with ingots of 105x260 mm diam. The resultant ingot bodies were cut open and investigated. Gamma photography of the cut ingots was performed, and their wall thicknesses were compared with the results of analyses of prior temperature measurements by the method of similarity. Some inconsistency was found in the data obtained. This was explained by the fact that when the metal was poured into ingots, a pourability limit comes into being that does not agree with the front of crystallization of the metal, since some of the crystals are removed from the two-phase layer while a portion of the liquid remains between the growing dendrites. Curves of solidification were drawn in dimensionless coordinates for all of the alloys investigated. These determined all the phases of solidification of the metal of alloys as one of the components is varied. It is asserted that both pure Al and all the alloys are subject to the law of successive crystallization. The concept that ingots solidify from a deeply supercooled state is refuted. The process of solidification of ingots from pure metals and eutectic alloys is defined as one of removal of the heat

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SOV/137-58-9-18674

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 75 (USSR)

AUTHORS: Gulyayev, B.B., Magnitskiy, O.N.

TITLE: Physicochemical Processes in the Solidification of an Ingot (Fiziko-khimicheskiye protsessy zatverdevaniya slitka)

PERIODICAL: V sb.: Fiz.-khim. osnovy proiz-va stali. Moscow, AN SSSR, 1957, pp 659-682. Diskuss. pp 781-791

ABSTRACT: This is a description of the results of an investigation of the processes occurring in the solidification of Al and of various alloys thereof with Zn, Si, and Ni. The methods used involved measurement of temperature and pouring the metal out of the mold; comparison of the parameters of the crystallization process with phase diagrams of the corresponding alloys was also employed. Ingots measuring 250x710 mm made by rising (bottom) pouring were subjected to temperature measurement by means of 6 chromel-alumel thermocouples arranged along a radius of the middle cross section of the ingot. Temperature curves were derived for alloys forming solid solutions (with Zn), with eutectic transformations (with Si) and with peritectic transformations (with Ni). At the instant when the metal

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MAGNITSKIY, O.N., inzhener; POSTNOV, L.M., inzhener.

Conference on problems of metal solidification. Lit.proizv. no.9: 30-31 S '56. (MLRA 9:11)
(Founding) (Solidification)

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Dmitriev, G. N.

Dist: 1Ma/1Ma

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The solidification of alloys. B. B. Gulyaev and G. N. Dmitriev. *Izv. Vses. Nauch.-Issled. Inst. Metallurgii* (Bull. Research Inst. Metallurgy, Leningrad, Gosudarstvennoe Izdat. Mashinostroitel'noi Lit.) 3, 69-76 (1936, 67-76). *Referat. Zhur.*, Khim. 1936, Abstr. No. 19169.—Studies were conducted, by the thermal method, on the solidification of alloys of various compos.: Al-Zn alloys with 3.7, 23.5, and 42.4% Zn; Al-Si alloys with 3.7, 10.0, and 19.3% Si; alloys with a eutectic of Al with 3.8, 7.6, 10.0, and 19.3% Si; alloys with a eutectic of Al with 38.1, 48.6, and 53.0% Zn. The alloys melted and formed into cylinders 235-78 mm. in diam. and 0.5 m. high. Chromel-alumel thermocouple junctions were inserted at the surface, in the center of the ingot, and also spaced 25, 50, 75, and 100 mm. from the center. A record of the temp. was made by using a 6-point electronic potentiometer. From the graphically constructed cooling curves, the time of passage through the separate stages (crit. points) is characterized at different points in the cross-section of the casting. For Al-Zn alloys solidification is characterized by 2 curves (for liquidus and for solidus); for Al-Si alloys, 4 (liquidus, beginning and end of eutectic transformation); for Al-Si-Zn, 5 (liquidus, beginning of sepn. of Al_3Ni, end of the conversion $Al_3Ni \rightarrow Al_9Ni$, and of the sepn. of Al_9Ni from the melt, and solidus). In all cases solidification was strictly sequential, i.e. each stage of solidification, in whatever layer of the ingot was recorded later than that of the neighboring layer if the latter was closer to the surface. Solidification of ingots of pure Al conforms to the parabolic law for the first 3/4 of its radius. The alloys show sharply different graphs. Thus, e.g., the curves for the Al-Zn alloys show continuous slowing down of "spread" of the liquidus in the depth of the ingot and continuous acceleration of spread of the solidus. This also does the solidification of the eutectic alloy Al + 19.31% Si depart from the parabolic law; however, it also crystallizes at a const. temp., as does pure Al. G. M. Fuchsman.

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1. MAGNITSKIY, L.F.; PRUDNIKOV, V.YE

2. USSR (600)

4. Mathematicians

7. First Russian arithmetician and geometrician; on the 250th anniversary of the publication of L.F. Magnitskiy's "Arithmetic." V.Ye. Prudnikov, Mat. v shkole no. 2, 1953.

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

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BESPYATOV, M.P., kand.tekhn.nauk; BAYKOV, S.F.; MAGNITSKIY, L.A., inzh.; DERYABINA, A.Ye., inzh.; SHMIDT, A.A., kand.tekhn.nauk; BELYAYEV, I.P., inzh.

Operational experience with the TNB-2 unit. Masl.-zhir.prom. 25 no.1:39-41 '59. (MIRA 12:1)

1. Khar'kovskiy politekhnicheskiy institut im. V.I.Lenina (for Bespyatov) 2. Moskovskiy zavod "Novyy mylovar" (for Baykov, Magnitskiy, Deryabina). 3. TSentral'naya nauchno-issledovatel'skaya laboratoriya Upravleniya meditsinskoy i parfyumernoy promyshlennosti Mosgorsovnarkhoza (for Shmidt, Belyayev).
(Moscow--Oil industries--Equipment and supplies)
(Saponification)

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1. BUKHARIN, V. V., Eng.; MAGNITSKIY, L. A., Eng.

2. USSR (600)

4. DDT (Insecticide)

7. DDT soap, Masl. zhir. prom., 17, No. 7, 1952.

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

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MAGNITSKIY, K.P., doktor sel'skokhoz. nauk

Nitrogen, phosphorus, and potassium requirements of plants in Podzolic soils. Zhur.VKHO 10 no.4:386-392 '65. (MIRA 18:11)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, K.P., doktor sel'khoz. nauk, red.; KHAR'KOV, D.V., kand. sel'khoz. nauk, red.[deceased]; ANTONOVA, M.M., red.

[Potassium fertilizers] Kaliinye udobreniia. Moskva, Kolos, 1964. 206 p. (MIRA 18:5)

1. Moscow. Nauchnyy institut po udobreniyam i insektofungitsidam.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400041-6

MAGNITSKIY, Konstantin Pavlovich. Prinimali uchastiye: GOSUDAREVA, A.G.; PANITKIN V.A.; BELYAKOVA, N.G.; KAPUSTYANSKIY, A.N.; ZHUKOV, S.N.; NIKULINA, F.F.; BALABANOV, B.G.; VISHNYAKOVA, Ye., red.; KUZNETSOVA, A., tekhn. red.

[Control of the nutrition of field and vegetable crops] Kontrol' pitaniia polevykh i ovoshchnykh kul'tur. Moskva, Mosk. rabochii, 1964. 302 p. (MIRA 17:2)

1. Nauchnyye sotrudniki laboratorii kaliya Nauchnogo instituta po udobreniyam i insektofungitsidam (for Gosudareva, Panitkin, Belyakova, Kapustyanskiy, Zhukov, Nikulina, Balabanov).

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MAGNITSKIY, K.P., doktor sel'skokhoz.nauk

Chlorine-free potassium fertilizers. Priroda 51 no.7:64-67 Jl '62. (MIRA 15:9)

1. Nauchnyy institut po udobreniyam i insektofungisidam im. Ya.V. Samoylova, Moskva.
(Potassium) (Fertilizers and manures)

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