"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

L 31867-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AT6013555 (A) SOURCE CODE: UR/0000/65/000/000/0081/0087

AUTHOR: Pchelkina, M. A.

ORG: Moscow Highway Institute (Moskovskiy avtodorozhnyi institut)

TITLE: Gas-phase boration of high alloy steels

SOURCE: AN UkrSSR. Institut problem materialovedeniya. Vysokotemperaturnyye neorganicheskiye soyedineniya (High temperature inorganic compounds). Kiev, Naukova dumka, 1965, 81-87

TOPIC TAGS: boron containing alloy, boron steel, high quality steel, steel microstructure

ABSTRACT: Gas-phase boration of a series of commercial grade high alloy steels was studied in order to examine the influence of individual steel components on composition of the upper steel layer, mechanism of its formation, and depth and properties of the borated layer. The steel samples contained 0.27-0.51% C, 1.06-25.50% Cr, 2.17-12.82% Ni, 2.05-2.30% W, 1.95-7.90% Mn, 0.60-1.54% Nb, and 1.9-3.5% Ti. The boration was effected by treatment of steel samples with a $B_2H_6+H_2$ mixture ($B_2H_6:H_2=1:25$) at 950°C for 6 hours. All steels except high-chromium ones exhibited austenite structure after boration. The borated high-chromium steels mixed α- and β-phase structures. The effect of chromium content on depth of the borated layer is shown in figure 1. The re-

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L 14450-66 EWT(m)/EWP(j) WW/RM (N)
ACC NR: AP6002965 SOURCE CODE: UR/0286/65/000/024/0134/0134

INVENTOR: Antonov, I. S.; Galaktionova, N. A.; Pchelkina, M. A.

ORG: none

TITLE: A method for gas boronizing metal surfaces. Class 48, No. 177254

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 134

TOPIC TAGS: surface hardening, metal coating, boron, diborane

ABSTRACT: This Author's Certificate introduces a method for gas boronizing metal surfaces by high temperature treatment in a gas mixture based on diborane. A diboraneargon mixture is used to produce a layer which is tightly bound to the substrate and resistant to mechanical shocks.

SUB CODE: 11/13/ SUBM DATE: 11Oct63

UDC: 621.785.5

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

L 8649-65 EPA(s)-2/EWT(m)/EPF(n)-2/EPR/EWP(b) Pad/Pe-4/Pt-10/Pu-4
ASD(m)-3 MJW/JD/HW/JG/AT/WH
ACCESSION NR: AT4043507 S/3107/64/000/003/0042/0063

AUTHOR: Lakhtin, Yu. M. (Doctor of technical sciences, Professor); Pchelkina, M. A. (Engineer)

TITLE: Mechanism of the formation and properties of a bonded layer on iron- and nickel-base alloys

SOURCE: Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promy*shlennosti. Sektsiya metallovedeniya i termicheskoy obrabotki. Metallovedeniye i termicheskaya obrabotka, no. 3, 1964, 42-63

TOPIC TAGS: boriding, nickel alloy boriding, nickel boriding, stainless steel boriding, heat resistant steel boriding, boride layer

ABSTRACT: A study has been made of the effect of alloying components on the phase composition, formation mechanism, depth, and properties of the borided layer of medium carbon (0.38--0.51%C)

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L 8619-65

ACCESSION NR: AT4043507

steel with 1.06--25.5% Cr and 2--12.8% Ni, high-chromium steels with 15 and 45% Cr, chromium-nickel stainless and heat-resistant steels, and nickel-base alloys with 16--27% Cr. The data obtained showed that in medium carbon steels, chromium, especially in amounts up to 3%, decreases the depth of the borided layer, but it increases the microhardness of the borided layer from 1290 at 0.06% Cr to 1850--2290 at 13--19.5% Cr. Nickel, in amounts up to 4--6%, decreases the depth and the hardness of the borided layer, with no effect for further increases in nickel content. Nickel in high-chromium steel (15% Cr) somewhat increases the depth of the borided layer, 2.2% tungsten decreases it, and manganese in amounts up to 8% has no effect on the depth or the composition of the borided layer. In Kh18N9 steel (AISI-304), niobium and particularly titanium sharply decrease the depth and the hardness of the borided layer. In other stainless and heat-resistant steels, the depth of the borided layer increases with increasing temperature and time of boriding. The borided layer consists of iron borides with part of the iron atoms replaced by those of the alloy elements. Boriding of nickel and nickel-base alloys in a diborane-hydrogen mixture ($B_2H_6+H_2$ in a ratio of 1:25) for 6 hr at 950C produced a continuous boride

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ACCESSION NR: AT4043507

layer up to 70 μ in depth with a microhardness of 1780--2010. Orig. art. has: 23 figures and 6 tables.

ASSOCIATION: none

SUBMITTED: 00 ATD PRESS: 3111 ENCL: 00

SUB CODE: MM NO REF SOV: 011 OTHER: 011

Card 3/3

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

NIKITIN, V.S.; MAL'TSEV, A.A.; PCHELKINA, M.A.; VINOGRADOVA, Z.F.

Infrared spectrum of diboron tetrahydroxide and boron monoxide.
Vest. Mosk. un. Ser. 2: Khim. 18 no.3:14-17 My-Je '63.
(MIRA 16:6)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Boron oxides—Absorption spectra)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

L 12592-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS ASD Ps-4/Pr-4/Pc-4
RM/WW

ACCESSION NR: AP3001601 S/0189/63/000/003/0014/0017

AUTHOR: Nikitin, V. S.; Mal'tsev, A. A.; Pchelkina, M. A.; Vinogradova, Z. F.

TITLE: Infrared spectrum of diborontetrahydroxide B sub 2 (OH) sub 4 and boronmonoxide (BO) sub x

SOURCE: Moscow. Universitet. Vestnik. Seriya 2. Khimiya, no. 3, 1963, 14-17

TOPIC TAGS: infrared spectrum, diborontetrahydroxide, boronmonoxide, polymer of boron

ABSTRACT: The study was undertaken to ascertain the frequencies characteristic for the B—B bond in infrared spectra of diborontetrahydroxide and boronmonoxide. A white modification of boronmonoxide was prepared by heating diborontetrahydroxide to 250-270C in a vacuum, and a brown modification obtained by further heating to 600-650C. By hydrolysis of the white boronmonoxide with heavy water a deuterium-substituted diborontetrahydroxide was obtained, which served to pinpoint the absorption lines of diborontetrahydroxide. The samples were suspended in vaseline oil or in hexachlorobutadiene and subjected to infrared spectroscopy. For diborontetrahydroxide the line at 1150 cm sup -1 was found to represent the B—B valency oscillation. The wide absorption lines of the white and brown modifica-

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ACCESSION NR: AP3001601

tions of boronmonoxide lead to the assumption that both are polymers. The similarity of the spectrum of the brown modification with that of boric anhydride indicates that the brown boronmonoxide is a mixture of boric anhydride with boron, which was confirmed by experiment. Orig. art. has: 5 formulas, 2 charts, and 1 table.

ASSOCIATION: Moskovskiy universitet, kafedra fizicheskoy khimii (Moscow University, Department of Physical Chemistry)

SUBMITTED: 27Dec62 DATE ACQ: 09Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 000 OTHER: 016

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

LAKHTIN, Yu. M., doktor tekhn.nauk, prof.; PCHELKINA, M.A., inzh.

Boron hydride coatings of high alloy steels. Metalloved i term. obr. met. no.3:27-30 Mr '61. (MIRA 14:6)

1. Moskovskiy avtomobil'no-dorozhnyy institut.
(Boron hydride)
(Case hardening)

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27624
S/145/61/000/002/004/005
D214/D303

1.1800

AUTHORS: Lakhtin, Yu.M., Doctor of Technical Sciences, Professor, and Pchelkina, M.A., Aspirant

TITLE: Gas boranizing of austenitic steel, ЭИ612 (EI612)

PERIODICAL: Izvestiya vysshykh uchebnykh zavedeniy. Mashinostroyeniye, no. 2, 1961, 171-174

TEXT: Austenitic steel, EI612, is used for producing parts that operate in steam at high temperatures and pressures. Its chemical composition in percent is: C - 0.06; Si - 0.18; Mn - 1.02; S - 0.09; P - 0.1; Cr - 15.05; Ni - 35; W - 3.39 and Ti - 1.32. Experiments were carried out by treating it in a mixture of diborane (B_2H_6) and hydrogen in a ratio of 1:25, as reported by A.F. Zhigach, I.S. Antonov and M.A. Pchelkina and others (Ref. 3: Metallovedeniye i termicheskaya obrabotka, no. 4, 1959) and M.A. Pchelkina, Yu.M. Lakhtin (Ref. 4: Sb. "Termicheskaya obrabotka", Trudy sektsii metallovedeniya i termicheskoy obrabotki, NTO Mashprom, Mashgiz, 1960). Dibor-

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Gas boranizing... S/145/61/000/002/004/005
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are is decomposed above 500°. The arrangement for the gas boranizing is then shown and described. Optimum conditions were studied with temperatures varying between 850-1050°. The effect of the duration of the saturation process on depth and hardness of diffuse layer were also considered. Results are plotted in Figs. 2 and 3. They demonstrate that steel EI612 can be successfully hardened by boranizing. As expected, the increase of temperature and duration of treatment result in the greater depth of diffused layer. It should be noted that EI612 steel can be boranized at the relatively low temperature of 850°. The character of the structure of the diffused layer in EI612 differs from that obtained in iron, carbon and low-alloyed steels. It consists of a dense layer of solid borides with an austenitic-borides zone underneath. The boride layer of EI612 steel probably consists of two diffusion zones: at the surface - borides of the type of (Fe, Ni, Cr)B, and deeper - type $(Fe, Ni, Cr)_2B$. The kinetics of the boranized layer formation in iron and low-alloyed steels which include EI612 differ. After reaching limit boron saturation in $\gamma(\alpha)$ iron, conditions are created at the

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surface to form stable borides Fe_2B at the start, and then FeB. This leads to a growth column type structure of a olid boride layer. Formation of two-phase diffusion layer at saturation temperature is improbable. Austenitic borides (two-phase layer) may be produced as a result of the predominant diffusion of boron along the boundary of the grain. When boride forming alloying elements (Ni, Cr, etc) are present, then at saturation temperature a single phase layer is produced of a saturated hard solution of γ (α) and borides. A layer in an alloyed steel, such as EI612 is formed in the following manner. Borides are formed as separate sections within the hard solution. They are made gradually also inside the layer, and the austenitic borides zone spreads to a certain depth. With the growth of borides there is a possibility of recrystallization. The hardness of (Fe, Ni, Cr)B is greater than that of $(Fe, Ni, Cr)_2B$, and it decreases during the passage into the austenitic boride zone. Hardness of this layer changes little during a long heating at 650-700°. A.V. Ratner and L.G. Leonova at the Vsesoyuznyy nauchno-issledovatel'skiy institut (All-Union Scientific and Research Insti-

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Gas boranizing...

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tute) demonstrated that the boranized layer in EI612 steel has a high erosion resistance even after long heating. The above method is, therefore, considered as the most promising process for hardening components which operate in superheated steam. There are 6 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Moskovskiy avtomobil'no-dorozhnyy institut (Moscow Automobile Highway Institute)

SUBMITTED: June 13, 1960

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

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S/123/61/000/012/021/042
A004/A101

1.1800 2808 2208 1521

AUTHORS: Lakhtin, Yu. M.; Pohelkina, M. A.

TITLE: Gaseous boriding of steel

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 12, 1961, 84, abstract 12B600 (V sb. "Metallovedeniye i term. obrabotka metallov". [Tr. Sektsii metalloved. i term. obrabotki metallov. Tsentr. pravl. Nauchno-tekhn. o-va mashinostroit. prom-sti, no. 2] Moscow, 1960, 92-105)

TEXT: The authors investigate the boriding process of commercial iron and carbon steel during the thermal decomposition of diborane. Boriding was carried out with induction heating and in the muffle furnace with external heating. The gaseous boriding in a B_2H_6-H_2 medium makes it possible to carry out this process at 650-850°C. In some cases it is expedient to effect a short-term boriding (2-3 hours) with subsequent diffusion holding for some hours without feeding the boriding gaseous mixture, which ensures a high compactness of the diffusion layer. The diffusion of boron in the α-phase proceeds easier than in the γ-phase. Carbon inhibits the growth of the boride phases. The saturation of

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKINA, M.A.

PHASE I BOOK EXPLOITATION SOV/5457

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Sektsiya metallovedeniya i termicheskoy obrabotki metallov.

Metallovedeniye i termicheskaya obrabotka metallov; trudy Sektsii metallovedeniya i termicheskoy obrabotki metallov (Physical Metallurgy and Heat Treatment of Metals; Transactions of the Section of Physical Metallurgy and Heat Treatment of Metals) no. 2. Moscow, Mashgiz, 1960. 242 p. 6,000 copies printed.

Sponsoring Agency: Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Tsentral'noye pravleniye.

Editorial Board: G. I. Pogodin-Alekseyev, Yu. A. Geller, A. G. Rakhshtadt, and G. K. Shreyber; Ed. of Publishing House: I. I. Lesnichenko; Tech. Ed.: B. I. Model'; Managing Ed. for Literature on Metalworking and Machine-Tool Making: V. I. Mitin.

PURPOSE: This collection of articles is intended for metallurgists, mechanical engineers, and scientific research workers.

COVERAGE: The collection contains articles describing results of research conducted by members of NTO (Scientific Technical Society) of the machine-building industry in the field of physical metallurgy, and in the heat treatment of steel, cast iron, and nonferrous metals and alloys. No personalities are mentioned. Most of articles are accompanied by Soviet and non-Soviet references and contain conclusions drawn from investigations.

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Constructional Alloy Steels 84

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S/137/61/000/005/027/060
A006/A106

AUTHORS: Lakhtin, Yu.M., Ponelkina, M.A.

TITLE: Gas boronizing of steel

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 5, 1961, 37-38, abstract 5D334 (Tr. Sektsii metalloved. i term. obrabotki metallov. Tsentr. pravl. Nauchno-tekhn. o-va mashinostroit. prom-sti, no. 2), Moscow, 1960, 92 - 105)

TEXT: The authors discuss studies on the boronizing of steel, and describe results of investigating the boronizing process during the thermal decomposition of diborane (B_2H_6). At room temperature gaseous B_2H_6 decomposes, accompanied by the formation of higher B and H hydrides. The rate of pyrolysis decreases when adding H_2 and remains unchanged when an equivalent amount of N_2 is added. A description is made of the reaction of B_2H_6 pyrolysis and of the scheme of installations for gas boronizing when heating with high frequency current in a muffle furnace. To inhibit the decomposition reaction and reduce the amount of B in the gaseous phase N, Ar, CO and H are employed as rarefying gases. Boronizing with diborane in N_2 atmosphere did not yield positive results; in CO and Ar atmosphere

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diffusion saturation of B was not observed. Best results were obtained when rare fying with H_2. The $B_2H_6:H_2$ ratio varied within 1/25 to 1/150. Fe specimens (0.006 % C) and 45 St steel specimens were subjected to boronizing at 550, 650, 750, 800, 900, 950 and 1,050°C for 2 hours; $B_2H_6:H_2$ was 1/25, the feed rate was 50 liters/hour. Kinetics of the formation of a boronized layer is analyzed. The possibility is shown of boronizing in B_2H_6-H_2 at relatively low temperatures (650 - 850°C). It is recommended to perform short-time boronizing (2 - 3 hours) with subsequent diffusion holding for 2 - 5 hours, without the supply of a boronizing gas mixture. This assures a greater density of the diffusion layer. The density of the boronized layer decreases with higher boronizing temperatures. Diffusion of B in the α-phase proceeds easier than in the γ-phase. C inhibits the growth of boride phases. Saturation of the steel with B is accompanied by the expelling of C from the diffusion layer into the core. There are 25 references.

A. B.

[Abstracter's note: Complete translation]

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E073/E335

AUTHORS: Lakhtin Yu.M., Doctor of Technical Sciences, Professor and Pchelkina, M.A., Engineer

TITLE: Borating High-alloy Steels

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1961, No. 3, pp. 27 - 30 and 35

TEXT: For the purpose of increasing the hardness, wear-resistance, resistance-to-erosion and abrasion at elevated temperatures of high-alloy stainless and high-temperature steels, the authors investigated the use of boron saturation in the gaseous phase. In preliminary experiments the influence of chromium and nickel on the hardness, depth and phase composition of the boron-saturated layer was studied. Boron saturation was effected by means of the mixture (B_2H_6:H_2 = 1:25) at 950 °C for 6 hours (Pchelkina, Lakhtin - Ref. 1). Following that the specimens were held at the saturation temperature for 4 hours. At the saturation temperature high-chromium steels had a mixed structure, consisting of γ and α phases. All the other steels had an austenitic

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Borating ....

structure. Fig. 1 shows the influence of the chromium content (%) on the depth (μ) of the boron-saturated layer (solid-line curves - total thickness of the layer; dashed-line curves - thickness of the dense boride layer). Fig. 2 shows the same for nickel. The hardness of the boron-saturated layer increases somewhat with increasing chromium content. For instance it amounts to 1 290 H_μ for steel with 0.38% C and 1.06% Cr and to 1 850 H_μ for steel containing 7.56% Cr. Typical microstructure photographs are also included. Introduction of up to 8% Mn into chromium steel (0.32% C, 15% Cr) has practically no effect on the depth and structure of the boron-saturated layer. Fig. 5 shows the influence of Ti on the depth of the boron-saturated layer of steel (0.15% C, 18.39% Cr, 8.4% Ni, 2.05% W) (continuous-line curve - total depth of the layer; dashed-line curve - depth of the dense boride layer). The lower graph gives the depth of the layer, μ and the top graph gives the hardness, H_μ. Fig. 6 shows the influence of niobium for the steel containing

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Borating ....

0.27% C, 17.5% Cr, 8.1% Ni and 2.3% W (the notations are the same as for Fig. 5). It can be seen that niobium and particularly titanium bring about a sharp decrease in the depth and hardness of the boron-saturated layer for 18/8 steels. Numerical results for a number of boron-saturation experiments of standard stainless and heat-resistant steels are given in the table. Fig. 7 shows the hardness H_v along the depth (in μ) of the borated layer for the steel [illegible] (EI612); the same picture was observed for other austenitic steels. Saturation of the steels with boron is accompanied by carbon impoverishment of the austenite which is adjacent to the boride phase. The carbon diffuses away from the boride layer towards the core. Thus, at the diffusion temperature there will be in the transition austenite-boride zone in addition to the boride phase, two γ solid solid solutions, one with a low and the other with a high carbon concentration. X-ray investigations of the phase composition of borated layers of high-chromium and high-nickel steels has shown that these layers consist of boron carbides in which a part of the iron atoms

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is substituted by the alloying elements. The results have shown that high-alloy steels including austenitic-class steels, can be gas-borated. The borated layer of high-alloy steels has a high hardness and wear-resistance. There are 9 figures, 1 table and 4 references: 3 Soviet and 1 non-Soviet.

ASSOCIATION: Moskovskiy avtomobil'no-dorozhnyy institut (Moscow Motor-road Institute)

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Borating ....

S/129/61/000/003/005/011
E073/E335

Table:

1 Марка стали	Режим борирования 2 Температура в °С 3	Время в час. 4	Глубина слоя в мк 3 Борная 6	Общая глубина 7	Микротвердость (на поверхности) 8
1X18H9T (1Kh18N9T)	950 1100	6 2	25 20	100 120	2200 2200
X18H12M3T (Kh18N12M3T)	900	4	20	100	2290
X18H25C2 (Kh18N25S2)	900 1100	4 2	25 70	115 150	2290 2200
X23H18 (Kh23N18)	950 1100	6 2	15 20	130 130	2190 2190
X25H20C2 (Kh25N20S2)	950	6	15	70	1890
X25H25T (Kh25N25T)	950	6	12	130	2090
X15H37B3T (Kh15N37V3T)	850 850 850 850 950 1050	2 4 6 10 2 2	15 25 30 45 30 50	60 75 125 160 80 120	2190 2190 2190 2190 2190 2190

Key to table:

1 - Grade of steel;
2 - Borating conditions;
3 - Layer depth, μ;
4 - Temperature, °C;
5 - time, hours
6 - Borides;
7 - Total depth
8 - Microhardness (at the surface)

Card 5/8

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20260

S/129/61/000/003/005/011
E073/E335

Borating ....

Fig. 1:

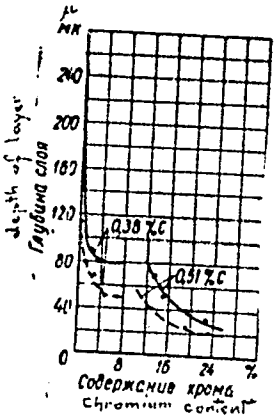
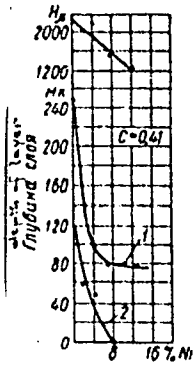


Fig. 2:



Card 6/8

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

20260
S/129/61/000/003/005/011
E073/E335

Borating ....

Fig. 5:

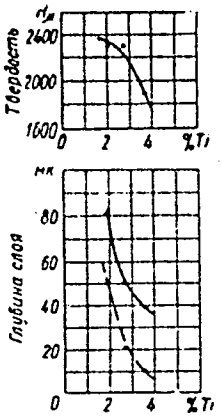
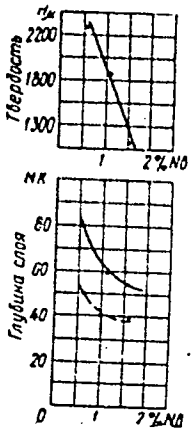


Fig. 6:



Card 7/8

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

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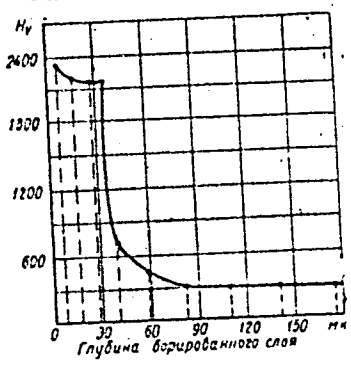
E073/E335

Borating ....

Fig. 7:



Card 8/8

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PUHELKINA, M.A., inzh.; LAKHTIN, Yu.M., doktor tekhn.nauk, prof.

Gaseous boron treatment in an atmosphere of boron trichloride. Metalloved. i term obr. met. no.7:40-42 Jl'60. (MIRA 13:10)
(Boron steel) (Boron chloride)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKINA, M.A.; LAKHTIN, Yu.M.

Gaseous boron diffusion in steel. Izv.vys.ucheb.zav.; chern.met. no.7:163-170 '60. (MIRA 13:8)

1. Moskovskiy avtomobil'no-dorozhnyy institut.
(Diffusion coatings)
(Boron)
(Steel--Hardening)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

83292

2308 only 18.7500

S/148/60/000/007/013/015
A161/A029

AUTHORS: Pchelkina, M.A.; Lakhtin, Yu.M.

TITLE: Boration of Steel from Gas

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1960, Nr 7, pp 163-170

TEXT: Saturation of steel with boron from gas was tried before /Ref 1-5/. The purpose of the special investigation described here was to find optimum conditions for the formation of a high-quality diffusion layer in steel at thermic decomposition of diborane (B_2H_6-H_2). Boration was tried with induction heating of specimens and in an externally heated reactor container, into which diborane was fed through a rheometer and water-cooled nozzles (to prevent pyrolysis before reaching the container.) The installation is described and illustrated (Fig. 1). Pure diborane could not be used because of heavy boron deposits, and another gas was added - nitrogen, argon, carbon monoxide or hydrogen. Hydrogen showed the best results, at the ratio B_2H_6:H_2 of 1:25 to 1:100, and a flow of 75-100 liter /hr. Microphotographs of diffusion layers obtained are included. The

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83292

S/148/60/000/007/013/015
A161/A029

Boration of Steel from Gas

boride phase spread in the diffusion direction very unevenly with formation of specific needle-like crystallites (Figure 2). On carbon steel, redistribution of carbon took place with concentration under the diffusion layer (Figure 6). It was concluded that the method is practically applicable, and a relatively low temperature (650-850°C) is needed, which is important. In some cases brief boration (2-3 hours) will be expedient, with subsequent diffusion soaking for several hours without more gas feed, which gives a more sound diffusion layer. The higher the process temperature the less sound is the borated layer. It was stated that the kinetics of the layer formation followed the general law of multiphase diffusion layer formation. Boron diffused readier in alpha-phase than in gamma-phase. Carbon inhibited the growth of the boride phases, and saturation of steel with boron was accompanied by displacement of carbon from the diffusion layer and formation of a high-carbon zone directly under the borated layer. There are 7 figures and 6 references: 3 are Soviet, 2 English and 1 German.

ASSOCIATION: Moskovskiy avtomobil'no-dorozhnyy institut (Moscow Motor

Card 2/3

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

83292

Boration of Steel from Gas

S/148/60/000/007/013/015
A161/A029

Vehicle and Highway Institute)

PRESENTED: June 13, 1959

Card 3/3

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKINA, M.A.

81822

S/129/60/000/07/008/013
E193/E235

18.7100

AUTHORS: Pchelkina, M. A., Engineer and Lakhtin, Yu. M., Doctor of Technical Sciences, Professor

TITLE: Application of Boron Trichloride in the Boride Process

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1960, No. 7, pp. 40-42 + 1 plate

TEXT: The results of experiments, carried out on technical iron and steels 20, 40, and U12, heated in the atmosphere of $BCl_3 + H_2$ at temperatures between 750 and 950°C, showed that this gaseous medium can be successfully used in case-hardening of steel by the boride process. The optimum results were obtained under the following conditions: temperature - 850°C; duration of treatment - 3 to 6 h; BCl_3/H_2 ratio - approximately 0.05. Under these conditions, a surface layer, 150 microns thick, consisting of FeB and Fe_2B was produced, the hardness of these two constituents being 2340 to 1890 and 1680 to 1290 kg/mm^2, respectively. With increasing carbon content in the steel, the proportion of FeB in the surface layer decreased, and hardness of both FeB and FeB_2 was reduced. There are 5 figures and 4 references: 2 Soviet, 1 English and 1 German.

Card 1/1

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

SOV/129-59-4-9/17

AUTHORS: Dr. Chem.Sc. Zhigach, A.F., Cand.Tech.Sci. Antonov, I.S., Engineers Pchelkina, M.A., Yukin, G.I., Dobrodeyev, A.S., and Matveyev, V.N.

TITLE: Surface Saturation of Steel with Boron from a Gaseous Medium (Poverkhnostnoye nasyshcheniye stali borom iz gazovoy sredy)

PERIODICAL: Metallovedeniye i Termicheskaya Obrabotka Metallov, 1959, Nr 4, pp 45-47 + 3 plates (USSR)

ABSTRACT: The authors of this paper investigated exhaustively the problem of borating of metallic surfaces by B_2H_6 for the purpose of determining optimal conditions of obtaining layers of high quality. The experiments and the experimental apparatus are briefly described. The possibility was established of borating from the gaseous phase, using as a circulation medium a mixture of B_2H_6 and hydrogen. The best results were obtained with the following regime: borating temperature 800 - 850°C; process duration 4 - 5 hours; ratio of the gas mixture $B_2H_6:H_2$ = 1:75; gas flow rate 75 - 100 litres/hour.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

SOV/129-59-4-9/17

Surface Saturation of Steel with Boron from a Gaseous Medium

Under such conditions a 200 micron thick borated layer of a high hardness is obtained. The microhardness of the layer at the surface reaches the value of 3000. There are 9 figures and 6 references, 1 of which is Soviet, 1 German, 4 English.

Card 2/2

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

REZNIK, B.Ye.; BEDNYAK, N.A.; PCHELKINA, M.V.

Kinetics of the reduction of the tiocyanato complex of iron in the presence of copper ions. Izv.vys.ucheb.zav.;khim. i khim.tekh. 6 no.2:209-211 '63. (MIRA 16:9)

1. Dnepropetrovskiy gosudarstvennyy universitet, kafedra analiticheskoy khimii.
(Iron compounds) (Thiocyanates) (Copper catalysts)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

Pchelkina, N. V. Cand. Biolog. Sci.

Dissertation: "Nutrition of the Larvae of Diptera." Moscow Technical Inst of Fish Industry and Economy imeni A. I. Mikoyan, 11 Apr 47.

SO: Vechernyaya Moskva, Apr, 1947 (Project #17836)

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Ca

12

The character of the microbiological processes in the pickling of mushrooms. B. S. Aleev and O. U. Pchelkina. *Microbiology* (U. S. S. R.) 6, 507-9 (in English 509) (1937). —There is a threefold increase in the amt. of bacteria on pickling *Lactarius deliciosus* for 13 days, but on the 59th day a 2000-fold decrease is observed. The acidity increases from 0.34 to 0.667% (calcd. as lactic acid). The same general results were obtained for *Armillaria mellea*. With the increase in acidity the sugar content drops to practically 0.

S. A. Karjala

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

AYZEN, G.S.; PCHELKINA, V.K.; SAL'TSEVA, M.T.

Dynamics of the bioelectric processes within the heart under the influence of acupuncture in the area of the Chinese points. Sbor. trud. GMI no.9:104-107 '62. (MIRA 17:2)

1. Kafedra gospital'noy terapii lechebnogo fakul'teta Gor'kovskogo meditsinskogo instituta (zav. kafedroy prof. V.G. Vogralik).

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKINA, V.K., aspirant

Diagnostic meaning of puncture of the lymphatic nodes. Uch. zap. GMI no.8:71-77 '59. (MIRA 14:9)

1. Iz kafedry gospital'noy terapii (zav. kafedroy - prof. V.G.Vogralik).
(LYMPHATICS—PUNCTURE)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKINA, V. K., Cand Med Sci -- (diss) "Diagnostics of the systemic growth of lymph nodes from material of a hospital therapeutic clinic." Gor'kiy, 1960. 10 pp; (Gor'kiy State Medical Inst im S. M. Kirov); 300 copies; price not given; (KL, 19-60, 138)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

L 6669-65
EWT(m)/EWP(q)/EWP(b) IJP(c) MJW/JD

ACCESSION NR: AR4036013 S/0276/64/000/003/0009/0009 51

SOURCE: Ref. zh. Tekhnol. mashinostr. Sv. t., Abs. 3044

AUTHOR: Kachanov, N. N.; Sakhon'ko, I. M.; Pchelkina, V. M.; Laposhko, A. D.; Oyks, G. N.; Baranov, I. A.; Anshelas, I. I.

TITLE: The quality and properties of silicon-free bearing steel

CITED SOURCE: Tr. Vses. n.-i. konstrukt.-tekhnol. in-ta podshipnik. prom-sti, no. 1(33), 1963, 54-68

TOPIC TAGS: ShKh15 steel, silicon free steel, high purity steel, bearing steel, instrument bearing steel, stainless steel

TRANSLATION: An industrial method has been developed for making ShKh15 bearing steel, which does not contain silicon, making it possible to obtain metal with a smaller content of nonmetallic inclusions than is possible with ordinary steel-making methods. Silicon-free ShKh15 steel can be used for making instrument bearings and is recommended as an initial material for electroslag remelting. The hardenability and annealability of silicon-free steel from the heats that

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L 6669-65

ACCESSION NR: AR4036013

were tested were lower than in the case of ShKh15 steel produced by conventional methods. The contact resistance and strength properties, except for torsional strength, of silicon-free steel matched those of ShKh15 steel produced by conventional methods. The corrosion resistance in a 3% solution of NaCl of silicon-free ShKh15 steel was somewhat higher than that of ShKh15 steel produced by conventional methods. A drawback of the new industrial process is the instability of purity of the ShKh15 steel with respect to nonmetallic inclusions.

SUB CODE: MM ENCL: 00

Card 2/2

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

L 2[illegible]41-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t) LIP(c) JD/DJ

ACC NR: AR5019274 SOURCE CODE: UR/0277/65/000/007/0009/0009

AUTHOR: Kachanov, N. N.; Pchelkina, V. M.; Luzinov, A. A.

ORG: none

TITLE: New brands of superhardenable steel for large-size bearings.

SOURCE: Ref. zh. Mashinostroitel'nyye materialy, konstruktsii i raschet detaley mashin. Gidroprivod. Otdel'nyy vypusk, Abs. 7.48.56

REF SOURCE: Tr. Vses. n.-i. konstrukt.-tekhnol. in-ta podshipnik. prom-sti, no. 2(38), 1964, 3-18

TOPIC TAGS: roller bearing, hardness, metal hardening, ball bearing steel, bearing steel, steel/ShKh20SG15F steel, ShKh20SG15MF steel, ShKh15SG steel

TRANSLATION: Two new brands of superhardenable steel have been developed for bearings. The ShKh20SG15F brand may be recommended for making rings for large bearings with wall thicknesses of 80 to 100 mm and for rollers 90 to 120 mm in diameter; brand ShKh20SG15MF is good for rings with 90-120 mm walls and for rollers 100-140 in diameter. The steel can be recommended for use in shipbuilding, transportation machine-building, machine tools, etc., as well as for manufacturing large parts requiring very hard surfaces. It was established that the hardenability, determined by the calculation method, is approximately 36.0 mm for brand ShKh20SG15F, and 51.0 for brand ShKh20sg15MF. In steels which were experimentally smelted at a hardening of 840°,

Card 1/2

UDC: 669.14.018.24

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

L 25341-66

ACC NR: AR5019274

the amount of residue austenite was the same as in ShKh15SG steel, but at a hardening of 880° the content was slightly larger than in ShKh15SG.

SUB CODE: 11/3/ SUBM DATE: none

Card 2/2

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKINA, V. V., VANTROVA, G. V., and BUKIN, V. N. (USSR)

"Biosynthesis of Vitamin B_{12} and Porphyrins in Propionic Acid Bacteria."

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

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKING, A. A.

USSR/Medicine - Poisons Venom

"Characteristics of the Action of Indian Cobra (Naja Naja) Venom on Experimental Animals," F. F. Talyzin, T. P. Chizhova, A. A. Pchelkina, Inst of Epidomiol and Microbiol imeni Gamaleya, Acad Sci USSR, 3½ pp

"Dok Ak Nauk SSSR" Vol LXIX, No 2

Experiments conducted to determine minimum lethal dose of cobra venom and to compare its action with other venoms showed: It has many of same properties as venom from the Viperidae. Very dilute venom ($1 \cdot 10^{-8}$), although a vasoconstrictor, has vasodilative effect on isolated mouse ears. Minimum active dose of Indian cobra venom is $1 \cdot 10^{-7}$ while that of Central Asian cobra venom is $1 \cdot 10^{-6}$) in isolated from hearts. Experiments in vivo on small intestine of rabbits showed characteristic increase in tonus followed by changes in amplitude OF pendular contractions, which soon returned to normal. Submitted by Acad Ye N. Pavlovskiy 16 Sep 49.

PS 157T60

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKINS, A. A.

"Domestic Fowl as Carriers of Q Fever Rickettsia in the Turkmen SSR," by Z. M. Zhmayeva and A. A. Pchelkins, Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Zhurnal Microbiologii, Epidemiologii, i Immunobiologii, No 3, Mar 57, p 39-41

The work reports on the discovery of Q fever and its pathogen, R burneti, in the Turkmen SSR by an expedition from the Institute of Epidemiology and Microbiology under P. A. Petrishchev in 1953. The pathogen was isolated from human patients, two species of ticks (Hyalomma anatolicum and Ornithodorus tartakovsky), one species of mites (Leeuwenhoekia major), and two species of susliks.

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In 1954, studies were made of the epidemiological significance of domestic fowl in a region 70 km southwest of the Amu-Dar where two cases of positive complement fixation reactions had been reported. After elimination of any other contacts, the infection was traced to the consumption of raw eggs. Large numbers of the Argas persicus mite were found on the chickens; therefore, to prove the spontaneous carrying of rickettsia by chickens, suspensions of brain and kidney tissues from two roosters were prepared and 4 ml of the suspension injected into the abdominal cavities of two guinea pigs. Within 11 days, both animals developed a fever which lasted 14 days. Experiments were continued with various internal organs of guinea pigs, and examination showed light hyperemia of the lungs, an increase of the spleen to three or four times its normal size, and hyperemia of the kidneys. At the spot where the suspension had been injected subcutaneously into the leg, a serous-hemorrhagic infiltrate developed. Upon a second passage through the guinea pigs, conglomerates of cocciform rickettsia were found at the injection point.

The authors conclude that Q fever can be transmitted through the consumption of raw eggs and that chickens can form a reservoir of the Q fever pathogen. (U)

Sum. 'U/45.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELINTSEV, A.V., inzh.

What's new in unloading and transporting cement. Gidr. stroi. 31 no.1:41-43 Ja '61. (MIRA 14:2)
(Loading and unloading) (Cement—Transportation)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

1. PCHELKO, A. S.

2. USSR (600)

4. Science

7. Solving arithmetic problems in pedagogical schools. Pod red. A. S. Pchelko, Yaa A. Shor (author), Moskva, Akad. ped. nauk RSFSR, 1951.

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

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKO, A.S., redaktor.

[Teaching arithmetic in the elementary school] Opyt prepodavaniia arifmetiki v nachal'noi shkole. Sbornik pod red. A.A.Pchelko. Moskva, Izd-vo Akademii pedagogicheskikh nauk RSFSR, 1953. 90 p. (Arithmetic--Study and teaching) (MLRA 7:11)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKO, A. S.

4907. PCHELKO, A. S. i POLYAK, G. B. Arifmetika. Uchbnik dlya vtorogo klassa nach. Shkoly. Per. so 2-go rus. IZD. Kazan', tatknigoizdat, Red. ucheb.--ped. lit., 1955. 140 s. s, Ill. 23sm. (akad. ped. nauk RSFSR). 42.000 EKZ. 1r. 5k. V per.--na pereplete avt. ne ukazany.--na tatar. yaz.-- (54-55494) 511(076)

SO: Knizhnaya Letopis', Vol. 1, 1955

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKO, A. S. S

EPP
R92133

ELEMENTY POLITEKHNICHESKOGO OBUCHENIYA V NACHAL'NOY SHKOLE; METODICHESKIYE POSOBIYE. 2. IZD. (BY) A. S. PCHELKO

77, (2) P.
LITERATURA...": P. 74-(78)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKO, A. S.

7060. PCHELKO, A. S. i POLYAK, G. [illegible]. Arifmetika. Uchebnik dlya vtorogo klassa nach. shkoly. Izd. 2-ye Stalinabad. Tadzhikgosizdat. 1955. 144s. s ill. 23 sm. 28.000 ekz. i r. 5 k. V per. — Na pereplete avt. ne ukazany. — Na tadzhik, yaz. — [55-2372] 511(076)

Knizhnaya Letopis' No. 6, 1955

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

IGNAT'YEV, V.A.; PCHELKO, A.S., redaktor

[Work on arithmetic methodology outside of class at pedagogical institutes] Vneklassnaia rabota po metodike arifmetiki v pedagogicheskikh uchilishchakh. Pod red. A.S.Pchelko. Moskva, Izd-vo Akademii pedagog. nauk RSFSR, 1954. 53 p. (MLRA 8:1)

(Teachers, Training of)
(Arithmetic--Study and teaching)

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PUHELKO, A. S.

5968 PUHELKO, A. S. AND POLYIK, G. T. Arifmetika. Uchebnik Dlya vtorogo klassa nach. shkoly. Nal'chik, Kabard. kn. izd., 1955 140s. s ill. 23sm. (akad. ped. nauk RSFSR). 3.5000 ekz. 1r. 10k. v per.- Na perepleto avt. ne ukazany.-ms kabard. yaz (54- 57219) pweeplete avt. ne ukazany. - Na kabard. yaz. (54- 57219) 511(076)

SO: Knizhnaya Letopis', vol. 1, 1955

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

POHELKO, A. S.

5969. POHELKO, A. S. I. POLYAK, G. B. - Arifmetika. Uchebnik olya vtorogo klassa nach. shkoly, per. N. T. Vasyanka. izd. 2-YE. Cheboksary, Chuvashgosizdat, 1955. 136s. s ill. 23sm. (akad. ped. nauk RSFSR). 15.000 ekz. 1R. 5K. V per. - Na chuvash. yaz. (54-58253) 511(076)

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1. PCHELKO, A. S.

2. USSR (600)

4. Science

7. Professional-pedagogical method of teaching arithmetic in a pedagogical school. Ped red. A. S. Pchelko, A. N. Bogolyubov, (author) Moskva, Akad. ped. nauk RSFSR, 1951.

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

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKO, Aleksandr Spiridovovich; POLYAK, Grigoriy Borisovich; KAPUSTINA, V.S., redaktor; TSIRUL'VITSKIY, N., tekhnicheskiy redaktor

[Arithmetic; textbook for class 2 of the primary school] Arifmetika; uchebnik dlia 2-go klassa nachal'noi shkoly. Izd. 2-e. Moskva, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, 1955. 127 p. (MLRA 8:7)

(Arithmetic)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHELKO, ALEKSANDR

IGNAT'YEV, Venedikt Antonovich; PCHELKO, Aleksandr Spiridonovich; SHOR, Yakov Aleksandrovich; SIDOROVA, L.A., redaktor; RYBKIN, I.V., tekhnicheskiy redaktor

[Methods of teaching arithmetic in elementary schools; a manual for pedagogical institutions] Metodika prepodavaniia arifmetiki v nachal'noi shkole; posobie dlia pedagogicheskikh uchilishch. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1956. 242 p.

(MLRA 10:4)

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ICHELKO, Aleksandr Spiridonovich; ZAVITAYEV, Petr Alekseyevich; PROFKRANSOVA, N.V., redaktor; SOKOLOVA, P.Ya., tekhnicheskiy redaktor

[Elements of general science teaching in primary schools; a practical manual] Elementy politekhnicheskogo obucheniia v nachal'noi shkole; metodicheskoe posobie. Izd. 3-e, perer. Moskva, Izd-vo Akad. pedagog. nauk RSFSR, 1956. 95 p. (MLRA 10:4)
(Science--Study and teaching)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1"

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PCHELKO, Aleksandr Spiridonovich

PCHELKO, Aleksandr Spiridonovich; FOLYAK, Grigoriy Borisovich; ARKHANGEL'skaya, N.V., redaktor; KAPUSTINA, V.S.: redaktor; TSIRUL'NITSKIY N.P., tekhnicheskiy redaktor.

[Arithmetic; textbook for grade 1 of the primary school]Arifmetika; uchebnik dlia pervogo klassa nachal'noy shkoly. Moskva, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, 1955 143 p. (MLRA 8:8)

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PCHELKO, Aleksandr Spiridonovich; POLYAK, Grigoriy Borisovich; KAPUSTINA, V.S., redaktor; TSIRUL'VITSKIY, N., tekhnicheskiy redaktor

[Arithmetic; textbook for class 2 of the primary school] Arifmetika; uchebnik dlia 2-go klassa nachal'noi shkoly. Izd. 2-e. Moskva, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, 1955. 127 p. (MIRA 8:7)

(Arithmetic)

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PCHELKO, Aleksandr Spiridonovich; POLYAK, Grigoriy Borisovich; LEPESHKINA, N.I., redaktor; MAKHOVA, N.N., tekhnicheskiy redaktor

[Arithmetic; textbook for grade 4 of the elementary school] Arifmetika; uchebnik dlia 4-go klassa nachal'noi shkoly. Moskva, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, 1955. 158 p. (MLRA 8:7)

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PCHELKO, Aleksandr Spiridonovich

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9. Monthly List of Russian Accessions, Library of Congress, July 1952. Unclassified.

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PCHELKO, I. G.

"Flight Conditions in Frontal Zones Over the European Territory of the USSR," Gidrometeoizdat, Moscow, 1941

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PCHELKO, I. G.

AMS/A+B

1951

551.574.7:551.509.34

29-128

Pchelko, I. G. Ob odnom sposobe opredeleniia opasnosti obledeneniia samoleta. [A method for determining the danger of airplane icing.] *Meteorologiia i Gidrologiia*, No. 3:61-64, 1947. DWB. A brief but quantitative account of the method, proposed by the Finnish meteorologist Simola, for determining the most likely temperature and humidity at which ice will form in clouds under conditions such as exist in Moscow. The method was tested from the data from 65 airplane accidents in the Moscow region, and the conclusion reached that the method would be useful for predicting icing in the Moscow region, as verified by 74% of the cases. *Subject Headings:* Icing of aircraft, Icing forecasting, Aeronautical meteorology, Moscow, USSR. *MK*

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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POHELKO, I. S.

26481 Sinopticheskiye usloviya zasukhi 1947 goda. Trudy ts entr. In-ta gromozov, vyp. 13, 1949, c. 13-24

SO: LETOPIS' No. 35, 1949

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POHELKO, I. G., ed.

Atmosphere of the earth; a collection Moskva, Gos. izd-vo kul'turno-prosvetitel'noi lit-ry, 1953. 421 p. (54-38805)

QC852.A8

1. Meteorology. 2. Atmosphere. I. Pohelko, I. G., ed.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

FCHELKO, I. G., and BUTOKIN, M. M.

"Problem of Meteorological Observation From Aboard Aircraft," Meteorol. i gidrologiya, No 10, 1953, pp 45-48

The authors give practical instructions concerning the evaluation of the magnitude of cloudiness during flight under clouds, over clouds, between layers, and in clouds. They note the peculiarities of nighttime observations of cloudiness. Observations from aircraft on the form of cloudiness differ essentially from ground-based observations in that it becomes possible to observe also the character of the upper surface of clouds, and to judge, although roughly, the degree of turbulence in the clouds and under them. It is also possible to judge the nature of visibility under clouds. The height of the lower and upper limits of clouds is determined rather accurately by the altimeter at the moment of the aircraft's entrance into the cloud and exit. (RZhGeol, No 5, 1954)

SO: Sum No 568, 6 Jul 55

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GAL'TSOV, A.P.; PCHELKO, I.G., kandidat fiziko-matematicheskikh nauk, redaktor; DUBENTSOV, V.R., kandidat geograficheskikh nauk, redaktor; KADER, Ya.M., redaktor; MEZHERITSKAYA, N.P., tekhnicheskiy redaktor

[How to forecast the weather] Kak predskazyvaiut pogodu. Moskva, Voen. izd-vo Ministerstva oborony Soiuza SSR, 1954. 111 p.
(Weather forecasting) (MLRA 8:5)

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GAL'TSOV, Aleksandr Petrovich, kandidat geograficheskikh nauk; PCHELKO, I.G., redaktor; ISLANKINA, T.F., redaktor; DMITRIYEVA, R.V., tekhnicheskiy redaktor.

[Weather and its forecasting] Pogoda i ee predskazanie. Moskva, Izd-vo "Znanie," 1955. 29 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii, Ser. 3, no.3). (MIRA 8:4)
(Weather forecasting)

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PCHELKO, IVAN GRIGOR'YEVICH

PHASE I BOOK EXPLOITATION 432

Pchelko, Ivan Grigor'yevich

Meteorologicheskiye usloviya poletov na bol'shikh vysotakh (Meteorological Conditions of Flight at High Altitude) Leningrad, Gidrometeorizdat, 1957. 53 p. 5,000 copies printed.

Resp. Ed.: Baranov, A.M.; Ed.: Ushakova, T.V.; Tech. Ed.: Soloveychik, A.A.

PURPOSE: The purpose of this book is to improve aircraft operation and to promote scientific research by giving synoptists and pilots some new information on meteorological phenomena occurring at high altitudes.

COVERAGE: The evaluation of meteorological conditions and their influence on flying in the upper troposphere and the lower stratosphere is changing. Cirrus and cirrostratus, which appear harmless when observed from the ground are now known to present a real hazard in

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high altitude flights. These cloud formations appear in thick layers at altitudes of 8-15 km., and the aircraft crew flying in them may expect turbulence, icing and bad visibility. Meteorological study of the conditions in higher troposphere and lower stratosphere is a new science. Considerable amount of materials have been collected which are, however, insufficient, so the research should be continued on a large scale to complete and verify the established data. In this book the author describes essential needs to be fulfilled by the meteorological services for high altitude and high speed flights. They consist of information on: cloudiness, special phenomena, visibility, temperature, turbulence and icing. The author deals with charts now being established for the tropopause, which are important in determining flying conditions in the upper troposphere and lower stratosphere. Those charts are not yet in full practical use. The following personalities are mentioned in the text (respective fields of science are given in parentheses): Klemin, I.A., (research in higher troposphere regions); Kalinovskiy, A.B. (research in atmospheric conditions in the Moscow region); Mazurin, N.I., (the altitude of the tropopause); Snegirev, B.I., (jet flow); Khrgian, A.Kh., Kogan-Beletskiy, (the structure of the jet flow); Imnadze, A.M., Kofman, B.Kh., (meteorology). The bibliography consists of 8 references, all of them are Soviet.

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3. Waves of the tropopause 15

4. Forecasting of the tropopause altitude 16

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PCHELKO, I.G.

ZVEREV, Aleksey Semenovich; PCHELKO, I.G., otvetstvennyy redaktor; YASNOGORODSKAYA, M.M., redaktor; KUZONOVA, L.B., tekhnicheskiy redaktor.

[Synoptic meteorology] Sinopticheskaia meteorologiia. Leningrad, Gidrometeor.izd-vo, 1957. 558 p. (MIRA 10:11)
(Meteorology)

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PCHELKO, I.G.

Twenty years of research on methods of short-range and long-range weather forecasts. Trudy TSIP no.55:12-22 '57. (MIRA 10:9)
(Weather forecasting)

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3 (7)

AUTHOR: Pchelko, I. G. SOV/50-59-12-1/23

TITLE: Formation and Evolution of the Stratospheric Summer Anticyclone on the Northern Hemisphere

PERIODICAL: Meteorologiya i gidrologiya, 1959, Nr 12, pp 3 - 10 (USSR)

ABSTRACT: The author investigated the evolution of the polar stratospheric anticyclone. In this connection, he also investigated the evolution of the baric field in the temperate latitudes of the entire northern hemisphere. The investigation was carried out on the basis of an analysis of daily AT_{30} charts at the Tsentral'nyy institut prognozov (Central Institute of Forecasts) from April to September 1958 and from April to July 1959. The series of AT_{25} charts compiled according to data from daily reports of US weather bureaus for the warm season of 1957 and 1958 was also analyzed. The analysis of AT_{30} charts was connected with great difficulties. There were few radio-balloon data from high altitudes, and their quality was irregular. But - due to systematic analysis - common rules for the evolution of atmospheric processes at altitudes of 24-26 km could be found. AT_{30} collect-

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ing charts for decades were also compiled for this purpose. On the basis of the analysis of daily AT_{30} charts and AT_{30} collecting charts, the following evolution of the baric field at altitudes of 24-26 km over the northern hemisphere could be determined during the warm season of 1958: The formation of the polar anticyclone as an independent baric system began on about May 10 over the American arctic sector. Over the Eurasian sector including the continental areas, cyclonic systems prevailed as far as 55° northern latitude, and as far as 45° northern latitude over East Siberia. Then, the polar anticyclone increased in intensity and area. At that time, the temperate latitudes of the northern hemisphere were under the influence of cyclonic fields shifting from west to east. Southward, between 45 and 30° northern latitude, there was a second anticyclonic field. More southward, a transition into the low-pressure zone on the equator was observed. With an intensification of the polar anticyclone, its center shifted from the Canadian Archipelago toward the pole. At the same time, the influence of this anticyclone extended to the temperate zones (the cyclonic circulation

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formerly present was gradually attenuated). About the middle of June, a homogeneous anticyclonic circulation field appeared over the entire northern hemisphere in the form of a circumpolar cyclone with a general motion of the atmosphere from east to west. Northeast and southeast winds prevailed in the temperate latitudes. The stratospheric anticyclone attained in the 3rd decade of July its maximum intensity (Fig 3). The mean decade value of the geopotential in the anticyclonic center over the pole was about 2474 dkm. As from July 22, when the absolute geopotential value in the polar region attained 2486 dkm, the anticyclone began to abate gradually. But, until the beginning of the 3rd decade of August, the anticyclone held its position as an independent baric system with a center near the pole. Only during the 3rd decade of August, cyclonic systems appeared over the polar region. The anticyclonic field occupied only the temperate zones. These characteristics of the evolution of the stratospheric anticyclone in summer 1958 appeared, in principle, also in 1959. The question as to whether the characteristics pointed out here

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PCHELKO, I.C.; BOROVIKOV, A.M.

Results of working up data of microstructural observations of clouds with regard to the possibility of airplane icing. (MIRA 12:5)
Trudy TSIP no.80:64-78 '59.
(Cloud physics)
(Airplanes--Ice prevention)

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PHASE I BOOK EXPLOITATION

Pchelko, Ivan Grigor'yevich

Aerosinopticheskiye usloviya boltanki samoletov v verkhnikh sloyakh troposfery i nizhney stratosfere (Aerosynoptic Conditions Causing Airplane Bumping in the Upper Layers of the Troposphere and the Lower Stratosphere). Moscow, Gidrometeoizdat, 1962. 92 p. 1360 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR. Tsentral'nyy institut prognozov.

Resp. Ed.: N. V. Sagatovskiy; Ed.: V. I. Tarkhunova; Tech. Ed.: I. M. Zarkh.

PURPOSE: This book is intended for synoptic meteorologists and pilots.

COVERAGE: The book discusses investigations based on the analysis of a great deal of factual data, which have made possible the supplementing and more accurate definition of previous concepts of the aerosynoptic conditions which

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AM1035370 BOOK EXPLOITATION S/

Pchelko, Ivan Grigor'yevich

Aviation meteorology (Aviatsionnaya meteorologiya), Leningrad, Gidrometeoizdat, 1963, 345 p. illus., maps. 20,000 copies printed.

TOPIC TAGS: meteorology, aviation meteorology, cyclone, anticyclone, Civil Air Fleet

PURPOSE AND COVERAGE: The book presents in a compressed and accessible form the basic meteorological elements and phenomena in connection with their effect on aviation. Most detailed consideration is given to clouds, especially low clouds, visibility, and detrimental phenomena (fog, snowstorms, dust storms), jet streams, thunderstorms, bumps, and aircraft icing. Especial attention is given to the weather phenomena that are dangerous for aviation with joint analysis of ground and air maps of the weather. The problem of the role of jet streams in the formation of thunderstorms and aircraft bumping in the upper layers of the troposphere. The nature and variations of meteorological service to piston and jet aircraft flights are given. The book is intended chiefly for pilots of the Civil Air Fleet; it can also be used by aviation meteorologists in flight crews.

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Ch. IV. Operational meteorological service of the Civil Air Fleet -- 336
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OTHER: 000 DATE ACQ: 16Apr64

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ACCESSION NR: AR4008226 S/0169/63/000/011/B056/B056

SOURCE: RZh. Geofizika, Abs. 11B370 K

AUTHOR: Pchelko, I. G.

TITLE: Materials of the Scientific Conference on Aviation Meteorology

CITED SOURCE: (Tsentr. in-t prognozov). M., Gidrometeoizdat, 1963, 128 str.

TOPIC TAGS: meteorology, meteorology conference, atmospheric turbulence, aircraft bumping, cloudiness, aircraft atmospheric sounding, wind forecasting, storm, storm forecasting, aviation meteorology, lower atmosphere sounding

TRANSLATION: The collection contains 13 papers presented at the Scientific Conference on Aviation Meteorology in June-July 1960. Four of the papers deal with the problem of atmospheric turbulence producing aircraft bumping. Four other papers are concerned with the structure, extent, and prediction of cloud cover. The remaining papers contain reports on the use of helicopters in lower atmospheric probes, a method of wind forecasting at an altitude of 9-12 km, results of measurements of air temperature and vertical components of wind velocity from

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an aircraft, and the possibilities and prospects of efficient supply of information to aviation on storm activity and the use of meteorological data in engineering-navigation computations. The papers are of great scientific and practical interest to aviation meteorologists. N. Davy*dov.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

CHISTYAKOV, A.D.; BURKOVA, M.V.; ORLOVA, Ye.M.; GLAZOVA, O.P.; PED', D.A.; BERLYAND, M.Ye.; ABRAMOVICH, K.G.; POPOVA, T.P.; MATVEYEV, L.T.; BACHURINA, A.A.; LEBEDEVA, N.V.; PESKOV, B.Ye.; ROMANOV, N.N.; VOLEVAKHA, N.M.; PCHELKO, I.G.; PETRENKO, N.V.; KOSHELENKO, I.V.; PINUS, N.Z.; SHMETER, S.M.; BATMAYEVA, T.F.; MININA, L.S.; BEL'SKAYA, N.N., nauchn. red.; ZVEREVA, N.I., nauchn. red.; KURGANSKAYA, V.M., nauchn. red.; MERTSALOVA, A.N., nauchn. red.; TOMASHEVICH, L.V., nauchn. red.; SAGATOVSKIY, N.V., otv. red.; KOTIKOVSKAYA, A.B., red.

[Manual of short-range weather forecasting] Rukovodstvo po kratkosrochnym prognozam pogody. Leningrad, Gidrometeoizdat. Pt.2. Izd.2. 1965. 491 p. (MIRA 18:8)

1. Moscow. TSentral'nyy institut prognozov.

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PCHELKO, Ye.G.; MESHCHANSKIY, L.B., red.

[Bibliographical index to the Transactions of the Central Scientific Research Institute of Geodesy, Aerial Photography, and Cartography, for the years 1956-1960]Bibliograficheskii ukazatel' Trudov TSentral'nogo nauchno-issledovatel'skogo instituta geodezii, aeros'emki i kartografii za 1956-1960 gg. Sost. E.G.Pchelko. Moskva, 1961. 29 p. (MIRA 15:11)

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(Bibliography--Geodesy) (Bibliography--Cartography)

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PCHELKO, Yevgeniya Grigor'yevna; MESHCHANSKIY, L.B., redaktor; KHROMCHENKO, F.I., redaktor izdatel'stva; KUZ'MIN, G.M., tekhnicheskiy redaktor

[A bibliography of the works of the Central Research Institute of Geodesy, Aerial Surveying and Cartography from 1929 to 1955] Bibliograficheskii ukazatel' trudov TSentral'nogo nauchno-issledovatel'skogo instituta geodezii, aeros"emki i kartografii za 1929-1955 gg. Moskva, Izd-vo geodezicheskoi lit-ry, 1956. 58 p. (MLRA 9:11)

1. Leningrad, TSentral'nyy nauchno-issledovatel'skiy institut geodezii, aeros"yemki i kartografii.
(Bibliography--Cartography)
(Bibliography--Geodesy)
(Bibliography--Photography, Aerial)

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

CA

11A

PROCESSES AND PROPERTIES INDEX

Hydrophobic properties of hair. V. Pchelin. *Colloid J.* (U. S. S. R.) 2, 247-8(1936). Attempts to make human hair hydrophilic by treatment with acids, alcs., Et_2O, CS_2, H_2O or by surface active saponins were unsuccessful. Boiling alkali converts the hair to a hydrophilic substance but at the cost of considerable decompn. P holds that only the surface layer of hair is hydrophobic. F. H. R.

COMMON ELEMENTS

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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L 01229-66 EWP(j)/EWT(m)/ETC/EWG(m)/T/EWP(b)/EWP(t) IJP(c) DS/JD/RM

ACCESSION NR: AP5022135 UR/0364/65/001/009/1058/1063

541.13

AUTHOR: Pchel'nikov, A. P.; Losev, V. V.

TITLE: Electrochemical behavior of indium. 1. Cathodic process.

SOURCE: Elektrokhimiya, v. 1, no. 9, 1965, 1058-1063

TOPIC TAGS: indium, electrochemistry, reduction, electrodeposition, kinetics

ABSTRACT: A lack of concrete data on the mechanism and kinetics of the cathodic deposition of indium prompted this study. To clarify the kinetics of the cathodic process it was first of all necessary to investigate its rate as a function of potential and other factors under the simplest conditions, in the absence of complexation which complicates the kinetic of discharge of indium ions. By combination of electrochemical and radiochemical measurements the cathodic discharge of indium ions was investigated at the indium electrode in perchlorate solutions as a function of the potential and the acidity. Experiments were conducted in $In(ClO_4)_3(2\cdot10^{-3}M)+HClO_4(3\cdot10^{-3}-0.2\ M)+NaClO_4$ at constant ionic strength (μ = 3M) at 20° C in a purified nitrogen atmosphere. As the acidity is increased inhibition of the cathodic process is observed both at the solid indium electrode as well as

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ACCESSION NR: AP5022144

at the indium amalgam electrode. The rate of discharge is essentially potential independent. In view of this and the fact that the cathodic limiting current is not diffusion, but kinetically controlled and there is a strong tendency for indium salts to hydrolysis, it is presumed that not simple but hydrated $[In(H_2O)_5OH]^{2+}$ ions participate in the cathodic process and that the rate of electrode reaction even at insignificant shift in the negative direction from the equilibrium potential is limited by the reaction

$$In(H_2O)_6^{3+}+H_2O \rightleftharpoons [In(H_2O)_5OH]^{2+}+H_3O^+.$$

The pH dependence indicates that the particles which participate in the limiting reaction are $[In(H_2O)_5OH]^{2+}$ where the above reaction is an equilibrium one and the limiting state is the partial dehydration of these particles:

$$[In(H_2O)_5OH]^{2+} \rightarrow [In(H_2O)_4OH]^{2+}+H_2O$$

The produced $[In(H_2O)_4OH]^{2+}$ ions participate in a further electrochemical stage. The rate of hydration reaction increases with pH, i.e. with increase of $[In(H_2O)_5OH]^{2+}$ ion concentration and at sufficiently high pH the rate of the process begins to be limited by hydrolysis. The sharp increase of the rate of discharge of indium above -1.0 v with a second diffusion plateau results from the participation

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PCHEL'NIKOV, G.V., inzh.

Standardization of antifriction bearing caps. Standartizatsiia 22 no.1:35 J-F '58. (MIRA 11:2)

1. Gosudarstvennoye spetsial'noye konstruktorskoye byuro po khlopku.
(Bearings (Machinery)--Standards)

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PCHEL'NIKOV, G.V.

AUTHOR: Pchel'nikov, G.V., Engineer 28-58-1-12/34

TITLE: Normalization of Antifriction Bearing Covers (Normalizatsiya kryshek podshipnikov kacheniya)

PERIODICAL: Standartizatsiya, 1958, # 1, p 35 (USSR)

ABSTRACT: Information is given on work done by the Gosudarstvennoye spetsial'noye konstruktorskoye byuro po khlopku (Normalization and Standardization Group of the Special State Designing Bureau for Cotton). This Group has completed the unification of steel grades, rolled steel, nuts and bolts, etc, as well as single components for cultivation of cotton, and is now unifying the covers of bearings for cotton-cultivating machines. A standard for "Bearing Covers" has been laid down, specifying two types of covers: through-covers with self-aligning rubber seals, and blind covers. This standard includes type drawings and dimension tables.

ASSOCIATION: GSKB po khlopku (GSKB for Cotton)

AVAILABLE: Library of Congress

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KOBYLIN, Aleksandr Ivanovich, kandidat tekhnicheskikh nauk, dotsent; LISHUTIN, B.G., redaktor; RASHKOVSKIY, Ya.Z., redaktor; PARTSEVSKIY, V.N., redaktor; OSTASHENKO-KUDRYAVTSEV, B.P., zasluzhennyy deyatel' nauki, professor, doktor fiziko-matematicheskikh nauk, retsenzent; KAPLUNOV, B.V., inzhener, retsenzent; PCHEL'NIKOV, inzhener, retsenzent; EVENSON, I.M., tekhnicheskiy redaktor

[Group equating in mining triangulation] Gruppovoe uravnivanie rudnichnoi trianguliatsii. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1955. 128 p.
(Triangulation) (MLRA 9:2)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

L 32067-66 EWT(1)/EWT(m) RO

ACC NR: AR6016159 SOURCE CODE: UR/0058/65/000/011/A050/A050

AUTHOR: Pchel'nikov, M. N.; Markov, K. P.; Dykovskiy, N. N.

TITLE: Apparatus for radiometry of gases and liquids

SOURCE: Ref. zh. Fizika, Abs. 11A417

REF SOURCE: Tr. Soyuzn. n.-i. in-ta priborostr., vyp. 1, 1964, 167-181

TOPIC TAGS: radiometry, radioactive contamination, atmospheric contamination, radioactive aerosol, nuclear decontamination

ABSTRACT: It is noted that the development of the atomic industry, the extensive use of radioactive isotopes in the national economy, and tests of atomic and hydrogen weapons unavoidably increase the amout of liquid and gaseous radioactive waste in the biosphere. All this has made more acute need for combatting contamination of the biosphere. A brief review is presented of the work performed at SNIIP in recent years on the development of procedures and apparatus for the control of radioactive aerosols and water contaminated with radioactive substances. The principal problems of radiometric control of air are discussed. Sources and composition of radioactive aerosols of commercial origin are considered. The main requirements which are imposed on an aerosol radiometer are formulated. Methods and instruments for intermittent and continuous monitoring of radioactive aerosols in manufacturing areas are described. Specific features of the problem of control of gas waste from radiochemical enterprises are considered. Instruments and apparatus for the control of contamination of

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ACC NR: AR6016159

air in uranium (thorium) mines and enriching factories are described. Methods and instruments used for radiometry of liquid media are also described. Ways of further development of these procedures are noted. L. I. [Translation of abstract]

SUB CODE: 18, 06

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

L 47101-66 EWT(1)/EWT(m) RO

ACC NR: AR6016489 SOURCE CODE: UR/0272/65/000/012/0105/0105

AUTHOR: Pchel'nikov, M. N.; Markov, K. P.; Bykovskiy, N. N.

TITLE: Equipment for radiometry of gas and liquid media

36

B

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika, Abs. 12.32.910

REF SOURCE: Tr. Soyuzn. n.-i in-ta priborostr., vyp. 1, 1964, 167-181

TOPIC TAGS: Radiometer, radioactive aerosol, air pollution, radioactive substance

ABSTRACT: A brief review was made of some works completed at the SNIIP in recent years, of the development of methods and equipment for testing radioactive aerosols and water contaminated with radioactive substances. Basic aspects of radiometric testing of the atmosphere were discussed. The radioactive sources and the composition of radioactive aerosols of industrial origin were considered. The basic requirements for aerosol radiometers were formulated. The methods and equipment for single and continuous control of radioactive aerosols in industrial buildings were described and specific characteristics of the problem of controlling gas waste by radiochemical

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UDC: 389:539.16.07

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHEL'NIKOV, N. I.

Anti-aircraft fire control device; text-book. Moskva, Gos. v en. izd-vo, 1943- (54-18411)

UF625.P3

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239810006-1

PCHEL'NIKOV, N.G., inzhener.

Using machinery to assemble hook link chains for the "Stalinets-6" combine. Sel'khozmashina no.4:24-25 Ap '54. (MLRA 7:5)
(Chains)

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