ALEKSEYEV, A.P.

ALEKSANDROV, Boris Sergeyevich; ALEKSEYEV, A.P.; BABOLOTSKIY, F.D.; KONDAKOV, A.Yu.; NEGODAYEV, V.I.; RYB'YEV, I.A.; SARSATSKIKH, P.I.; CHAHUYSKIY, A.P.; SHOMINOV, I.S.; BABKOV, V.F., doktor tekhnicheskikh nauk, professor, redaktor; CHVANOV, V.G., redaktor; MAL'KOVA, N.V., tekhnicheskiy redaktor.

[Handbook for road foremen] Spravochnoe rukovodstvo dlia dorozhnogo mastera. Pod red. V.F.Babkova. Moskva, Nauchno-tekhn. izd-vo avtotransportnoi lit-ry, 1954. 450 p. [Microfilm] (MLRA 8:2)
(Roads)

BYALOBZHESKIY,Grigoriy Valeryanovich; ALEKSEYEV,A.P., redaktor; MAL'KOVA, N.V., tekhnicheskiy redaktor

[Snow drifts and how to fight them] Sneshnye zanosy i bor'ba s nimi. Izd.2-oe, perer. Moskva, Nauchno-tekhn. izd-vo avto-transportnoi lit-ry, 1955. 47 p. (MLRA 9:1)

(Snow removal)

TELEGIN, Mikhail Yakovlevich; BAYLOBZHESKIY, Grigoriy Valerianovich; KORSUNSKIY, Mark Borisovich; ALEKSEYEV, A.P., redaktor; MAL'KOVA, N.V., tekhnicheskiy redaktor.

[Maintenance and repair of automobile roads] Soderzhanie i remont avtomobil'nykh dorog. Moskva, Nauchno-tekhnicheskoe izd-vo avtotranspo. lit-ry, 1955 185 p. (MLRA 8:12)
(Roads--Maintenance and repair)

ALEKSEYEV, A.P., inzhener

Maintenance and repair of automobile roads abroad. Avt.dor.18 no.4:28-29 Jl-Ag'55. (MLRA 8:11)
(Roads--Maintenance and repair)

TELEGIN, M.Ya.; KORSUNSKIY, M.B.p ZEL'MANOVICH, M.S.; ALEKSEYEV, A.P., redaktor; MAL'KOVA, N.V., tekhnicheskiy redaktor

[Efficiency and life characteristics of flexible road surfaces] Rabotosposobnost' i mezhremontnye sroki sluzhby nezhestkikh dorozhnykh odezhd. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry, 1956. 164 p. (MLRA 9:11)

(Roads)

MOROZOV, S.A., kand. tekhn. nauk,; DENISOV, Ye.M., SAFRONOV, V.N., RITOV, M.N., kand. tekhn. nauk,; GRIBENKO, T.V., kand. tekhn. nauk,; BELICHENKO, D.M., kand. tekhn. nauk,; ALEKSEYEV, A.P., red.; MAL'KOVA, N.V., tekhn. red.

[Progressive practices in road organization] Peredovoi opyt v dorozhnykh organizatsiiakh. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry. No. 2. 1957. 35 p. (MIRA 11:11)

1. Moscow. Gosudarstvennyy Vsesoyuznyy dorozhnyy Nauchno-issledovatel'skiy institut.
(Road construction)

ALEKSEYEV, A.P.

LYSIKHINA, A.I., kand.tekhn.nauk; KOZLOVA, Ye.N., kand.tekhn.nauk; ALEKSEYEV, A.P., otvetstvennyy za vypusk; GALAKTIONOVA, Ye.N., tekhn.red.

[Technical specifications for installing pavement and roadbeds of broken stone, gravel, soil and other mineral materials mixed with asphalt or tar] Tekhnicheskie pravila ustroistva dorozhnykh pokrutii i osnovanii iz obrabotannykh bitumom ili degtem shchebnia, graviia, grunta i drugikh mineral'nykh materialov. VTP 106-57/ Glavdorstroi SSSR. Moskva, Nauchno-tekhn.izd-vo avtotransp.lit-ry, 1957. 146 p. (MIRA 10:12)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye po stroitel'stvu avtomobil'nykh dorog.

(Road materials)

ALEKSEYEV A.P.

NEKRASOV, Vladimir Konstantinovich; KALECHITS, Yevgeniy Vital'yevich; ALEKSEYEV, A.P., red.; KOGAN, F.L., tekhn.red.

[The building of automobile roads] Stroitel'stvo avtomobil'nykh dorog. Moskva, Nauchno-tekhn.izd-vo avtotransp. lit-ry, 1957. 486 p. (Road construction) (MIRA 11:2)

ALEKSEYEV, A.P.

IGOLKIN, N.I., inzh.; ALEKSEYEV, A.P., inzh.

Highway maintenance and repair service during the last 40 years.
Avt.dor.20 no.10:32-33 O '57. (MIRA 10:12)
(Roads--Maintenance and repair--History)

BOCHIN, Valeriy Aleksandrovich, inzh.-dorozhnik,; ALEKSEYEV, A.P., red.; ZUYEVA, N.K., tekhn. red.

[British roads; highway engineer's notebook] Dorogi Anglii; zametki inzhenera-dorozhnika. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry, 1958. 85 p. (MIRA 11:11)
(Great Britain--Road construction)

ALEKSEYEV, A.P., red.; MAL'KOVA, N.V., tekhn.red.

[Elimination of seasonal aspects in road construction] Likvidatsiia sezonnosti dorozhnykh rabot. Moskva, Nauchno-tekhn. izd-vo M-va avtomobil'nogo transp. i shosseinykh dorog RSFSR, 1959. 233 p. (MIRA 12:12)

1. Moscow. Vsesoyuznyy dorozhnyy nauchno-issledovatel'skiy institut.
(Road construction--Cold weather conditions)

BOCHIN, Valeriy Aleksandrovich; ALEKSEYEV, A.P., red.; ZUBKOVA, M.S., red.izd-va; MAL'KOVA, N.V., tekhn.red.

[Prospects for expanding and improving the highway system] Perspektivy razvitiia i uluchsheniia seti avtomobil'nykh dorog. Moskva, Nauchno-tekhn.izd-vo M-va avtomobil'nogo transp. i shosseinykh dorog RSFSR, 1960. 61 p. (MIRA 13:9)
(Road construction)

TELEGIN, Mikhail Yakovlevich, kand.tekhn.nauk; BYALOBZHESKIY, Grigoriy Valerianovich, kand.tekhn.nauk; KORSUNSKIY, Mark Borisovich, kand.tekhn.nauk; ALEKSEYEV, A.P., red.; GALAKTIONOVA, Ye.N., tekhn.red.

[Road maintenance and repair] Soderzhanie i remont avtomobil'nykh dorog. Izd.2., perer. i dop. Moskva, Nauchno-tekhn.izd-vo avtotransp.lit-ry, 1960. 254 p. (MIRA 14:4)
(Roads--Maintenance and repair)

MIKHAYLOV, Valentin Vasil'yevich; ALEKSEYEV, A.P., red.; CHVANOV, V.G., red.izd-va; DONSKAYA, G.D., tekhn.red.

[Canadian highways] Dorogi Kanady. Moskva, Nauchno-tekhn. izd-vo M-va avtomobil'nogo transporta i shosseinykh dorog RSFSR, 1960. 82 p. (MIRA 13:11)
(Canada--Road construction)

ALEKSEYEV, A.P.; POTAYCHUK, S.I.

First cruise of the research ship "Sevastopol" in the Norwegian Sea under the program of the International Geophysical Year. Biul.Okean.kom. no.6:45-49 '60. (MIRA 14:7)
(Norwegian Sea—Oceanographic research)

ALEKSEYEV, A.P.

Research ships of the Polar Scientific Research Institute of Marine Fisheries and Oceanography. Biul.Okean.kom. no.6:62-65 '60. (MIRA 14:7)

(Ships) (Fisheries—Research)

ALEKSEYEV, A.P., kand.tekhn.nauk; TITOCHENKO, N.Ye., kand.tekhn.nauk

Expand the use of keramzit in constucting large-panel buildings.
Transp. stroi. 11 no.2:31-35 F '61. (MIRA 14:2)
(Lightweight concrete)

MASLOV, N.N., zasl. deyatel' nauki i tekhniki RSFSR, doktor tekhn. nauk, prof.; ALEKSEYEV, A.P., red.; GALAKTIONOVA, Ye.N., tekhn. red.

[Principles of soil mechanics and engineering geology] Osnovy mekhaniki gruntov i inzhenernoi geologii. Moskva, Nauchno-tekhn. izd-vo M-va avtomobil'nogo transporta i shosseinykh dorog RSFSR, 1961. 707 p. (MIRA 15:3)
(Engineering geology) (Soil mechanics)

ZASHCHUK, Igor' Vsevolodovich, kand. tekhn. nauk; ALEKSEYEV, A.P., red.; KOVRIZHNYKH, L.P., red.izd-va; BODANOVA, A.P., tekhn. red.

[New nondestructive methods of testing road materials and elements]Novye metody ispytaniia dorozhnykh materialov i sooruzhenii bez razrusheniia. Moskva, Avtotransizdat, 1962. 146 p. (MIRA 15:9)
(Road materials—Testing)
(Pavements—Testing)

ALEKSEYEV, Aleksandr Pavlovich; ICOLKIN, V.N., red.; GALAKTIONOVA, Ye.N., tekhn. red.

[Traffic signals and signs] Dorozhnye signal'nye i putevye znaki. Moskva, Avtotransizdat, 1954. 51 p. (MIRA 16:7)

(Traffic signs and signals)

ALEKSEYEV, A.P., kand. tekhn. nauk

Choosing cranes for completely precast construction. Transp. stroi. 13 no.5:62-63 My '63. (MIRA 16:7)

(Cranes, derricks, etc.)
(Precast concrete construction)

IGOLKIN, Nikolay Ivanovich; ALEKSEYEV, A.P., retsenzent; SILAKOV, D.R., red.

[Maintenance and repair of automobile roads] Soderzhanie i remont avtomobil'nykh dorog. Izd. 2., perer. i dop. Moskva, Avtotransizdat, 1963. 368 p. (MIRA 17:5)

BURLAY, P.F.; GENRITSY, G.Ye.; SOLOMIN, A.F.; SLAVUTSKIY, A.K., kand. tekhn. nauk, retsenzent; ANDRYEV, O.V., kand. tekhn. nauk, retsenzent; ALEKSEYEV, A.P., inzh., red.

[Reference book for workers in the construction of rural roads] Spravochnoe posobie stroiteliu sel'skikh dorog. Moskva, Izd-vo "Transport," 1964. 331 p. (MIRA 17:5)

BABKOV, V.F.; KLINKOVSHTEYN, G.I., kand. tekhn. nauk, retsenzent;
ALEKSEYEV, A.P., inzh.

[Road conditions and traffic safety] Dorozhnye usloviia i bezopasnost' dvizheniia. Moskva, Izd-vo "Transport," 1964. 188 p. (MIRA 17:7)

NIKISHINA, Mariya Filippovna; EVENTOV, Iosif Markovich; ARKHIPOVA, Aleksandra Pavlovna; BEGUNKOVA, Ninel' Ivanovna; BORODINA, Lyubov' Alekseyevna; IGON'KINA, Galina Sergeyevna; NAZAROV, Vladimir Vladimirovich; ALEKSEYEV, A.P., red.

[Emulsions used in road construction] Dorozhnye emul'sii. [By] M.F.Nikishina i dr. Moskva, Transport, 1964. 171 p. (MIRA 17:12)

ALEKSEYEV, A.P.; ISTOMIN, B.V.

Seasonal changes in the hydrological conditions of the Norwegian and Greenland Seas in 1959. Trudy PINRO no.14:203-207 '62.
(MIRA 17:10)

ALEKSEYEV, A.I. (Arkadiy Alekseyevich)

14-57-6-12357

Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 6, p 91 (USSR)

AUTHORS: Alekseyev, A. P., Istoshin, B. V.

TITLE: A Chart of Continuous Currents in the Norwegian and the Greenland Seas (Skhema postoyannykh techeniy Norvezhskogo i Grenlanskogo morey)

PERIODICAL: Tr. Polyar. n.-i. in-ta mor. ryb. kh-va i okeanogr. 1956, Nr 9, pp 62-68

ABSTRACT: The authors offer a new chart of currents in the Norwegian and Greenland Seas, which differs from the accepted charts of Helland-Hansen and of Nansen. They have established a close relation between continuous currents and the relief of the bottom. Their chart makes it possible to determine the location of the polar front which lies in the zone where warm and cold water masses converge, and also to fix exactly the direction of flow of the warm Atlantic current. Both of these factors are highly important in

Card 1/2

26-58-4-33/45

AUTHOR: Alekseyev, A.P., Candidate of Geographical Sciences

TITLE: Oceanographic Researches of the Expeditionary Vessel "Sevastopol'"

PERIODICAL: Priroda, 1958, Nr 4, pp 111-112 (USSR)

ABSTRACT: Among the Soviet scientific establishments participating in the work of the IGY is the Polar Scientific Research Institute of the Maritime Fishing Industry and Oceanography imeni N.M. Knipovich - Murmansk. Its task is to prepare a series of oceanographic profiles of the Norwegian Sea and the northern part of the Atlantic Ocean. At the beginning of the IGY, the above institute introduced a new expeditionary ship "Sevastopol'" of 2,000 t - a rebuilt fishing vessel with space for 30 persons. The ship is equipped with 2 electric capstans "Okean" and one capstan LG-5,000 constructed by the "Giprorybflot" institute. The trawling capstan, intended for depths of up to 1,000 m, may also be used for dredging, scooping, etc. There are laboratories for hydrological, hydrochemical, geological, ichthyological and hydrobiological purposes, four sounding devices(two of which are for deep sea sounding), a powerful fish searching device, modern radio and navigational

Card 1/2

26-58-4-33/45

Oceanographic Researches of the Expeditionary Vessel "Sevastopol'".

equipment and a naval meteorological station.

ASSOCIATION: Polyarnyy nauchno-issledovatel'skiy institut morskogo rybnogo khozyaystva i okeanografii imeni N.M. Knipovicha (Murmansk) (Polar Scientific Research Institute of the Maritime Fishing Industry and Oceanography imeni N.M. Knipovich, Murmansk)

AVAILABLE: Library of Congress

Card 2/2 1. Norwegian Sea-Oceanography 2. Atlantic Ocean-Oceanography 3. Oceanography-USSR

MARTI, Yu.Yu., otv. red.; ALEKSEYEV, A.P., zam. otv. red.; NOSKOV, A.S., zam. otv. red.; BORODATOV, V.A., red.; VINOGRADOV, L.G., red.; ZAYTSEV, G.N., red.; IZHEVSKIY, G.K., red.; KAZANOVA, I.I., red.; KONSTANTINOV, K.G., red.; MUNTYAN, V.M., red.; NAUMOV, V.M., red.; SEDYKH, K.A., red.; FEDOSOV, M.V., red.; CHUMAKOVA, L.S., red.; AYNZAFT, Yu.S., red.; MUKHINA, Ye.M., red.; FORMALINA, Ye.A., tekhn. red.

[Soviet fishery research in the northwestern part of the Atlantic Ocean] Sovetskie rybokhoziaistvennye issledovaniia v severo-zapadnoi chasti Atlanticheskogo okeana. Moskva, Izd-vo zhurnala "Rybnoe khoziaistvo," 1962. 375 p. (MIRA 15:7)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut morskogo rybnogo khozyaystva i okeanografii. 2. Vsesoyuznyy nauchnyy institut morskogo rybnogo khozyaystva i okeanografii (for Marti, Fedosov).
(Atlantic Ocean—Fisheries—Research)

ALEKSEYEV, A.P., otv. red.; ADROV, M.M., spets. red.; KONSTANTINOV, K.G., spets. red.; KUTAKOV, B.G., red.; MASLOV, N.A., red.; MINDER, L.P., red.; NIKOL'SKIY, L.S., red.; STAROVOYTOV, P.A., red.; SURKOV, S.S., red.; KHRANOVSKIY, A.Yu., red.; YUDANOV, I.G., red.; VOROB'YEV, A.T., red.

[Materials of the session of the Scientific Council of the Arctic Scientific Research Institute of Marine Fisheries and Oceanography dealing with the results of research in 1962-1963] Materialy sessii Uchenogo soveta PINRO po rezul'tatam issledovanii v 1962-1963 gg. Murmansk, 1964. 237 p. (MIRA 18:1)

1. Murmansk. Polyarnyy nauchno-issledovatel'skiy i proyektnyy institut morskogo rybnogo khozyaystva i okeanografii. 2. Direktor Polyarnogo nauchno-issledovatel'skogo i proyektnogo instituta morskogo rybnogo khozyaystva i okeanografii, Murmansk (for Alekseyev). 3. Laboratoriya vosproizvodstva Polyarnogo Nauchno-issledovatel'skogo i proyektnogo instituta morskogo rybnogo khozyaystva i okeanografii, Murmansk (for Surkov). 4. Laboratoriya tekhniki promyshlennogo rybolovstva Polyarnogo nauchno-issledovatel'skogo i proyektnogo instituta morskogo rybnogo khozyaystva i okeanografii, Murmansk (for Starovoytov).

ALEKSEYENKO, L. N.: Master Agric Sci (diss) -- "The structure of the grass stand of perennial grasses in pure plantings and grass mixtures under the conditions of Leningrad Oblast". Leningrad-Pushkin, 1958. 19 pp (Min Agric USSR, Leningrad Agric Inst, Chair of "Meadow Control"), 150 copies (KL, No 3, 1959, 111)

ALEKSEYENKO, L.N.

Structure and yield of a stand of perennial grasses. Dokl. Akad. sel'khoz. 23 no. 6:14-26 '58. (MIRA 11:7)

1. Leningradskig sel'skokhozyaystvennyy institut. Predstavlena adademikom I.V.Larinym.

(Grasses)

ALEKSEYENKO, L.N.

Biology and ecology of perennial grasses. Bot.zhur. 43 no.11: 1582-1588 N '58. (MIRA 11:11)

1. Leningradskiy sel'skokhozyaystvennyy institut, g. Pushkin.
(Grasses)

ALEKSEYENKO, L.N.

Herbage structure of perennial [illegible] grass. Bot.zhur. [illegible] no.5:704-706 My '59. (MIRA 12:11)

1. Leningradskiy sel'skokhozyaystvennyy institut, g. Pushkin.
(Pastures and meadows)

ALEKSEYENKO, L.N.

Herbage volume of perennial cultivated grasses. Biul. MOIP. Otd.biol. 64 no.6:99-103 N-D '59. (MIRA 13:5)
(PASTURES AND MEADOWS)

ALEKSEYENKO, L.N.

Productivity and intensity of photosynthesis of some meadow mesophytes in Leningrad Province. Nauch. dokl. vys. shkoly; biol. nauki no.1:140-144 '62. (MIRA 15:3)

1. Rekomendovana kafedroy lugovodstva Leningradskogo sel'skokhozyaystvennogo instituta.
(PHOTOSYNTHESIS)
(LENINGRAD PROVINCE--GRASSES)

ALEKSEYENKO, L.N.

Some problems in studying the stand structure of herbaceous phytocenoses. Bot. zhur. 49 no.1:65-74 Ja '64. (MIRA 17:2)

1. Leningradskiy gosudarstvennyy universitet.

ALEKSEYENKO, L.N.; MARTYNOVA, M.F.

Characteristics of the formation and work productivity of the assimilation apparatus in meadow grass stands. Fiziol.rast. 11 no. 3:417-423 '64. (MIRA 17:7)

1. Kafedra lugovodstva Leningradskogo sel'skokhozyaystvennogo instituta, Pushkin.

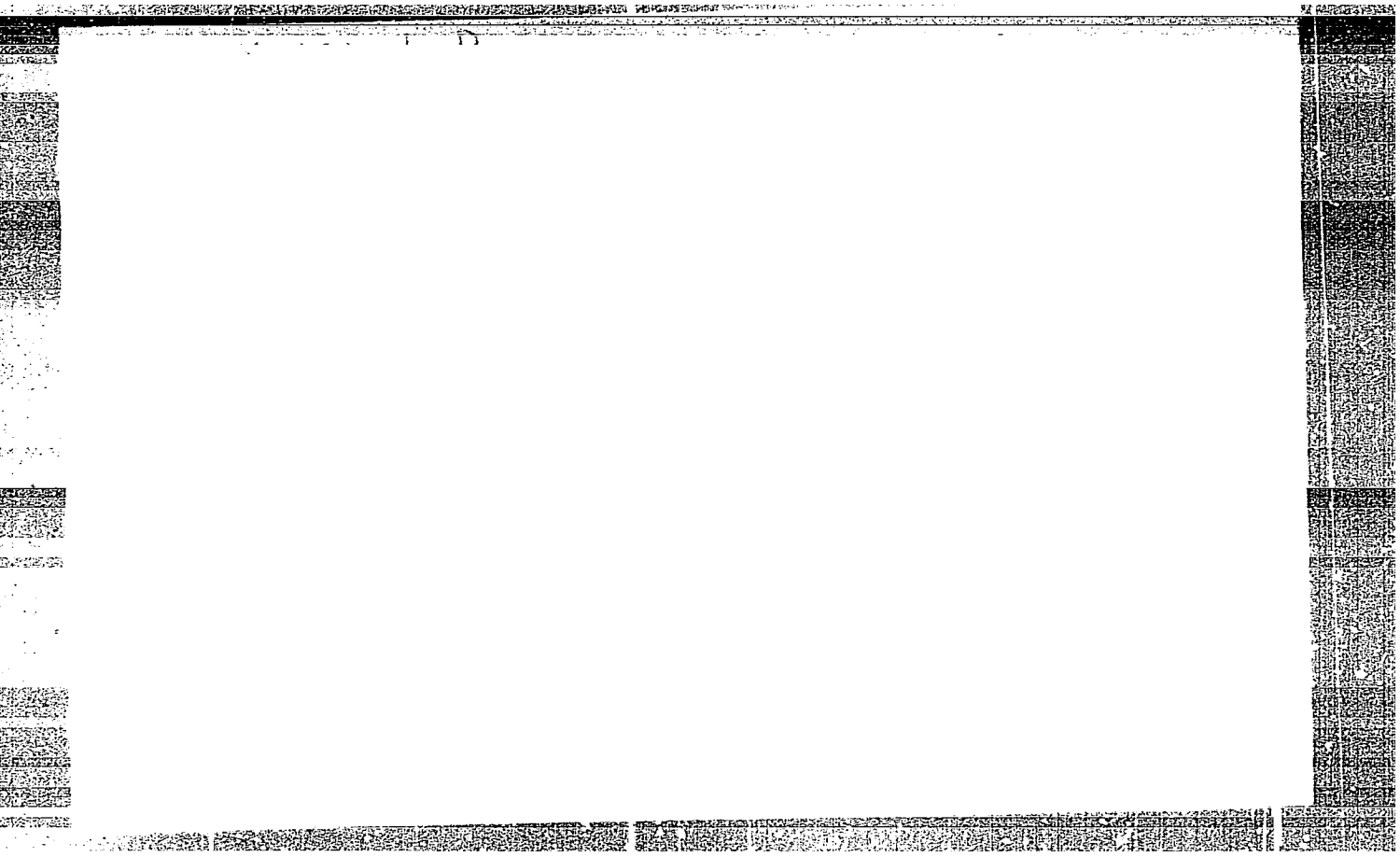
ALEKSEYENKO, L.N.

Gravimetric method of determining the leaf surface of meadow plants and meadow communities. Bot.zhur. 50 no.2:205-208 F '65. (MIRA 18:12)

1. Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova. Submitted July 16, 1964.

ALEKSEYENKO, L.N.

Interrelationship between the grass stand structure, phyto-climatic conditions and some physiological processes in meadow grasses. Biul. MOIP Otd. biol. 70 no. 6:92-98 N-D '65
(MIRA 19:1)



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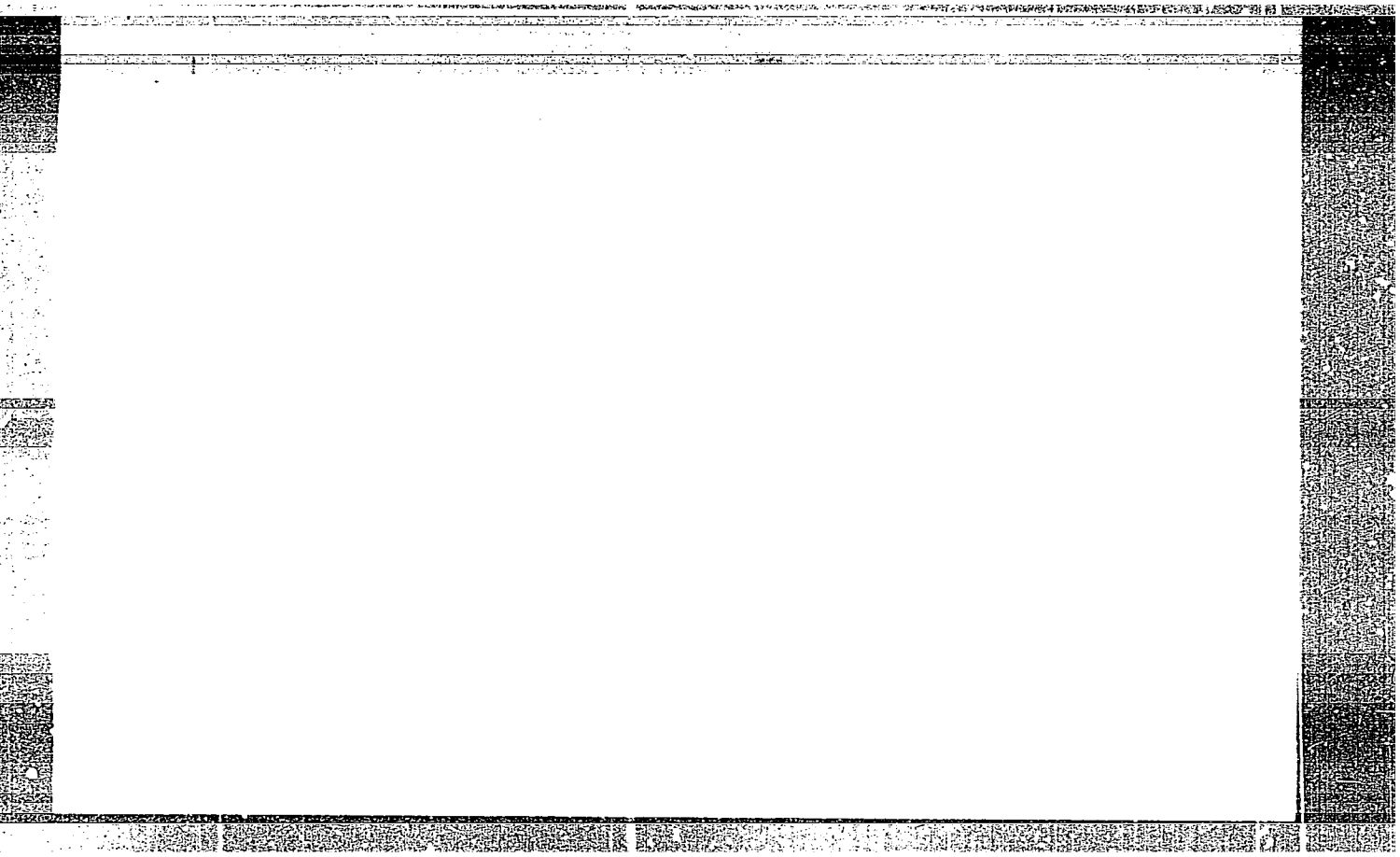

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OREKHOVICH, V.N.; ALEKSEYENKO, L.P.; LEVDIKOVA, G.A.

Heterogenicity of secreted protein substances. Vest. AMN SSSR 12 no.1:12-18 '57 (MLRA 10:5)

1. Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR, Moskva.
(PROTEINS
heterogenicity of animal proteins)

ALEKSEYENKO, L.P.; OREKHOVICH, V.N.

Ninhydrin method of determining proline and oxyproline in an acid medium by chromatography on starch. Dokl.AN SSSR 133 no.3:690-693 Jl '60. (MIRA 13:7)

1. Institut biologicheskoy i meditsinskoy khimii Akademii meditsinskikh nauk SSSR. 2. Deystvitel'nyy chlen AMN SSSR (for Orekhovich).
(PROLINE) (NINHYDRIN) (CHROMATOGRAPHIC ANALYSIS)

ALEKSEYENKO, L. P., SOLOVYEVA, N. I., RODIONOV, V. M., SHPIKITER, V. O., and USPENSKAYA, V. D. (USSR)

"The Protein of Canine Plasma."

Report presented at the 5th International Biochemistry Congress, Moscow, 10-16 Aug 1961

ALEKSEYENKO, L.P.

Amino acetic analysis of proteins, tissue extracts and biological fluids. Sovr. metod. v biokhim. 1:129-161 '64.
(MIRA 18:5)

ALEKSEYENKO, L.P.; OREKHOVICH, V.N.

Chemical and physicochemical characteristics of some hemoglobins. Dokl. AN SSSR 156 no.6:1455-1458 Je '64. (MIRA 17:8)

1. Institut biologicheskoy i meditsinskoy khimii AMN SSSR. 2. Deystvitel'nyy chlen AMN SSSR (for Orekhovich).

BOTSMAN, N.Ye.; ALEKSYENKO, L.S.

Histomorphological characteristics of experimental influenza in white mice following cooling of the body. Vop.virus. 1 no.6:7-10... N-D '56 (MIRA 11:3)

1. Institut infektsionnykh bolezney AMN SSSR, Kyev.
(INFLUENZA, exper.
eff. of cold at moment of infect. & pathol. findings)
(COLD, eff.
on course of exper. influenza in white mice at moment of infect., pathol. findings)

grinding, wet grinding, cast alumina

ABSTRACT: Cast cylindrical and cube-shaped samples of dry and wet-ground alumina

L 27305-6
ACCESSION NR: AP4047019

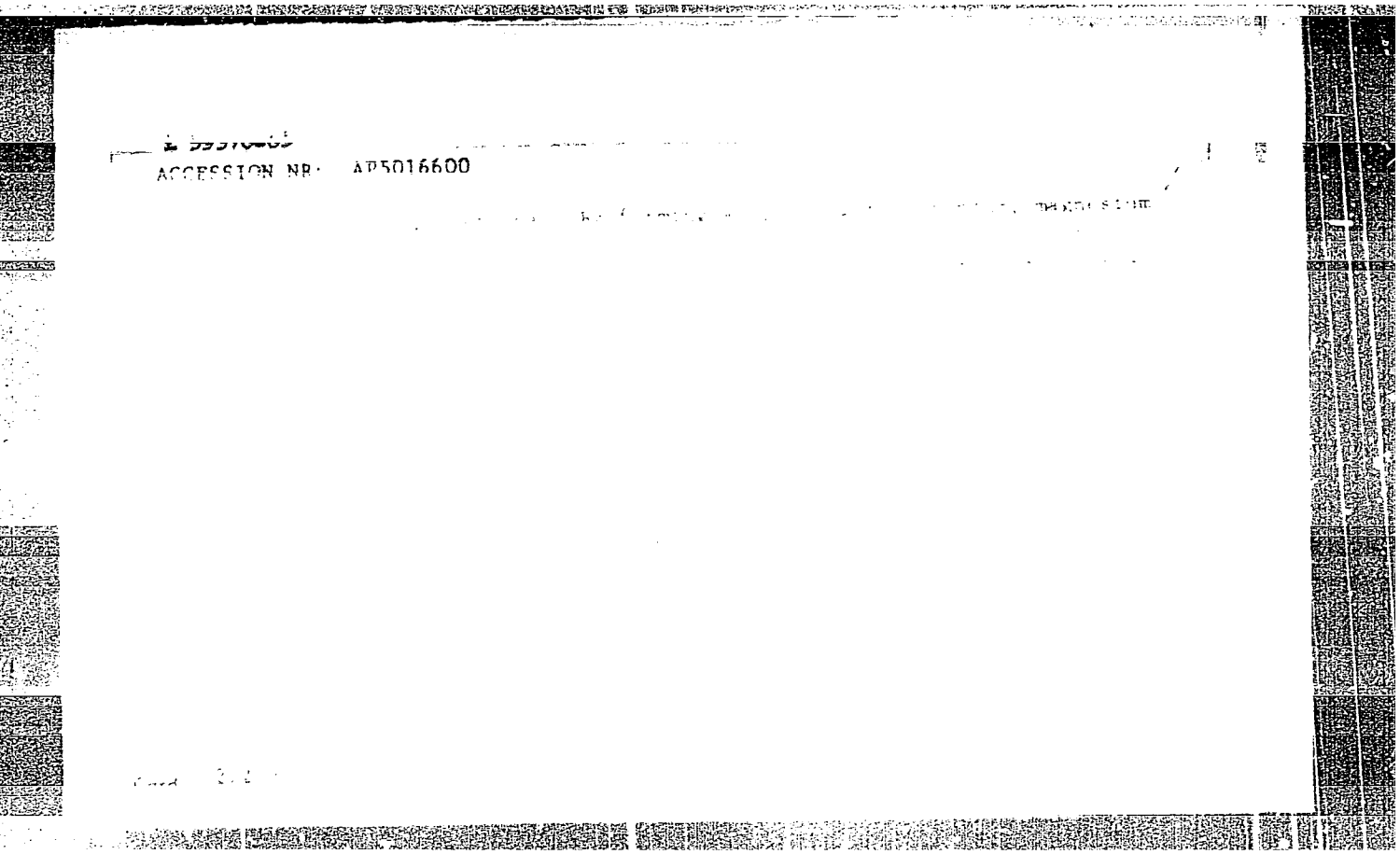
of the temperature of alumina burning and kerne[illegible] fall dry-ground fine cor-

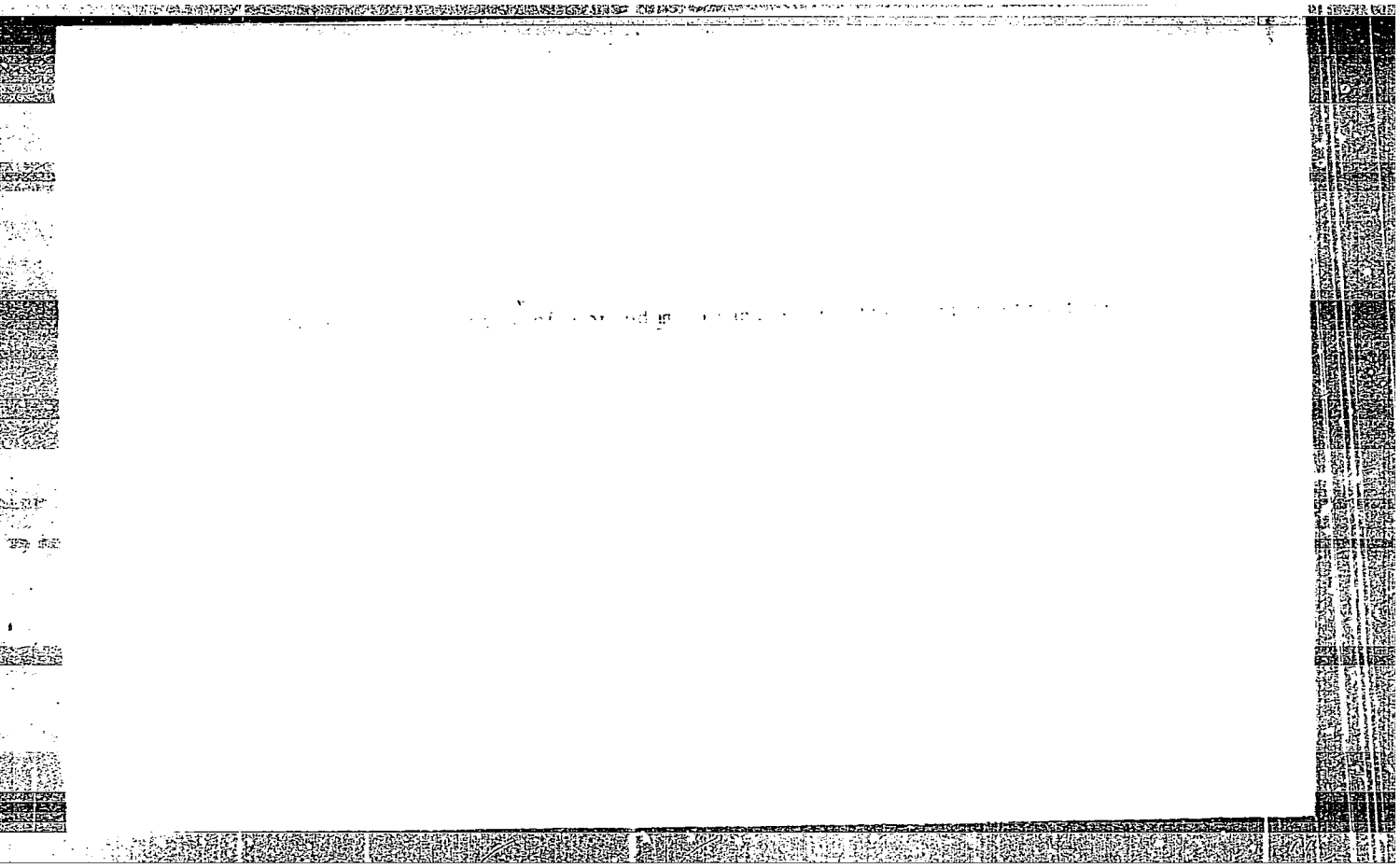
PAB-10/PC-7/Pl-4 IJP(c) CC/WH

/005/0810/0815

dielectric property, corundum ceramic,

Card





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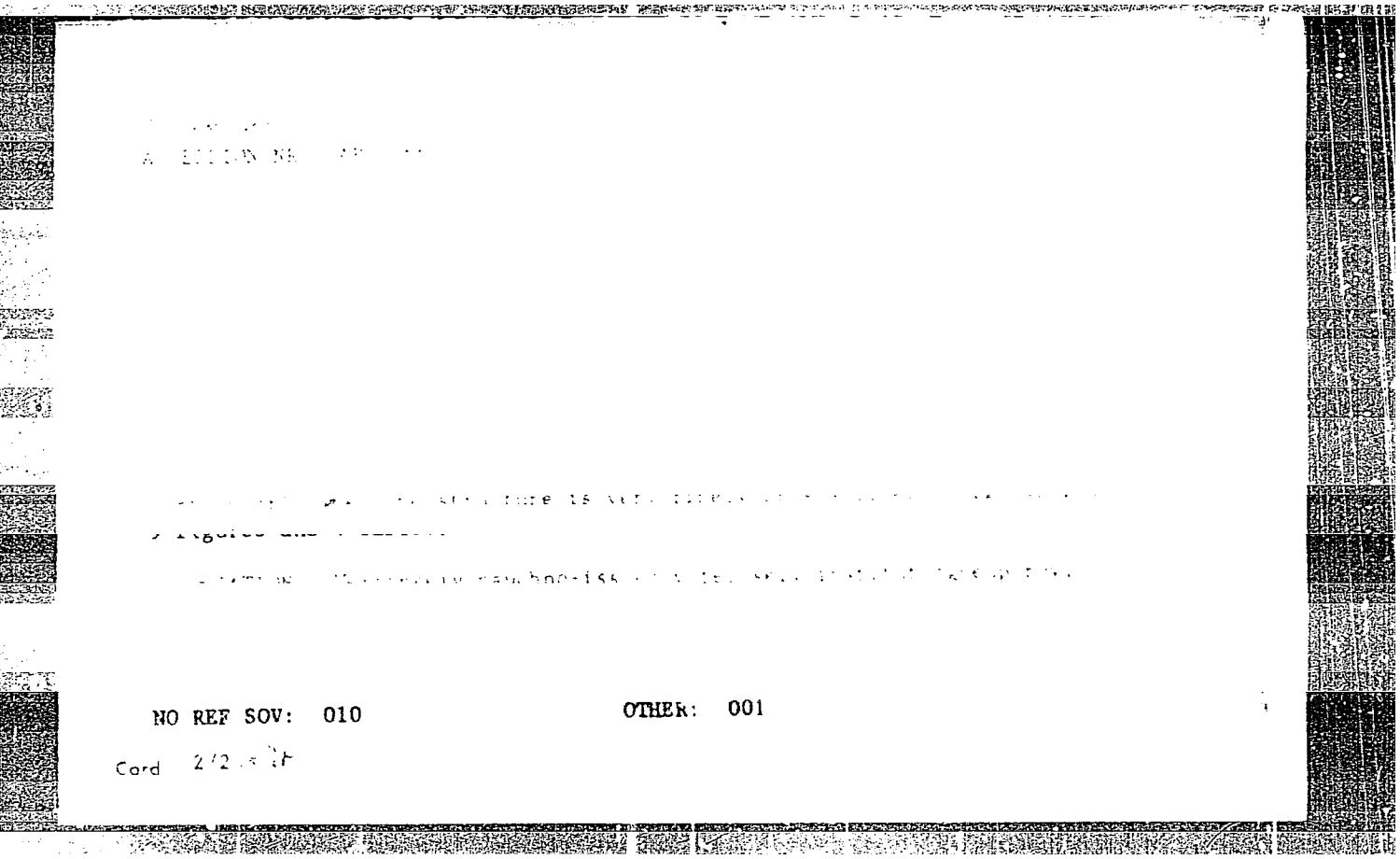

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DEGTYAREVA, E.V.; KAYNARSKIY, I.S.; KARYAKIN, L.I.; ALEKSEYENKO, L.S.

Dielectric properties of corundum ceramics and its microstructure.
Izv. AN SSSR. Neorg. mat. 1 no.5:816-822 My '65. (MIRA 18:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov, Khar'kov.

VINOGRADOV, K.A.; ZEMLYANITSKIY, L.T.; NOVOZHILOVA, V.A.[deceased]; LUNEVA, Z.S.; VAKULENKO, V.V.; GALAKTIONOV, I.I.; ALEKSEYENKO, L.V.; NERONOVA, M.D., red.; KHENOKH, F.M., tekhn. red.

[Care of urban plantings] Ukhod za gorodskimi nasazhdeniiami. Moskva, Izd-vo Kommun. khoz.RSFSR, 1963. 89 p. (MIRA 16:7)

1. Akademiya kommunal'nogo khozyaystva.
(Landscape gardening)

L 08270-67 EWT(1) SCTB DD/GD

ACC NR: AT6036465 SOURCE CODE: UR/0000/66/000/000/0009/0010

AUTHOR: Abramova, V. M.; Gertsuskiy, D. F.; Alekseyenko, L. V.; Nevzgodina, L. V.; Popkova, S. A.

17
B+1

ORG: none

TITLE: Sensitivity of potato seeds to proton and gamma radiation [Paper presented at conference on problems of space medicine held in Moscow from 24-27 May 1966]

SOURCE CODE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 9-10

TOPIC TAGS: ionizing radiation biologic effect, relative biologic efficiency, cosmic radiation biologic effect, radiation genetic effect, plant genetics

ABSTRACT:

Proton irradiation is the greatest spaceflight hazard to the plant link in a closed ecological system. Unfortunately, little is yet known about the RBE of protons as compared with x-rays or gamma rays. Experiments were conducted to study the RBE of protons and gamma rays for higher plants. Potato seeds were irradiated with 660-Mev protons (dose power 84 rad/sec) from and OIYAI synchrocyclotron or with gamma rays from an EGO-4 apparatus in a dose range from 500—50,000 rad (dose power

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L 08270-67

ACC NR: AT6036465

182 rad/min). Experimental results showed that potato seeds are twice as resistant to radiation as potato tubers. In addition, it was found that proton irradiation caused more significant changes in the growth and development of potato seedlings than gamma irradiation. The LD_{100} for proton-irradiated seeds is about 30,000 rad: for gamma-irradiated seeds the LD_{100} is more than 50,000 rad. These results agree with literature data. Doses from 500 to 10,000 rad were found to stimulate tuber formation, while doses above 10,000 rad depressed this process. From these data it was determined that the RBE of 660-Mev protons varies from 0.5 to 2.3. Study of the effect of radiation on the chromosome structure of the cell showed that for protons the coefficients of RGE (Relative Genetic Effectiveness—defined as the percentage of cells with chromosome aberrations) in the dose range 500—50,000 rad vary from 0.7—2.6. A close correspondence between extremal values of RBE and RGE of 660-Mev protons for potato seeds was observed. Literature data and results of these experiments show that a year is sufficient to produce a potato crop from seeds. It was concluded that cultivation of potatoes from seeds can be of great practical value on long spaceflights, especially during radiation emergencies.

[W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 2/2

ACC NR: AT6036529 SOURCE CODE: UR/0000/66/000/000/0119/0120

AUTHOR: Gertsuskiy, D. F.; Abramova, V. M.; Alekseyenko, L. V.; Sychkov, M. A.; Popkova, S. A.; Petrenko, L. M.

ORG: none

TITLE: Effect of 660-Mev protons and gamma rays on potato tubers irradiated before planting /Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966./

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 119-120

TOPIC TAGS: ionizing radiation biologic effect, cosmic radiation biologic effect, relative biologic efficiency, plant genetics, radiation genetic effect, space food, bioastronautics

ABSTRACT: The effect of 660-Mev protons and Co^{60} gamma rays on potato tubers (variety "Khibinskiy ranniy") was studied. Tubers were irradiated with 660-Mev protons from an OIYAI synchrocyclotron and gamma rays from an EGO-2 apparatus in the 250—10,000 rad dose range. The experiment was conducted in field conditions in three parts (50 specimens each). The following indices of radiation effect were used: germination, tempo

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of development, number of tubers, and their total weight.

Ionizing radiation is known to affect both the growth and development rates and the productivity of the potato: small doses have a stimulating effect and large doses a depressing effect. Experimental results showed that a proton dose of 250 rad or a dose of gamma rays from 500 to 1000 rad stimulates the appearance of seedlings and the beginning of budding. A considerable depressing effect was noted beginning with doses of 500 rad (protons) and over 1000 rad (gamma rays). Analagous results were obtained with respect to the number of stalks from one tuber and the height of the plants.

Potato productivity changes under the influence of radiation. The general rule of decrease in productivity with increase in dose is retained. This may be explained by the smaller number of tubers per experimental plant with all the doses used. The average number of tubers per plant was six with a 500-rad dose of protons, and eight for the same gamma-ray dose (as compared with nine in the control). Visual observations of full-grown plants showed that the stimulating effect of small radiation doses is most strongly manifested in initial developmental phases, and disappears gradually with time. In the period before blossoming, it is already difficult to detect the stimulating effect of a 250—500-rad dose. The depressing

ACC NR: AT6036529

effect of large radiation doses also seems to attenuate with time. Seventy days after planting, individual seedlings sprouted from specimens irradiated with a dose of 4000 rad. Doses of either gamma rays or protons higher than 4000 rad completely prevented germination: however, the tubers did not rot in the ground and retained their turgor. Experiments showed that potato tubers are radiosensitive and that protons have a greater effect on their growth, development and yield than gamma rays. [N. A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 3/3

ACC NR: AT6036528 SOURCE CODE: UR/0000/66/000/000/0117/0118

AUTHOR: Gertsuskiy, D. F.; Nevzgodina, L. V.; Alekseyenko, L. V.; Abramova, V. M.; Smirennyy, L. N.

ORG: none

TITLE: Evaluation of radiation hazard for plants in space greenhouses /Paper presented at the Conference on Problems of space medicine held in Moscow from 24 to 27 May 1966./

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 117-118

TOPIC TAGS: cosmic radiation biologic effect, life support system, radiation genetic effect, plant genetics, space food, ionizing radiation biologic effect, proton radiation biologic effect, relative biologic efficiency

ABSTRACT: Plants in a space greenhouse must be both highly productive and sufficiently radioresistant. In this work the effect of proton and gamma irradiation on some higher plants was studied, and the RBE of 660-Mev protons was determined. Potato tubers, beans, beets, and lettuce are usually classified among radiosensitive plants. Experiments showed that with a 4000-rad dose of gamma rays only a few potato tubers sprouted.

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It was found that doses of gamma rays from 1000—5000 rad and a proton dose of 250 rad (not higher) had a stimulating effect on potato growth. However, when potato seeds (which are much more radioresistant than tubers) were irradiated, a proton dose of approximately 40,000 rad was required to kill the plants, or a dose of gamma rays in excess of 50,000 rad. Of this group, beets, beans, and lettuce are slightly more radioresistant than potato tubers. Radioresistant plants include cabbage, carrots, radishes, and tomatoes. Doses of more than 200,000 rad were required to kill cabbage, radish, and carrot plants, and the range of stimulating doses was correspondingly higher.

The experiments described in this article were conducted to determine the RBE and RGE (Relative Genetic Effectiveness—the percentage of cells with chromosome rearrangements) of 660-Mev protons as compared with Co^{60} gamma rays during irradiation of seeds of the following plants in the dose range indicated: potato—0.5—50, cabbage—0.5—250, and carrot—0.5—100 rad. The RBE of portons increased with increased dosage from 0.7 to 2.6, 1 to 3.6, and 1 to 11, respectively. These experimental data suggest that a relationship exists between the RGE value and the general radioresistance of the plants. It was observed that limits of change in RBE coefficients (the criterion is the potato yeild) and RGE values of 660-Mev

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000100920002-7"

ACC NR: AT6036528

protons for potatoes in the dose range 500—50,000 rad, coincide. This is interesting in view of a possible correlation between the observed genetic effects and subsequent changes in plant development. / W. A. No. 22; ATD Report 66-116/

SUB CODE: 06 / SUBM DATE: 00May66

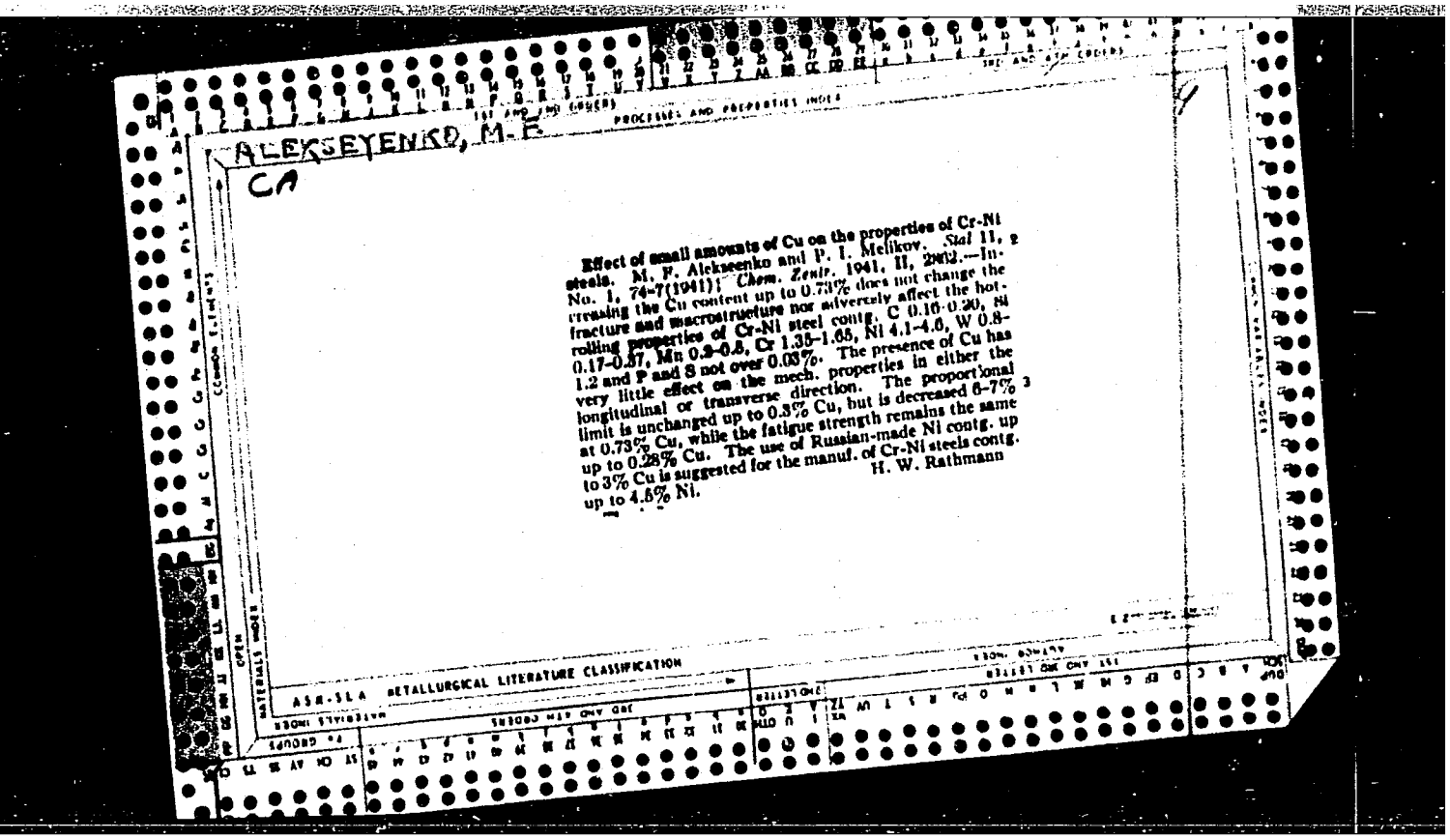
Card 3/3

ALEKSEYENKO, M.; ZAYTSEV, A.; SKORODUMOV, M.

Several financial problems in the organization of firms. Fin.SSSR Ap '63. (MIRA 16:4)
(Lvov Economic Region--Industrial organization)
(Finance)

ALEKSEYENKO, M., polkovnik

Commander and the community. Av. i kosm. 47 no.11:37-41 N '64.
(MIRA 17:11)



ALEKSEYENKO, M. F.

CA

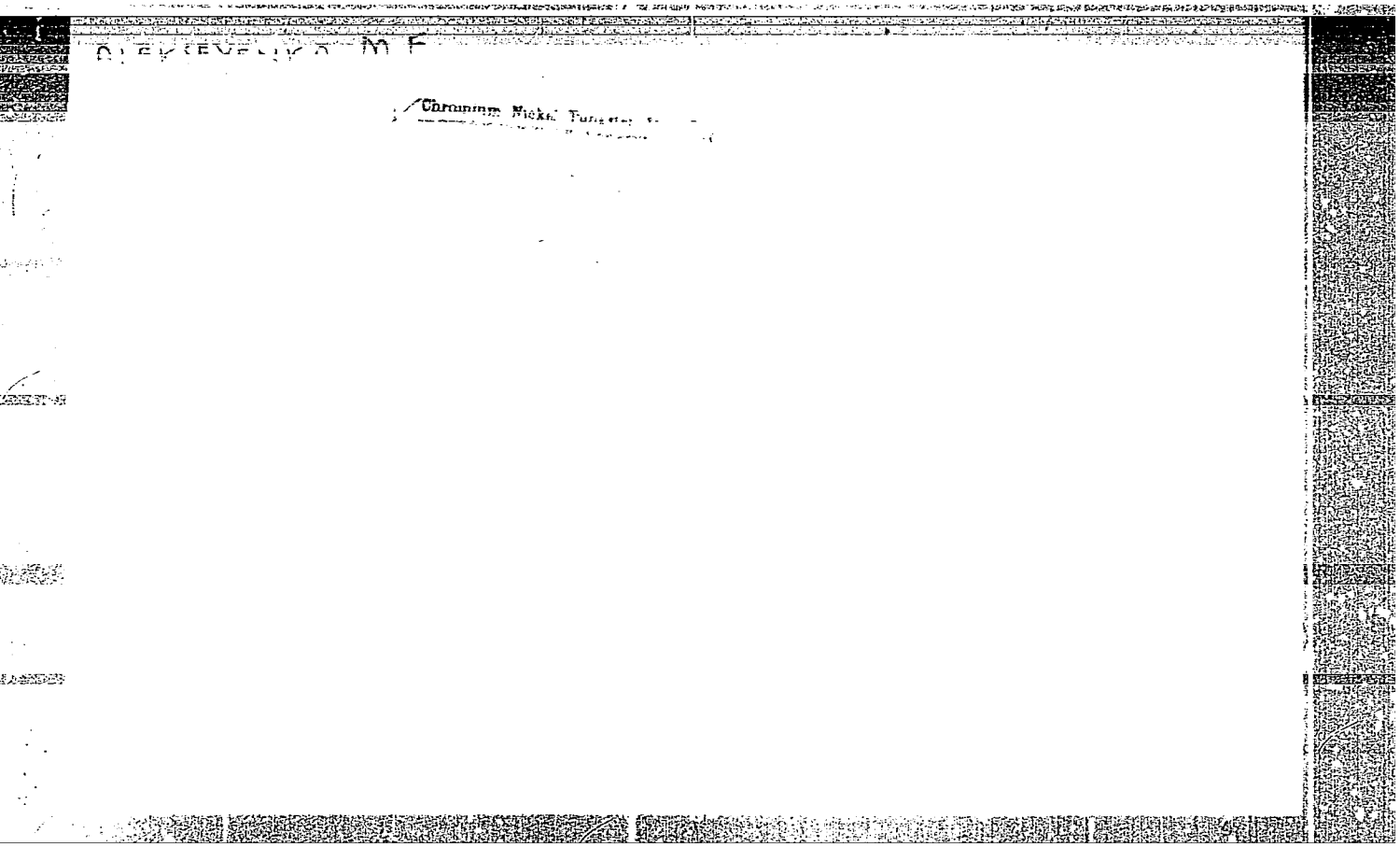
Effect of small amounts of Cu on the properties of Cr-Ni steels. M. F. Alekseenko and P. I. Melikov. *Stal* 11, 2 No. 1, 74-7(1941); *Chem. Zentr.* 1941, II, 2012.—Increasing the Cu content up to 0.73% does not change the fracture and macrostructure nor adversely affect the hot-rolling properties of Cr-Ni steel contg. C 0.10-0.20, Si 0.17-0.37, Mn 0.3-0.8, Cr 1.35-1.65, Ni 4.1-4.6, W 0.8-1.2 and P and S not over 0.03%. The presence of Cu has very little effect on the mech. properties in either the longitudinal or transverse direction. The proportional limit is unchanged up to 0.3% Cu, but is decreased 6-7% at 0.73% Cu, while the fatigue strength remains the same up to 0.28% Cu. The use of Russian-made Ni contg. up to 3% Cu is suggested for the manuf. of Cr-Ni steels contg. up to 4.6% Ni.

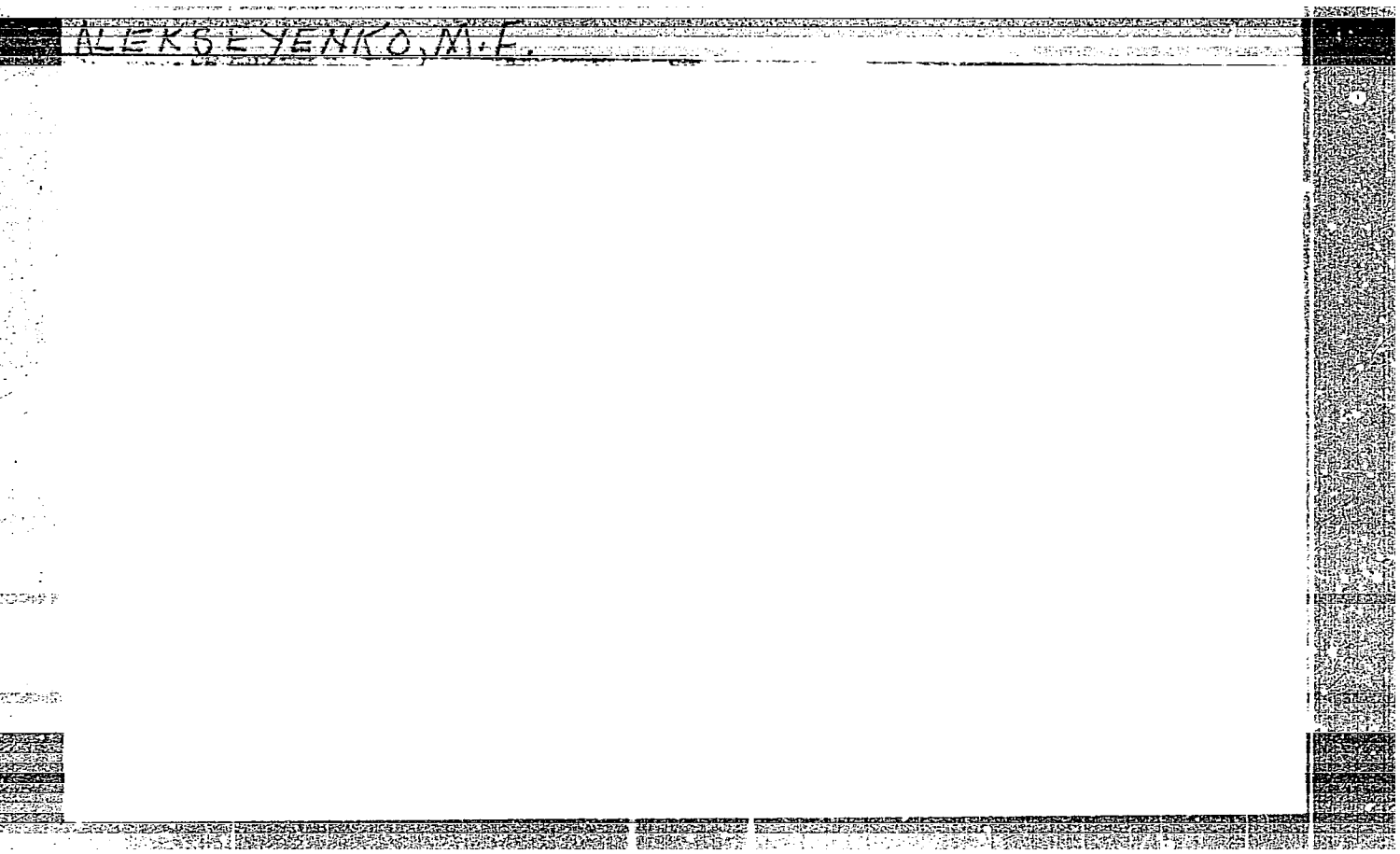
H. W. Rathmann

ALEKSEYENKO, M. F.

Induktsionnyi nagrev pri termoobrabotke stali [Induction heating in the heat treatment of steel]. Moskva, Oborongiz, 1953. 191 p.

SO: Monthly List of Russian Accessions, Vol. 7 No. 2 May 1954.





AUTHOR: ALEKSEYENKO,M.F., Cand.Tech.Sc. PA - 2409

TITLE: S.M.Viranov,"The Properties of Structural Steel with Boron Content. (S.M.Vinarov, "Svoystva konstruktsionnoy stali s borom, Russian). Published by Oborongiz, 1955, 80 pages.

PERIODICAL: Stal', 1957, Vol 17, Nr 2, pp 192 - 192 (U.S.S.R.)

Received: 5 / 1957 Reviewed: 5 / 1957

ABSTRACT: The present publication is a short monography, edited by the Moscow Institute for Aeronautics. It contains a short survey of the problem of the influence of small amounts of boron on the properties of structural steel. The effect of boron on the kinetics of the growth of an austenite grain, on the annealing resistivity of the metal and on its mechanical properties is investigated. Besides, the importance of structural steel for industry is characterized. Describing the build-up of the system of dispersion the author draws attention to the leading role of surface energy., and to the reduction of this energy by the elements adsorbed by the surface. In the third part of the publication the theory developed by the author on the influence of boron on the boundary zones is explained. According to this theory small amounts of boron can be adsorbed through the surface- (boundary-) zones under specific conditions. In this case the surface-energy decreases and slowing down occurs because of this austenite transformation. Vinarov critizises the lack of attention paid to the technological

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PA - 2409

S.M.Viranov, "The Properties of Structural Steel with Boron Content."

questions of the production of boron-steel and the inadequate metallographic analysis of the dependence of the structure from boron content.

ASSOCIATION: Not given.
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress
Card 2/2

ALEKSEYENKO, M. F., PIGUZOV, Yu. V., and FEDOTOVA, L. S.

"The Annealing Friability of High-Chromium Steels and Its Influence on Internal Friction."

report presented at Inter-vuz Conference on Relaxation Phenomena in Pure Metals and Alloys, 2-4 Apr 1958, Moscow Inst. Steel.

(Moscow Inst. of Steel and the A-U Inst. of Aircraft Materials)

Vest. Vysshe Shkoly, 9:72-73, '58
(Piguzov, Yu. V.)

SOV/137-58-9-19967

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 269 (USSR)

AUTHORS: Alekseyenko, M.F., Alekseyeva, G.N., Orekhov, G.N., Fedotova, L.S.

TITLE: A Study of the Sensitivity of Structural Steels to Overheating (Izucheniye chuvstvitel'nosti konstruktsionnykh staley k peregrevu)

PERIODICAL: Metallovedeniye i term. obrabotka. Moscow, Metallurgizdat, 1958, pp 21-30

ABSTRACT: An investigation is made of the tendency of 15Kh2GNTA, 25Kh2GNTA, 30Kh2N2VA, and 30Kh3VA steels to overheat in the 900-1300°C temperature interval, and the possibility of correcting this tendency is studied. It is found that overheating may be corrected by normalization at 900-950°. The standard mechanical properties of the overheated and the normally treated metal are identical. The overheating effect is found in impact testing at -70°, in notch tensile testing at 8° notch angle and in fatigue testing; overheating reduces a_k from 9 to 3.4 kgm/cm^2, σ_b from 106 to 68-77 kg/mm^2, and σ_{-1} by 3-6 kg/mm^2. The correction of overheated steel by

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SOV/137-58-9-19967

A Study of the Sensitivity of Structural Steels to Overheating

normalization from a temperature of 150-180° higher than the Ac_3 point confirms the conclusions of a number of investigators to the effect that Chernov's point "B" cannot be identified with the Ac_3 point.

F.U.

1. Steel--Heat treatment 2. Steel--Temperature factors 3. Steel--Test methods

Card 2/2

SOV/133-59-1-18/23

AUTHORS: Alekseyenko, M.F., Candidate of Technical Sciences and Andreyeva, A.G., Engineer

TITLE: A New Austenitic Steel for Nitriding (25Kh18N8V2) (Novaya austenitnaya stal' dlya azotirovaniya (25Kh18N8V2)

PERIODICAL: Stal', 1959, Nr 1, pp 78 - 81 (USSR)

ABSTRACT: For the manufacture of parts from which a high wear and corrosion resistance is required, nitrided EI69 (4Kh14N14V2M) steel is used at present. However, this steel has a number of deficiencies: a) a low depth of nitrided layer (0.11 mm); b) long duration of the nitriding process (60 hours, an increase to 100 hours increases the depth of the layer only by 0.01 mm); c) high brittleness of the nitrided layer caused by a sharp hardness gradient along the depth of the layer; d) tendency of shelling and e) insufficient strength of the core. In order to find a more suitable type of steel nitriding of specimens of a number of stainless steels of standard production as well as specially prepared alloys was carried out and their properties investigated. The experimental results for most typical steels are given in Tables 1 and 2 and Figures 1-6. On the basis of the results obtained replacement of steel EI69 used at present

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A New Austenitic Steel for Nitriding (25Kh18N8V2)

by steel 25Kh18N8V2 (C 0.25%, Cr 18.4%, Ni 7.5%, W 2.2%) is recommended. The use of the proposed steel instead of EI69 has the following advantages: 1) rapid nitriding to a depth of 0.18 mm in 40 hours; 2) a stronger core; 3) a more uniform hardness gradient from the surface to the core; 4) a deeper zone of positive corrosion resistance and 5) absence of shelling. There are 6 figures, 2 tables and 3 references, 2 of which are Soviet and 1 English.

ASSOCIATION: VIAM

SOV/129-59-5-12/17

AUTHORS: M.F. Alekseyenko, N.F. Lashko, N.M. Popova, G.N. Orekhov

TITLE: Phase Analysis of Heat Resistant Constructional Steels (Fazovyy analiz teplostoykikh konstruktsionnykh staley)

PERIODICAL: Metallovedeniye i Termicheskaya Obrabotka Metallov, 1959, Nr 5, pp 52-54 (USSR)

ABSTRACT: The authors investigated the phase composition and the mechanical properties of the steels 30Kh3VA, 30Kh2N2VA (i.e. with differing vanadium contents) and of the steel EI415. The results of the strength tests after heat treatment (quenching in oil followed by tempering) for each of these steels are entered in a table on page 52. The carbide analysis was effected on 12 mm diameter, 60 mm long specimens which served as anodes and dissolved in an electrolyte for a duration of 5 hours with a current density of 0.2 A/cm^2, following which the solution was cooled to 0°C. The Fe, Cr, Mn, W, V and Mo contents of the carbide precipitates were determined. In Fig 1 the influence is graphed of the tempering time at 500 °C of the steels 30Kh2N2VA (curves 1 and 2) and 30Kh3VA (curves 3 and 4) on the contents of individual elements which are combined in the carbides. In Figs 2 and 3 the

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Phase Analysis of Heat Resistant Constructional Steels

influence is graphed of the tempering time at 600 °C of the steels 30Kh2N2VA and 30Kh3VA respectively on the contents of Cr and Fe which are combined in the cementite and trigonal chromium carbide; the effect of vanadium additions on the mechanical properties and the sustained strength of 30Kh2N2VA steel is graphed in Figs 4 and 5. The results of analysis of phase composition of 30Kh2N2VA steels with various vanadium contents enabled explaining their behaviour in tests for sustained strength at 550 °C. The sustained strength is determined by the hardening of the solid solution, its thermal stability and also its interaction with the rejected phases. The hardening effect of the rejected phases on the steel depends on their degree of dispersion and the proneness to diffusion interaction with the solid solution; the lower the speed of formation and the slower the growth of the germinations, the greater will be the hardening effect on the steel. After tempering at 650 °C the carbide phases in the steel EI415 combined only partly with the alloying elements W, Mo, V and Cr.

Card 2/3 The alloying elements which remained in the solid

solution, slowed down diffusion process and hardened the solid solution. After tempering at 650 °C for one hour 2.2% Cr remained in the solid solution. Subsequent tempering at 500 °C for 10 and 300 hours had little effect on the redistribution of the alloying elements between the carbides and the solid solutions. Such alloying distinguishes favourably the steel EI415 from other steels of similar composition.
There are 5 figures and 1 table.

ALEKSEYENKO, M.F., kand.tekhn.nauk; ANDREYEVA, A.G., inzh.

New 25Kh18N8B2 austenitic steel for nitriding (with summary in English). Stal' 19 no.1:78-81 Ja '59. (MIRA 12:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut aviatsionnykh materialov.
(Steel alloys) (Case hardening)

PHASE I BOOK EXPLOITATION SOV/5305

Moscow. Institut stali

Relaksatsionnyye yavleniya v metallakh i splavakh; trudy Mezhvuzovskogo soveshchaniya (Relaxation Phenomena in Metals and Alloys; Transactions of the Inter-Institute Conference) Moscow, Metallurgizdat, 1960. 326 p.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR and Moskovskiy institut stali imeni I.V. Stalina.

Ed. (Title page): B.N. Finkel'shteyn; Ed. of Publishing House: Ye.I. Levit; Tech. Ed.: A.I. Karasev.

PURPOSE: This collection of articles is intended for personnel in scientific institutions and schools of higher education and for physical metallurgists and physicists specializing in metals. It may also be useful to students of these fields.

COVERAGE: The collection contains results of experimental and theoretical investigations carried out by schools of higher education and scientific research institutions in the field of the relaxation phenomena in metals and alloys. Several articles are devoted to the investigation—by the internal-friction method—of the decomposition of supersaturated solid solutions. Also analyzed are the defects of the crystalline lattice, plastic deformations, high-temperature behavior of alloys, and creep. Problems of the relation between internal friction and temper brittleness, the use of the method of internal friction in the investigation of powder-metallurgy products, and the mechanism of impact fatigue are discussed. The collection also contains articles on the damping characteristics of materials, elastic-after-effect, and the new slow-detection method. No personalities are mentioned. References follow most articles. There are 366 references: 192 Soviet and 174 non-Soviet.

82582

S/148/60/000/006/006/010

18.1150

AUTHORS: Vinarov, S. M., Alekseyenko, M. F., Orekhov, G. N.

TITLE: Heat-Resistance of Austenitic High-Phosphorus Steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1960, No. 6, pp. 106-113

TEXT: There are no literature data available on the effect of phosphorus alloying of complex alloy steels on their mechanical properties, particularly at high temperatures. This effect was determined by short-time and long lasting tests after quench hardening from 1,100°C and aging at 780°C for 16 hrs. Results of tests are given in a series of tables. It was established that alloying of austenitic steel with phosphorus increased the effect of aging and raised considerably the steel strength at room temperature and at 600-700°C. The relativ increase in the ultimate strength and the yield point at high temperatures was greater than at room temperature. Endurance strength also increased considerably. In steel without molybdenum, alloying with phosphorus caused an increase in the ultimate strength at 650°C from 18 -19 to 33 kg/mm^2, i. e. by 65%. In steel containing 0.6-0.7% Mo the strength increased from 23 to 43 kg/mm^2, i. e. by 87%. To raise the heat resistance of complex alloyed austenitic steels

Card 1/2

VINAROV, S.M., doktor tekhn.nauk; ALEKSEYENKO, M.F., kand.tekhn.nauk;
OREKHOV, G.N., inzh.

Nitrided chromium-manganese, high-carbon, stainless steel for work at high temperatures. Trudy MAI no.123:41-44 '60.
(MIRA 13:8)

(Steel, Stainless) (Metals at high temperature)

82720

S/133/60/000/006/002/002

18.7100

AUTHORS: Alekseyenko, M. F., Candidate of Technical Sciences, Orekhov, G. N., Engineer

TITLE: 15Kh2GN2TRA (15Kh2GN2TRA) Type Boron Steel - Substitute for the 12KhN3A (12KhN3A), 12Kh2N4A (12Kh2N4A) and 18KhNVA (18KhNVA) Type Steels

PERIODICAL: Stal', 1960, No. 6, pp. 548-551

TEXT: The chrome-manganese-titanium-boron containing 15Kh2GN2TRA alloy has proved a success when used instead of the case-hardening structural steels with 3-5% Ni content (12KhN3A, 12KhN4A, 18KhNVA, 13H5A=13N5A, 21H5A=21N5A, etc.). The alloy under investigation has the following composition: C 0.12-0.18%; Mn 0.7-1.0%; Si 0.17-0.37%; Cr 1.4-1.8%; Ni 1.4-1.8%; Ti 0.06-0.12%; B 0.001-0.005%; S $\leq$ 0.03%; P $\leq$ 0.03%. First, the alloy was produced without boron, but it was found that by adding 0.001-0.002% of boron to the alloy, the hardenability was raised from 50 mm up to 85 mm without increasing the grain size, as evidently boron is adsorbed at the boundaries of the austenitic particles thus reducing their tendency for growing. As a consequence, the delay of transformation

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15X2TH2TPA (15Kh2GN2TRA) Type Boron Steel - Substitute for the 12XH3A (12KhN3A), 12X2H4A (12Kh2N4A) and 18XHBA (18KhNVA) Type Steels

decreases the critical hardening rate and increases hardenability. The 15Kh2GN2TRA type steel can easily be case-hardened and cyanized, while after these treatments it contains considerably less residual austenite than other types, and moreover, no cold treatment is necessary. It shows less deformation during heating than the steels compared, its cementation can take place in a carburator of lower activity. In spite of the presence of Cr, Ti and B, its critical points are fairly low (A_{c1}=710°-730°C; A_{c3}=780°-830°C) and for this reason hardening can be started already from 800°-850°C. The mechanical properties of this steel after hardening at the temperatures mentioned and tempering at 150°-170°C, are indicated by the following values (according to MTU-ChMTU-5596-56): σ_B 105 kg/mm^2, $\sigma_{0.2}$ 90 kg/mm^2, δ 12%, Ψ 55%, a_k 10 kgm/cm^2, d_B 3.45-3.15 mm. When raising the hardening temperature from 780°C to 850°C the strength indices of the new steel increase, while its plasticity remains unchanged. A further increase in temperature does not affect these values, showing that the boron containing steel can be heated in a wide temperature range. This steel can be applied to products subjected to a high degree of tempering. Even

15X2ГН2ТРА (15Kh2GN2TRA) Type Boron Steel - Substitute for the 12ХН3А (12KhN3A), 12Х2Н4А (12Kh2N4A) and 18ХНВА (18KhNVA) Type Steels

when increasing tempering temperature up to 450°C its strength properties do not change. The dependence of the cementation layer of this steel on the temperature of the process and the holding time is similar to that of steels of the same sort (data of N. K. Sadkov, A. D. Porgova and L. Ya. Kashennik): at higher temperatures and at longer holding times cementation is more intensive. The thickest cementation layer can be obtained at 1,000°-1,050°C. The mechanical properties of the boron steel, at a hardening temperature of 850°C and tempering at 160°C are practically independent of previous cementation (at 900°-1,000°C) and the holding time applied. The torsion tests carried out according to V. V. Chugunov on cylindrical 12KhN3A and 15Kh2GN2TRA steel specimens of 10 mm diameter showed that at an increasing temperature of cementation the plastic properties of the case-hardened layer deteriorate but in spite of this, the torsion test results are 10%-12% better for boron steel than for the 12KhN3A type. The microstructural analyses of both steels show that due to its titanium content there is no growth of the grains in the boron steel. Tests were also made to determine the stress conditions and the carbon content, the sensitivity against notches and its toughness.

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82720

S/133/60/000/006/002/002

15X2ГН2ТРА (15Kh2GN2TRA) Type Boron Steel - Substitute for the 12ХН3А (12KhN3A), 12Х2Н4А (12Kh2N4A) and 18ХНВА (18KhNVA) Type Steels

Flaking, however, is a drawback of boron steels, but it was found that by magnetic mixing in 25-ton baths and by blowing argon through the bath (2-3m^3/ton of steel) the hydrogen content of the metal could be decreased from 8 to 4-5cm^3/100g and consequently flake forming was decreased. There are 3 figures and 3 tables.

Card 4/4

18.1130 1045, 1454, 1496,

89971

S/133/61/000/003/011/014
A054/A033

AUTHORS: Odesskiy, D. A., Candidate of Technical Sciences, and Alekseyenko, M. F., Candidate of Technical Sciences

TITLE: High-chromium steels, containing titanium and nitrogen, replacing 1X18H9 (1Kh18N9) and 1X18H9T (1Kh18N9T) steels

PERIODICAL: Stal', no. 3, 1961, 262 - 266

TEXT: As a result of the rising demand for heatresistant and stainless steels, the nickel supply is apparently insufficient to cover present requirments. In the Soviet Union tests are being made to replace nickel-containing steels by high-chromium and chromium-nitrogen steels of the X17T (Kh17T)/ЭЖ645 (EI645), X28T (Kh28T)/ЭЖ457 (EI457) and x28N (Kh28N)/ЭЖ657 (EI657) grades. The Kh17T steel contain 0.4 % nitrogen, 17.33% chromium and 0.46 % titanium. They have satisfactory mechanical and technological properties. Their corrosion resistance was tested by exposing them for 3 months at varying atmospheric conditions on house roofs. Moreover their salt-water resistance was tested in a fog-chamber, with 96-98 % moisture. The structure of these steels consists of ferrite

High-chromium steels, containing ....

with carbide inclusions. Having a one-phase structure, their mechanical properties cannot be modified by heat treatment, only by forging, however, during this process they lose their ductility. During fusion welding the ferrite grains increase, causing a considerable brittleness in the welding zone and increased sensitivity to impact loads. For these reasons the Kh17T steels can be used for products that have not to be welded or, when welding is indispensable, without fusion. The Kh28T steel (EI457) contains 25.05 % chromium, 0.47 % titanium and no nickel. It displays good mechanical properties at room temperature, or, at short-term loads, below 500°C, it has a low linear elongation coefficient, and can be processed under pressure in both cold and hot condition. It shows high resistance to various acidic substances (lactic acid, phosphorus acid, acetic acid) as well as to chemicals used in the textile industry. The steel does not show a tendency to develop intercrystalline corrosion. It can be classified as a highly heat-resistant steel, as its losses due to gaseous corrosion are not more than 1.0 g/m^2 h. It can easily be spot- or seam-welded, but as the Kh17T type steel it is also unsuitable for fusion-welding. The Kh28T and 1Kh18N9T steels have the following coefficients

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of linear expansion (numerator-denominator):

Temperature, °C ..	100-200	300-400	500-600	700-800
$10^6\alpha$	10.40 / 15.95	12.48 / 18.74	12.13 / 21.23	16.11 / 25.53

while the coefficients of heat conductivity for the same steels (numerator--denominator) are the following:

Temperature, °C ...	200	400	600	800	900
λ, cal/cm sec °C ..	0.059 / 0.054	0.0607 / 0.056	0.065 / 0.060	0.069 / 0.060	0.0755 / 0.0725

However, in spite of these satisfactory mechanical properties and workability, heat and corrosion resistance, the Kh17T and Kh28T steels cannot entirely replace the nickel-steels, because of their unsatisfactory behaviour under welding. In order to make full use of the good qualities of ferrite type chromium steels - restricting at the same time the growth of ferrite grains during heating, causing brittleness - a new steel composition has

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been developed by the authors, alloyed with a small amount of nitrogen (0.18 - 0.25 %) and containing 1.0 - 2.0 % nickel. The new Kh28N (EI657) grade steel has the same mechanical properties at room and high temperatures and the same heat resistance as nickel steels, while its coefficient of linear expansion is even better than that of the 1Kh18N9T steel. The mechanical characteristics of Kh28N nitrogen-containing steel are compiled in table 2. Welding tests on samples 1.5 mm thick show that during fusion welding the ferrite grains also grow to some extent, but due to the development of austenite in this steel, the growth of ferrite grains is smaller than in the Kh28T and Kh17T steels. During the welding process austenite separates and forms a coating around the ferrite grains, restricting their growth. Owing to the limited size of ferrite grains and the development of austenite, the nitrogen-containing Kh28N steel has a high ductility. It also proved resistant to various aggressive agents, nitric acid, acetic acid, phosphorus acid, aqueous solution of sodium salt of fatty acid with sulfuric acid, moreover to various aggressive media and chemicals used in the leather industry as well as in the bakery trade and to media applied in copper and zinc-electrolytic plants. The heat resistance of the new steel was tested at temperatures of up to 900 - 1000°C in an electrofurnace

PHASE I BOOK EXPLOITATION SOV/5989

Alekseyenko, Mikhail Fedorovich

Struktura i svoystva teplostoykikh konstruktsionnykh i nerzhaveyushchikh staley (Structure and Properties of Heat-Resistant Structural and Stainless Steels) Moscow, Oborongiz, 1962. 215 p. 4550 copies printed.

Reviewer: S. M. Vinarov, Doctor of Technical Sciences, Professor; Ed.: M. A. Bochvar, Engineer; Ed. of Publishing House: T. M. Kunyavskaya; Tech. Ed.: V. I. Oreshkina; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE: This book is intended for scientific research workers and technical personnel of various branches of the machine-building industry which use heat-resistant structural and stainless steels.

COVERAGE: The book presents information on the chemical compositions, heat treatment, and mechanical properties (at room and elevated temperatures) of structural and stainless steels which are widely used or have recently been developed. The following are discussed: properties of low-nickel

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and nickelless steels which have been recommended as replacements for high-nickel steels, the chemical compositions and properties of intermediate-type (austenitic-martensitic) stainless steels, conditions of nitriding and carburizing stainless steels, and the properties of these steels at various temperatures. The author thanks G. N. Orekhov, L. S. Fedotova, A. G. Andreyeva, V. I. Bykova, Ye. L. Bushmanova, S. T. Kishkin, S. M. Vinarov, S. Z. Bokshteyn, B. G. Livshits, I. Ye. Kontorovich, Ya. M. Potak, N. F. Lashko, N. M. Popova, V. V. Sachkov, L. S. Popova, V. V. Chugunov, S. V. Lepnev, V. A. Belyakova, N. N. Mel'nikova, and L. G. Kozyreva. There are no references.

TABLE OF CONTENTS:

AIEKSEYENKO, M.F.; BANAS, P.S.; BOBKOV, T.M.; NATAPOV, B.S.; RYABTSEV, S.I.; SKLYAROV, P.I.; FRANTSOV, V.P.; YUDOVICH, S.Z.; PRONIN, V.Ye.

DL-1 stainless steel. Stal' 23 no.2:159-162 F '63. (MIRA 16:2)
(Steel, Stainless)

AID Nr. 977-7 27 May

NEW STEEL FOR CARBURIZING (USSR)

Orekhov, G. N., M. F. Alekseyenko, Ye. L. Bushmanova, and V. M. Doronin. Vestnik mashinostroyeniya, no. 3, Mar 1963, 42-44.
S/122/63/000/003/006/008

The ЭП176 steel [0.11-0.17% C, 0.65-0.95% Mn, 0.40-0.80% Si, 1.3-1.7% Cr, 1.6-2.0% Ni, 0.20-0.35% Mo, or 0.60-1.0% W], developed at the Elektrostal' Plant, is intended as a substitute for 12XH3A, 12X2H4A, and other high-nickel steels. It is suitable for carburizing and cyaniding. Carbon concentration in a carburized (at 920°C for 12 hrs) layer reaches 0.8 to 1.2%, and the surface hardness in the heat-treated condition (oil quenching from 820-850°C and tempering at 170-200°C) exceeds 58 RC. Sub-zero treatment increases surface hardness to more than 60 RC. The mechanical properties of ЭП176 are identical to those of the 12X2H4A steel (tensile strength, 100 kg/mm²; yield point, 80 kg/mm²; elongation, 12%; reduction of area, 55%; impact strength, 10 kg·m/cm²). The microstructure of the carburized layer is satisfactory. No residual austenite or carbide network is present. The ЭП176 possesses a low notch sensitivity. [AZ]

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AID Nr. 905-2 7 June

AUSFORMING OF CHROMIUM STEELS (USSR)

Kubyshkina, T. D., L. M. Pevzner, L. S. Fedotova, and M. F. Alekseyenko, Metallovedeniye i termicheskaya obrabotka metallov, no. 4, Apr 1963, 32-35.
S/129/63/000/004/008/014

The effect of ausforming on mechanical properties of complex alloyed steels 1Х12НВМФА or ЭИ961 (0.12% C, 11.3% Cr, 1.77% Ni, 1.60% W, 0.43% Mo, 0.27% V) and ВНС-6 (0.25% C, 12.3% Cr, 1.64% Ni, 1.74% W, 1.96% Mo, 0.23% V) was investigated. Steel specimens 90 x 35 x 22 mm were austenitized at 1020°C, furnace-cooled to 550°C, rolled with 90% reduction to a thickness of 2.5 mm, and immediately oil-quenched. The table shows tensile strength σ_b, yield strength $\sigma_{0.2}$, elongation δ, and notch toughness a_k of ausformed and conventionally hardened steels in as-quenched condition and after tempering at 500°C for 2 hrs.

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AID Nr. 985-2 7 June

AUSFORMING OF CHROMIUM STEELS [Cont'd] S/129/63/000/004/008/014

Steel	Condition	σ_b, kg/mm²	$\sigma_{0,2}$, kg/mm²	δ, %	a_k, kg-m/cm²
1X12HBMΦA	Ausformed	180.5	170.0	15.2	6.4
	Ausformed and tempered	173.5	167.0	13.9	8.6
	Quench hardened	147.0	127.5	15.8	
	Quench hardened and tempered	142.0	131.5	13.2	
BHC-6	Ausformed	231.5	150.5	10.9	4.1
	Ausformed and tempered	220.5	171.0	13.5	6.8
	Quench hardened	191.0	151.5	11.5	4.5
	Quench hardened and tempered	183.5	150.5	11.5	3.4

Thus, compared to conventional hardening, ausforming increases tensile and yield strength by approximately 20% without lowering ductility. It also makes

AID Nr. 985-2 7 June

AUSFORMING OF CHROMIUM STEELS [Cont'd] S/129/63/000/004/008/014

the steel structure more stable; the softening of ausformed steels begins at temperatures well over 500°C. Both steels after conventional hardening are susceptible to temper brittleness; for example, tempering at 400-500°C lowers the notch toughness of BHC-6 steel to 2.5-3.0 kgm/cm^2. In the ausformed BHC-6 steel, however, notch toughness increases steadily with increasing tempering temperature up to 7 kgm/cm^2 at 500°C. Another special advantage of ausformed steels is high notch toughness at subzero temperatures; BHC-6 ausformed and tempered at 500°C has an average notch toughness at -70 to -196°C of over 7 and 4.0 kgm/cm^2, respectively. In conventionally hardened steel, notch toughness dropped to 1-1.5 kgm/cm^2 at -70°C. [WW]

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