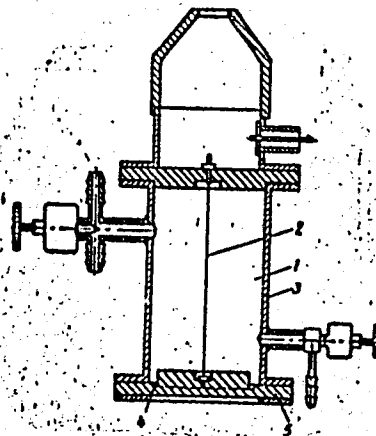


L 44679-66

ACC NR: AP6005361

Fig. 1. 1 - chamber; 2 and 3 - coaxial electrodes; 4 - ionization source; 5 - end cover



Orig. art. has: 1 diagram.

SUB CODE: 07/25/ SUBM DATE: 22Dec64

hs

Card 2/2

ACC NR: AP6025673

SOURCE CODE: UR/0413/66/000/013/0144/0145

INVENTORS: Anikin, V. I.; Belov, Ye. M.

ORG: none

TITLE: A device for installing an adjustable thrust bushing in bearings. Class 62, No. 183598

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 144-145

TOPIC TAGS: antifriction bearing, bushing, aircraft landing gear

ABSTRACT: This Author Certificate presents a device for installing an adjustable thrust bushing in bearings for, say, aircraft wheels. The bushing contains a bar carrying immovable and movable flats bearing against the internal ring of the wheel bearings. To produce a higher accuracy of the axle clearance and to determine the necessary length of the thrust bushing, the upper flat is made in the form of a spring-loaded flywheel. The outer surface of the flywheel supports an indicator fixed by a bracket to the bar. The indicator carries movable stops placed between the flats, as well as radial and longitudinal spring-loaded pins. The latter enter the radial recesses on both parts of the thrust bushing and also the openings formed on the inner sides of each flat.

SUB CODE: 01, 13 SUBM DATE: 12Jun65

Card 1/1

UDC: 629.135/138 531.71

BELOV, Ye.M., kand. veter. nauk; KRUGLOV, V.T., kand. veter. nauk;  
OSIPOVA, V.N., red.

[Protecting farm animals and plants against radioactive dust;  
safety manual for collective farm chairmen, state farm di-  
rectors, field crew foremen, and farm managers] Zashchita  
sel'skokhoziaistvennykh zhivotnykh i rastenii ot radioaktiv-  
noi pyli; pamiatka dlia predsedatelei kolkhozov, direktorov  
sovkhozov, brigadirov i upravliaiushchikh fermami. Moskva,  
Kolos, 1964. 16 p. (MIRA 18:5)

BELOV, E. N.

Osnovy tekhnicheskogo normirovaniia; rukovodstvo po tekhnich. normirovaniu v mestnoi promyshlennosti. Izd., 2., ispr. Moskva, Gos. izd-vo mestnoi promyshl. RSFSR, 1948. 110 p. tables.

Principles of technical normalization; manual of technical normalization in local industry.

DLC: TS155.B45 1948

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

BNLOV, Ye. N.; ZAKHAROV, N.N., redaktor; VASICH, I.N., redaktor izdatel'stva;  
BORISOV, A.S., tekhnicheskiy redaktor

[Principles for setting norms in technology; manual for setting  
technical norms in local industries] Osnovy tekhnicheskogo  
normirovaniia; rukovodstvo po tekhnicheskomu normirovaniu v  
mestnoi promyshlennosti. Izd. 4-oe, perer. Pod red. N.N.Zakharova.  
Moskva, Gos. izd-vo mestnoi promyshl. RSFSR, 1956. 158 p.  
(Production standards) (MIRA 10:7)

BELOV, Yevgeniy Nikolayevich; PETROCHENKO, P.F., kand. ekonom. nauk,  
red.; ILINICH, B.K., red.; KHARITONOVA, L.I., tekhn. red.

[Practical manual for the establishment of technical norms]  
Prakticheskoe rukovodstvo po tekhnicheskomu normirovaniu  
truda. Pod red. P.F.Petrochenko. Moskva, Gos. izd-vo mest-  
noi promyshl. i khudozh. promyslov RSFSR, 1961. 193 p.  
(MIRA 15:4)

(Production standards)

BELOV, Ye. P.

Reconditioning the negative plates of EPM-80 batteries. Elek. 1  
tepl. tiaga no.6:33-34 Je '57. (MLRA 10:8)

1. Akkumulyatorshchik motorvagonnogo depo Moskva III Severnoy  
dorogi.

(Electric batteries) (Electric locomotives)

BELOV, Ye.P.

Device for drilling holes in flanges of gate valves. Stroi.  
truboprov. 9 no.2:32-33 F '64. (MIRA 17:3)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, g.  
Bugul'ma.



BRYZGIN, V.A.; BELOV, Ye.P.

Attachment to the APR-2 automatic device for hoisting and lowering rods. Nefteprom. delo no.7:31-32 '64. (MIRA 17:8)

1. Neftepromyslovoye upravleniye "Al'met'yevneft'" i Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, g. Bugul'ma.

BELOV, Ye.P., inzh.

Inadequacy of the equipment for the major repair of oil wells. Berop.  
truda v prom. 8 no.10:16-18 0 '64. (MIRA 17:11)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, Bugul'ma.

BRYZGIN, V.A.; BELOV, Ye.P.

Improving a clamp to fasten a KRSK cable to pump lines. Mash.  
i neft. obor. no.7:32-33 '64.

(MIRA 17:11)

1. Ob'yedineniye Tatarskoy neftyanoy promyshlennosti i Tatarskiy  
neftyanoy nauchno-issledovatel'skiy institut, g. Bugul'ma.

BELOV, Ye.P.; BELOV, Ye.Ye.

Device for the continuous monitoring of the resistance of KRBK cable insulation when lowering a sinking electric pump into a well. Mash. i neft. obor. no.9:16 '64.

(MIRA 17:11)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, Bugul'ma.

BELOV, Ye.P.; BRYZGIN, V.A.

Using the APR-2 device in the current repair of wells exploited  
by electric centrifugal pumps. Mash. i neft. obor. no.9:13-14  
'64. (MIRA 17:11)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, Bugul'ma,  
i Ob"yedineniye neftyanoy promyshlennosti Tatarskoy ASSR Ministerstva  
neftyanoy promyshlennosti SSSR.

BELOV, Ye.P.; BRYZGIN, V.A.

Simplified method for installing hydraulic piston pumps using  
a PSh-6-500 packer. Nefteprom. delo no.8:23-25 '64.

(MIRA 17:12)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, Bugul'ma,  
i PTO ob'yedineniya "Tatneft".

BRYZGIN, V.A., inzh.; BELOV, Ye.P., inzh.

Platform for the underground repair of oil wells using the  
"Bakinate" unit. Bezop.truda v prom. 9 no.4:40 Ap '65.

(MIRA 18:5)

LAPKIN, I. I., LATOSH, N. I., BELOV, YE. S.

Ketones

Steric hindrances in organomagnesium reactions. Part 13. Preparation of ketones by interactions of acyl halides with organomagnesium compounds. Zhur. ob. khim. 22 no. 6, 1952

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.



BELOV, Ye.V.; DZHANGIR'YANTS, D.A.; TUL'BAYEVA, Z.N.

Results of studying the bitumen content and underground waters in Mesozoic and Paleozoic sediments in the southern part of the Emba region. Trudy Inst. geol. i geofiz. AN Kazakh. SSR 1:82-90 '63.

(MIRA 16:7)

(Emba region--Water, Underground)

(Emba region--Bitumen--Geology)

BELOV, Ye.V.

Some data on the presence of bitumen in persalt sediments of  
Novaya Kazanka domes. Trudy Inst. geol. i geofiz. AN Kazakh. SSR  
1:74-81 '63. (MIRA 16:7)  
(Volga-Ural region--Bitumen--Geology)

SHMAYS, I.I.; BELOV, Ye.V.

Features of the distribution of scattered bitumens in the  
sediments of the Volga-Ural interfluve. Geol. nefti i gaza  
8 no.4:44-46 Ap '64. (MIRA 17:6)

1. Kazakhskiy politekhnicheskii institut.

BELOV, Ye.P.; BELOV, Ye.Ye.

Device for the continuous monitoring of the resistance of KRBK cable insulation when lowering a sinking electric pump into a well. Mash. i nef. obor. no.9:16 '64.

(MIRA 17:11)

1. Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, Bugul'ma.

BELOV, Yu.

French economists in Moscow. Vop. ekon. no.3:160 Mr '60.

(MIRA 13:2)

(Economics)

BELOV, Yu.

Rural youth in the struggle for abundance. Komm. Vooruzh. Sil  
4 no.6:30-35 Mr '64. (MIRA 17:4)

1. Chlen byuro Tsentral'nogo komiteta Vsesoyuznogo Leninskogo  
kommunisticheskogo soyuz molodezhi.

36960

3, 2600

24.6716

S/141/62/005/001/005/024  
E052/E314

AUTHORS: Kaner, E.A. and Belov, Yu.A.

TITLE: On the penetration of an electromagnetic field into magneto-active plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.5, no. 1, 1962, 47 - 60

TEXT: The authors discuss the penetration of ordinary and extraordinary waves into semi-infinite plasma in a magnetic field when the latter is parallel to the surface of the plasma. Ion motion is taken into account and no limitations are imposed on the quantity  $\mu = \delta nT/H^2$ , where  $n$  is the plasma density and  $T$  is the electron temperature. The surface of the plasma is represented by a model, in which the electrons and ions are diffusely reflected at the surface, i.e. it is assumed that after collision with the surface the particles have a steady-state Maxwellian distribution function. The analysis starts with the formulation of the transport equations for electrons and ions and is continued with a derivation of formulae for the current density and the effective penetration  
Card 1/2

X

S/141/62/005/001/005/024  
EO32/E314

On the penetration of ....

depths in the limiting case of weak and strong spatial distribution. Particular attention is paid to the resonance properties of plasma at the "hybrid" frequency  $\sqrt{\Omega_e \Omega_i}$  and in the region of the electron and ion gyrofrequencies  $\Omega_e$  and  $\Omega_i$ , respectively. The resonance effect investigated in the present paper corresponds to cases where the dielectric constant  $\epsilon_{ef}$  of plasma becomes infinite. However, there are also resonances associated with zero values of  $\epsilon_{ef}$  but these will be considered in a further paper. There is 1 figure. ✓

ASSOCIATION: Institut radiofiziki i elektroniki AN UkrSSR  
(Institute of Radiophysics and Electronics of  
the AS UkrSSR)

SUBMITTED: May 29, 1961

Card 2/2



KARPACHEVA, S.M., doktor khimicheskikh nauk; MEDVEDEV, S.P., inzh.; ZAKHAROV, Ye.I.,  
inzh.; BELOV, Yu.A., inzh.

Effect of pulsation on the operation of packed columns. Khim.mashinostr.  
no.2:14-17 Mr-Ap '63. (MIRA 16:4)

(Packed towers)

L 56051-65 EWT(m)/EWP(w)/EPF(c)/EPF(n)-2/EWA(d)/EPR/T/EWP(t)/EWP(z)/EWP(b)  
Pr-4/Ps-4/Pu-4 IJP(c) MJW/JD

ACCESSION NR: AP5010558

UR/0129/65/000/004/0053/0055  
669.14:621.755

41  
38

AUTHOR: Belov, Yu. A.; Markin, G. M.

TITLE: Nitriding of 25Kh5MA steel

SOURCE: Metallovedaniye i termicheskaya obrabotka metallov, no. 4, 1965, 53-55

TOPIC TAGS: steel nitriding, steel hardness, nitriding catalyst, ammonium chloride, aniline / 25Kh5MA steel

ABSTRACT: A study of the change in layer depth and hardness was made under various conditions of nitriding 25Kh5MA steel. In a one-stage nitriding process, after a holding time of 15-16 hrs., the depth of the layer with a hardness of HV 820 does not increase and remains at 0.12-0.14  $\mu$ m. As the holding time is increased, the layer with hardness HV = 550-300 grows to a slight extent, and after 16 hrs. the process slows down so much that further nitriding is useless. As the temperature is raised from 500 to 560C (for a 16-hr. holding time), the layer increases by about 0.1  $\mu$ m, and the hardness decreases from HV 920 to HV 740. In a two-step nitriding process (first stage, 16 hrs. at 500C; second stage, 5, 10, 15 hrs. at 560C), the maximum hardness of the nitrated layer HV > 820 was observed

Card 1/2

L 56051-65

ACCESSION NR: AP5010558

at a depth of 0.10-0.15 mm. <sup>21</sup> Ammonium <sup>21</sup> chloride and aniline were tested as cata- <sup>3</sup>  
lysts for the acceleration of the nitriding process. With NH<sub>4</sub>Cl, no appreciable  
increase in layer depth was obtained. Aniline increased the depth by 0.05-0.08 mm,  
but the depth of the very hard layer (HV 820, up to 0.15 mm) remained unaffected.  
Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Yaroslavskiy zavod toplivnoy apparatury (Yaroslavl Fuel Apparatus  
Plant)

SUBMITTED: 00

ENCL: 00

SUB CODE: M4

NO REF SOV: 002

OTHER: 000

AR  
Card 2/2

BELOV, Yu.D. in h.

Investigating the strength of coal seam ground rocks. Izv.  
vys.ucheb.zav.; gor.zhur. no.10:38-46 '58. (MIRA 12:8)

1. Sibirskiy filial Vsesoyuznogo nauchno-issledovatel'skogo  
marksheyderskogo instituta.  
(Rocks--Testing) (Earth pressure)

BELOV, Yu.D., gornyy inzh.; KUNYAYEV, Ye.V., gornyy inzh.; OKHRIMENKO, V.A.

Manifestation of rock pressure in mining flat seams by the hydraulic method. Ugol' 34 no.1:33-38 Ja '58. (MIRA 12:1)

1.Vsesoyuznyy nauchno-issledovatel'skiy marksheyderskiy institut (for Belov, Kunyayev). 2.Vsesoyuznyy nauchno-issledovatel'skiy institut Gidrougol' (for Okhrimenko).  
(Hydraulic mining) (Subsidence (Earth movements))

BELOV, A.A.; BELOV, Yu.D.; BEZHETSKIY, A.Ye.; KUNYAYEV, Ye.V.;  
LYALIKOV, G.I.; PETROV, N.S.; SLAVOROSOV, A.Kh.;  
BOLDYREVA, Z.A., tekhn. red.

[Concise mine surveyors' reference book]Kratkii spravochnik  
marksheidera shakhty. Moskva, Gosgortekhnizdat, 1962. 416 p.  
(MIRA 15:9)

(Mine surveying)

SOV/136-50-11-4/21

AUTHOR: Sokolovskiy, P.A.  
Belov, Yu. I.

TITLE: Electrothermic Production of Zinc Dust at the Belovo  
Zinc Works (Elektrotermicheskoye polucheniye  
tsinkovoy pyli na Belovskom tsinkovom zavode)

PERIODICAL: Tsvetnyye Metally. 1958, Nr 11, pp 20-25 (USSR)

ABSTRACT: In view of the disadvantages of existing methods at  
the Belovo Zinc Works for zinc and zinc-dust production  
an electrothermic process has been investigated. This  
was done jointly by the works and the Gintsvetmet  
Institute in 1956-1957 with an experimental 150 kW  
installation and July 1957 a semi-production  
1000 kVA unit has been in operation. This has an  
oil-fired rotary kiln 11 m long and 1.6 m external  
diameter for calcination at a maximum temperature of  
850-900°C. From the kiln the hot charge goes via  
a lined bunker into the electric furnace. This is  
5.4 m long and 0.6 wide internally, with a chroma-  
magnesite brick bottom and magnesite in melt-contacted  
zones. Current is supplied from two three-phase  
transformers type ETM 900/10 with a maximum of

Card 1/3

SOV/136-5P-11-4/21

## Electrothermic Production of Zinc Dust at the Belovo Zinc Works

7400 amperes per phase. Eight charging hoppers are provided on the furnace as is a condenser for liquid zinc and a condensing chamber for zinc dust. The gases after cleaning in a water-cooled chamber, cyclone and scrubber are ejected. The trapped material is screened on 0.2 - 0.3 mm screens, the undersize being exported as zinc dust, the oversize being melted to liquid zinc. The electric-furnace charge consisted of sinter (58-59% Zn, 0.7 - 0.9% Pb, 6-8% Fe, 1.5 - 2.5% Cu, 0.7 - 0.9% S, 0.1 - 0.2% Cd, 1.2% CaO, 1.0 - 1.5% MgO, 4-5% SiO<sub>2</sub>, 1-2 g/tonne Au, 100-200 g/tonne Ag) with enough limestone (50-55% CaO, 3-5% SiO<sub>2</sub>) to give a CaO: SiO<sub>2</sub> ratio in the slag of 1 and the theoretical amount of coke. 140 was found to be the optimal voltage giving a current of 3600 amperes, the daily productivity of the furnace being 14 tonnes of calcined charge (6 tonnes of zinc). The zinc content of the slag depended on the iron content (1.9% Zn with 7.0% Fe - 5.8% Zn with 12.8% Fe) and on the (CaO + MgO)/SiO<sub>2</sub> ratio. The copper and noble

Card 2/3



SOV/136-58-11-4/21

Electrothermic Production of Zinc Dust at the Belovo Zinc Works

metals concentrated in the matte and alloy (about 2% copper loss in slag). The electrothermic process described required 5-7 kg of electrodes, 100 kg oil and 3600-3800 kWh per tonne of zinc dust, the production cost per tonne being 2800-2900 roubles. The condensation of zinc vapour into liquid metal has not been adopted, the activity of the dust is comparatively low, lining life is short and dust-condenser design is defective: these problems are being studied by the works with the Gintsvetmet Institute. There is 1 figure.

ASSOCIATION: Belovskiy Tsinkovyy Zavod (Belovo Zinc Works)

Card 3/3

BELOV, Yu.I.

Reliability of electroradionavigation equipment and its  
determination. Inform. sbor. TSNIIMF no. 120. Sudovozh.  
i sviaz' no. 27:14-23 '64 (MIRA 19:1)

L 46763-66 EWT(d)/EWT(1) TG/BC

ACC NR: AR6004335

SOURCE CODE: UR/0274/65/000/009/B037/B037

AUTHOR: Belov, Yu. I.

REF SOURCE: Inform. sb. Tsentr. n.-i. in-t morsk. flota, vyp. 126, 1964, 3-8

TITLE: Reliability requirements for electronic navigation equipment and the calculation of its reliability

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 9B236

TOPIC TAGS: system reliability, component life expectancy, navigation equipment

TRANSLATION: The basic characteristics of reliability are functions of purpose, complexity, and technological level. Reliability estimates may be based on analytical methods or on statistical data on failures. The basic characteristics of reliability are given by the relation

$$P(t) = e^{-t \sum_{i=1}^m \lambda_i}$$

where  $P(t)$  is the probability of flawless operation,  $t_{work}$  is the continuous operating time of the equipment and  $\lambda_i$  is the degree of component failure. The probability of flawless operation of all components in a computing block is given by the formula

$$P(t) = P_1(t) \cdot P_2(t) \cdot P_3(t) \dots P_n(t)$$

Card 1/2

UDC: 621.396.98.019.3

L 46763-66

ACC NR: AR6004335

The analytical method requires reliable information concerning the degree of failure of the components. In general, this method cannot be used when such data are lacking. At present, this procedure is not recommended for the evaluation of electronic navigation equipment, as it does not provide sufficient accuracy. It can, however, be utilized in the design stage to compare the reliability of equipment of the same type. M.

SUB CODE: 17,14,09/      SUBM DATE: none

Card 2/2    mt

BELOV, Yu.M., inzh.

Effect of conditions of hard facing under ~~fire~~ with ribbon  
electrodes on the cross-section of the bead. Svar. proizv.  
no.12:6-8 D '61. (MIRA 14:12)

(Hard facing)

BELOV, Yu.M., inzh.

Characteristics of the melting of electrode metal and flux during automatic arc hard facing with a strip electrode. Svar. proizvod. no.1:10-12 Ja '64. (MIRA 17:1)

BELOV, Yu.M. (Leningrad); KASHEVSKIY, N.P. (Leningrad);

Prinimali uchastiye: SINYUKOV, F.P., inzh.; MUL'KHANOV, N.I., inzh.;  
LUGOVSKOY, V.M., tekhnik; TABARENKOV, K.I., tekhnik;  
PETUKHOV, V.V., tekhnik

Hard facing of iron mill rolls with a ribbon electrode.  
Avtom.svar. 15 no.10:71-77 0 '62. (MIRA 15:11)  
(Rolls (Iron mills))  
(Hard facing)

IVANOV, I.D.; SITONITE, Yu.P.; BELOV, Yu.M.

Nitrogen fixation as a hydrogen-acceptor process. *Mikrobiologiya*  
34 no.2:193-199 Mr-Apr '65. (MIRA 18:6)

1. Institut mikrobiologii AN SSSR.



NYDEL'MAN, G.R.; ~~BELOV, Ya. N.~~, redaktor; KRASIL'SHCHIK, S.I., redaktor;  
TOKER, A.M., tekhnicheskiy redaktor

[Manual on safety measures for electric lineman] Pamiatka po tekhnike  
bezopasnosti dlia elektromonterov-lineishchikov. Moskva, Gos. izd-vo  
lit-ry po stroit. i arkhitekture, 1954. 38 p. (MIRA 8:3)

1. Russia (1923- U.S.S.R.) Ministerstvo stroitel'stva. Otdel  
tekhniki bezopasnosti i promyshlennoy sanitarii.  
(Electric lines--Safety measures)

NYDEL'MAN, G.R.; ~~BELOV, Yu. M.~~ redaktor; KRASIL'SHCHIK, S.I., redaktor;  
TOKER, A.M., tekhnicheskii redaktor

[Manual on safety measures for electricians working on cables]  
Pamiatka po tekhnike bezopasnosti dlia elektromonterov po kabel'-  
nym rabotam. Moskva, Gos. izd-vo lit-ry po stroit. i arkhitekture,  
1954. 46 p. (MIRA 8:3)  
(Electric cables--Safety measures)

DROZDOV, V.K.; MAYOROV, O.N.; BELOV, Yu.S.; BUNOV, Yu.N.; MAKAROV, A.N.

Formation of stationary waves on pneumatic tires at high rolling  
speeds. Kauch.i rez. 19 no.12:40-44 D '60. (MIRA 13:12)

1. Yaroslavskiy shinnyy zavod.

(Tires, Rubber--Testing)

YERAKHTIN, Dmitriy Dmitriyevich, dots., kand. tekhn. nauk; GOKHMAN, Shlema Moiseyevich, kand. tekhn. nauk; DVINYANINOV, Vistor Nikolayevich, st. prepodavatel'; ZAYTSEV, Pavel Alekseyevich, inzh.; LOPATIN, Anton Venediktovich, dots.; ORLOV, Nikolay Mikhaylovich, inzh.; STRATANOVICH, Nikolay Nikolayevich, inzh.; STRIGANOV, Nikolay Ignat'yevich, inzh.; TIKHONOV, Nikolay Prokop'yevich, dots., kand. tekhn. nauk; RAYKHLIN, Zaliman Tanfilovich, st. prepodavatel'; BELOV, Aleksandr Yemel'novich, dots.; RESHETNIKOV, N.S., dotsent, retsenzent; BABUSHKIN, I.N., red.; PITERMAN, Ye.L., red.izd-va; PARAKHINA, N.L., tekhn. red.

[Repair of lumbering and forestry machinery] Remong lesozagotovitel'nykh i lesokhoziaistvennykh mashin. By D.D.Erakhtin i dr. Moskva, Goslesbumizdat, 1961. 436 p. (MIRA 15:2)

1. Kafedra remonta Moskovskogo lesotekhnicheskogo instituta (for Reshetnikov).  
(Forests and forestry--Equipment and supplies)  
(Lumbering--Machinery)

S/588/61/000/004/008/011  
D234/D303

AUTHORS: Golubkin, V.N., and Belov, B.I., Candidates of Technical Sciences

TITLE: Programmed control of metal cutting machines

SOURCE: Avtomaticheskoye upravleniye i vychislitel'naya tekhnika, no. 4, Moscow 1961, 306 - 323

TEXT: The purpose of the paper is to classify the experience accumulated during the design of systems of programmed control, in order to have a unified point of view when considering a new system which is to be designed. All known systems are divided into 1) continuous, 2) discrete, and 3) discrete-continuous and a survey of system of the latter two types is given (chiefly those developed in non-Soviet-bloc countries). G.A. Spynu, Candidate of Technical Sciences of the Institute of Physics of AS, Ukrainian SSR, A.B. Yakhin, Professor and A.V. Chernyshev, Engineer, of MVTU im. Bauman are mentioned for their contributions in the field. There are 10 figures and 15 Soviet-bloc references. ✓

Card 1/1

BELOV, B.I.; KOZLOV, V.V.

Diazo compounds. Part 14: Diazotization of aromatic amines  
with nitrite in solutions of saturated carboxylic acids.  
Zhur.ob.khim. 31 no.7:2212-2217 JI '61. (MIRA 14:7)

1. Moskovskiy institut narodnogo khozyaystva imeni B.V.  
Plekhanova.

(Amines) (Diazo compounds)

Belova, A.

AUTHOR: Belova, A., Dneprodzerzhinsk

107-9-40/53

TITLE: The Repair of a Push-Button Switch (Remont klavishnogo pereklyuchatelya)

PERIODICAL: Radio, 1957, # 9, p 52 (USSR)

ABSTRACT: This article deals with break-downs of push-button switches in the "Daugava" and other types of radio receivers. In order to prevent malfunctions, the author suggests to make a groove in that surface of the push-button which comes into contact with the supporting bar. This groove must have a depth of 0.5 mm and a width corresponding to the thickness of the bar. It will prevent the bending of the bar.  
There is one figure.

AVAILABLE: Library of Congress

Card 1/1

BELOVA, A.

Credits for introducing new technology. Den. i kred. 18 no.12:  
44-45 D'60. (MIRA 13:11)

1. Starshiy kreditnyy inspektor Ivanovskoy oblastnoy kontory  
Gosbanka.  
(Ivanovo Province--Credit) (Ivanovo Province--Manufactures)



BELOVA, A.

State Bank's business and people. Den. 1 kred. 19 no.7:53-59  
Jl '61. (MIRA 14:7)

1. Starshiy kreditnyy inspektor Ivanovskoy kontory Gosbanka.  
(Ivanovo Province--Banks and banking)  
(Auditing)

BELOV, A. (Alma-Ata)

Reclamation of virgin land and problems of agricultural  
specialization. Vop.ekon. no.9:92-101 S '61. (MIRA 14:8)  
(Kazakhstan--Reclamation of land)

BELOVA, A., starshiy ekonomist; LOGVINENKO, N., instruktor

State Bank's business and people. Den. i kred. 20 no.9:44-50 S  
'62. (MIRA 15:9)

1. Ivanovskaya kontora Gosbanka (for Belova). 2. Dnepropetrovskiy  
oblastnoy komitet Kommunisticheskoy partii Ukrainy (for Logvinenko).  
(Banks and banking) (Auditing and inspection)

BELOVA, A. A.

Outstanding Soviet surgeon IU. IU. Dshanelidze. Sov. med. 20 no.4:  
84-89 Ap '56: (MLRA 9:8)

(BIOGRAPHIES,  
Dshanelidze, IU. IU. (Rus))

BELOVA, A. A. Cand Med Sci -- (diss) "Yu. Yu. Dzhanelidze's role in surgery."  
Mos, 1958. 20 pp (1st Mos Order of Lenin Med Inst in I. M. Sechenov), 200  
copies (KL, 52-58, 106)

-108-

BELOVA, A.A.

Problem of burn trauma in the works of I.U. Dzhanelidze.  
Sov.sdrav. Kirg. no.1:58-62 Ja-F '58. (MIRA 13:7)

1. Iz instituta organizatsii sdravookhraneniya i istorii  
meditsiny im. N.A. Semashko Ministerstva sdravookhraneniya  
SSSR.

(BURNS AND SCALDS)  
(DZHANELIDZE, IUSTIN JULIANOVICH, 1883-1950)

~~... A.A.,~~ kand. meditsinskikh nauk; KUZ'MIN, M.K., kand.  
meditsinskikh nauk

Dedication of a monument to Professor F.R. Borodulin. Sov.  
zdrav. 19 no. 4:87 '60. (MIRA 13:10)  
(BORODULIN, F.R., d. 1956)

BELOVA, Aleksandra Alekseyevna; ERISTAVI, K.D., prof., red.; KANDELAKI,  
D.S., red. 1zd-va; ZHIVIDZE, D.I., tekhn. red.

IU.IU.Dzhanelidze, 1883-1950. Tbilisi, Gos. izd-vo uchebno-  
pedagog. lit-ry, "TSodna," 1961. 277 p. (MIRA 14:9)  
(Dzhanelidze, Iustin Iulianovich, 1883-1950)  
(SURGERY)



BELOVA, A.A., kand.med.nauk; POPKOVA, T.A. (Moskva)

Works of Soviet graphic art as materials for the study of  
medical history. Sov.zdrav. 22 no.4:47-50 '63. (MIRA 16:4)  
(MEDICINE AND ART)

BEKOVA, A.A., kand.r.l.nauk

Impressions of an eyewitness. Zdrav.Ros.Feder. 7 no.3:44-46  
Mr '63. (MIRA 16:3)  
(TURIN--EXHIBITIONS) (WORK--EXHIBITIONS)

RZHEKHIN, V.P., kand.tekhn.nauk; BELOVA, A.B.

Removal of gossypol from cottonseed oil with anthranilic acid.  
Masl.-zhir.prom. 27 no.1:12-15 Ja '61. (MIRA 14:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov.  
(Cottonseed oil) (Gossypol)  
(Anthranilic acid)

RZHEKHIN, V.P., kand.tekhn.nauk; BELOVA, A.B., inzh.; TROS'KO, U.I.,  
inzh.; KONEVA, Ya.A., inzh.; BORSHCHEV, S.T., inzh.; VLASOV,  
V.I., inzh.; ROZENSHTEYN, G.V., inzh.; TADZHIBAYEV, G.T.,  
inzh.

Separation of gossypol from prepassed oils and micelles with  
anthranilic acid. Masl. - zhir. prom. 27 no.8:26-29 Ag '61.  
(MIRA 14:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov (for  
Rzhekhin, Belova).
  2. Sredneaziatskiy filial Vsesoyuznogo  
nauchno-issledovatel'skogo instituta zhirov (for Tros'ko, Koneva).
  3. Kokandskiy maslozhirovoy kombinat (for Borshchev, Vlasov,  
Rozenshteyn, Tadzhibayev).
- (Gossypol) (Anthranilic acid) (Oils and fats)

RZHEKHIN, V.P.; BELOVA, A.B.

Studying the interaction between gossypol and o-aminobenzoic  
(anthranilic) acid. Zhur. prikl. khim. 34 no.5:1176-1178  
M/ '61. (MIRA 16:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov.  
(Gossypol) (Anthranilic acid)

RZHEKIN, V.P., kand.tekhn.nauk; BELOVA, A.B., ~~ingh.~~; CHUDNOVSKAYA, M.A.

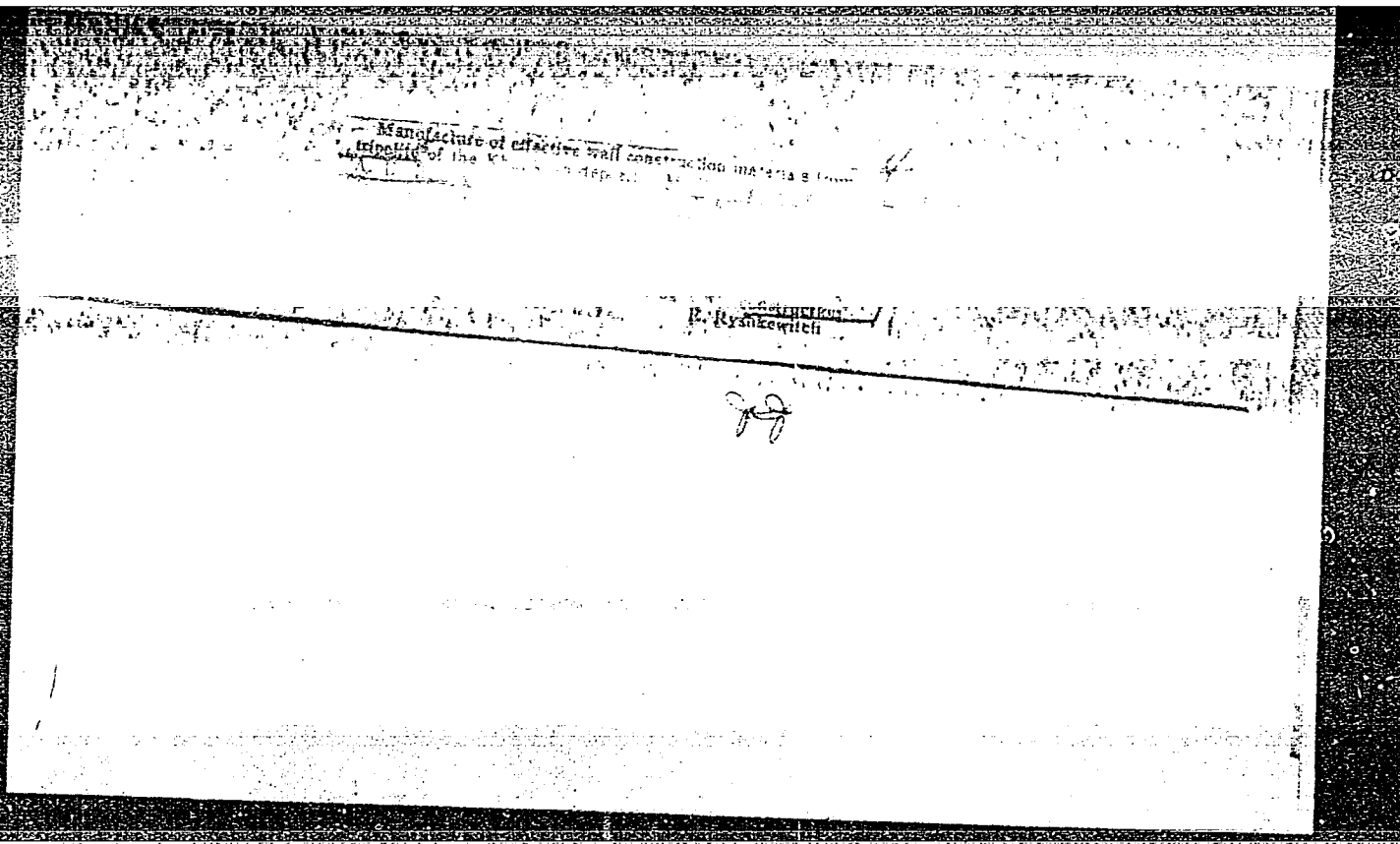
Obtaining gossypol and anthranilic acid with the method of alkaline hydrolysis of gossypol anthranilates. Masl.-zhir.prom. 29 no.2:9-12 F '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov.  
(Gossypol) (Anthranilic acid)

BELOVA, A.B., inzh.; RZHEKHIN, V.P., kand. tekhn. nauk; Prinimala  
uchastiye GORYAYEVA, L.N.

Determining the content in anthranilates of gossypol liberated  
during its hydrolysis. Masl.-shir. prom. 29 no.3:14-17 Mr '63.  
(MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut shirov.  
(Gossypol) (Anthranilic acid)





BELOVA, A. I.

Glass Manufacture

Cold repairs of tank furnaces. Stek. i ker. 10, No. 3, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

*BELOVA, A. I.*

PHASE I BOOK EXPLOITATION

SON/5027

Nauchno-issledovatel'skiy institut schetnogo mashinostroyeniya

Voprosy rascheta i konstruirovaniya elektronnykh vychislitel'nykh mashin, vyp. 1,  
(Problems of the Calculation and Design of Electronic Computers, v. 1) Mos-  
cow, Mashgiz, 1960. 194 p. Errata slip inserted. 8,000 copies printed.

Ed.: N.Ye. Kobrinskiy, Doctor of Technical Sciences; Ed. of Publishing House:  
A.G. Akimova; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on Machine  
Building and Instrument Construction: N.V. Pokrovskiy, Engineer.

PURPOSE: This collection of articles is intended for scientists and technicians  
working in computing-machine building and related fields.

COVERAGE: This collection of articles presents the results of investigations  
related to the design and development of electronic computers. It examines  
the realization of some general and special algorithms by means of digital  
and analog computers, investigates errors in the realization of functional  
relationships in electronic analogs, and reviews problems of computing and  
designing the external outfits and arrangement of digital computers based  
on various principles of operation. Methods of computation and the basic  
characteristics of stabilized supply sources for digital and analog computers,  
~~Card 1/4~~

Problems of the Calculation (Cont.)

SOV/5027

methods of computing standard circuits, and problems related to their reliability are examined. No personalities are mentioned. References accompany some of the articles.

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BELOVA, A.I.; VITENBERG, I.M.; GLUZBERG, E.A.; KOZLOVA, A.I.

Possibility of adding stages to mathematical electrical models.  
Vop. rasch. i konstr. elektron. vych. mash. no.1:57-74 '60.

(MIRA 14:1)

(Electronic analog computers)

LEONOV, I.A., inzh.; BELOVA, A.I., inzh.

Drawing of rods made of continuously cast metal. Stal' 22  
no.3:282 Mr '62. (MIRA 15:3)  
(Wire drawing) (Continuous casting)



BELOVA, A. M.

"The Graphanalytic Method -- A New Means of Calculating River Casting Sweep-Nets and Its Practical Application." Card Tech Sci, Moscow Technical Inst of Fishing Industry and Economy imeni A. I. Mikoyan, Moscow, 1954. (KL, No 7, Feb 55)

SO: Sum. No. 631, 26 Aug 55-Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

BELOVA, A.M.

VINTSEMINI, K.M., dotsent, BELOVA, A.M., kand.med.nauk, RUTKOVICH, N.L.,  
doktor med.nauk, LIPSKIY, Ye.B., kand.med.nauk

Dmitrii Ksenofontovich Iazykov; on his 60th birthday. Ortop.  
travm. i protez 19 no.2:83-84 Mr-Ap '58 (MIRA 11:5)  
(IAZYKOV, DMITRII KSENOFONTOVICH, 1898-)



BELOVA, Antonina Matveyevna; GOLYGINA, L.N., spets. red.;  
SEREBROVA, I.M., spets. red.; AYNZAVT, Yu.M., red.

[Safety measures in the fishing industry] Tekhnika bez-  
opasnosti v rybnoi promyshlennosti. Moskva, Fishchevaia  
promyshlennost', 1964. 268 p. (MIRA 18:7)

BELOVA, A. N., BELEN'KIY, Ye. S., and Rabotalova, Ye. K.

Pnevmoentsefalografiya v detskoy psikhiatricheskoy praktike p. 128  
V sb Aktual'nyye Problemy Nevropatologii i Psikhiatrii, Kuybyshev 1957.

Kuybyshev Psikhonevrologicheskoy Bol'nitsy.

BELOVA, A.N.

Alcohol-novocaine block in the treatment of fractures of the ribs.  
Nov.khir.arkh. no. 2:75-76 Mr-Apr '57. (MIRA 10:8)

1. Kafedra ortopedii i travmatologii Tsentral'nogo instituta  
usovershenstvovaniya vrachey  
(RIBS--WOUNDS AND INJURIES) (ALCOHOL--THERAPEUTIC USE)  
(NOVOCAINE)

9,2110  
9,4300

24928

S/181/61/003/006/025/031  
B102/B214



AUTHORS: Belova, A. P., Gorskaya, L. G., and Zakgeym, L. N.

TITLE: The electric properties of thin oxide layers on aluminum, tantalum, and zirconium

PERIODICAL: Fizika tverdogo tela, v. 3, no. 6, 1961, 1851 - 1858

TEXT: Rectifying metals with thin oxide layers in electrolytic cells have lately been investigated many times, partly because such oxide coated metals are finding more and more applications in radio engineering (e. g. construction of condensers), and partly because they exhibit interesting and often anomalous physical properties. The valve action and the asymmetry of the electric conduction have been investigated before for many systems including those in which an oxide semiconductor was used as the second electrode. The valve action has also been investigated repeatedly and different authors have made different assumptions about its origin, most of them assuming the appearance of a p - n junction. To learn more exactly the rectification mechanism and the asymmetry of the electric conduction the authors developed a new method for measuring the

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B102/B214

The electric properties... 24928

electrical characteristics of thin oxide layers on valve metals in cells where the second electrode is a metal. The subject to such investigations is the design of electrolyte - free condensers of small size having high capacities at low working voltages, a fine oxide layer serving as the dielectric. However, there are many difficulties in realizing this project. The method of the authors is the following: A foil of the valve metal is oxidized in an electrolytic cell; a plate of 6.5x6.5 mm is cut out and pasted on a ceramic plate having two silver grooves. The contact between the oxidized metal and a silver groove is accomplished by means of a conducting silver varnish. The second metal coating is a thin metal layer (e. g. Al) sputtered on to the oxide layer in vacuo. It is important to insulate the sputtered metal coating from the valve metal on the ceramic plate, which is accomplished by means of a "bridge" of insulating resin (see Fig. 1). Samples with oxide layers of  $Al_2O_3$ ,  $Ta_2O_5$ , and  $ZrO_2$  were prepared according to this method, the second electrode being Al in all cases. The temperature dependence of the capacity and of the loss angle at 1000 cps were measured for such samples. The capacity increases linearly with temperature for all the three oxides. The temperature

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S/191/61/003/006/025/031  
B102/B214

The electric properties...

coefficient of the capacity for  $Ta_2O_5$  was  $250 \cdot 10^{-6} \text{ deg}^{-1}$  which agrees with the result of Sloan and Berry; the value for  $Al_2O_3$  was  $440 \cdot 10^{-6} \text{ deg}^{-1}$  and for  $ZrO_2$   $310 \cdot 10^{-6} \text{ deg}^{-1}$ .  $\tan \delta$  for all the oxides at  $20^\circ C$  was  $5 \cdot 10^{-3}$  and increased exponentially with temperature. The  $I(t)$ -diagram shows that the leakage current in the blocking (transmitting) direction decreased (increased) rapidly and after this remained independent of or slightly dependent on time. Fig. 3 shows for all the three samples the dependence of resistivity on the field strength,  $\ln \rho = f(E)$ ; Fig. 4 shows  $\ln \rho = f(1/T)$ , where  $T$  is the absolute temperature. The table gives the resistivity values for  $E = 50 \text{ kv/mm}$  of the oxide layers (1) in the blocking (A) and the transmitting (B) direction. The results obtained justify the assumption made by the authors that a p-i-n or ap-n junction is formed in the oxide layer or on the oxide - metal interface. Further studies in an electrolytic cell showed that there existed in fact a p-i-n junction with a thin p-type semiconducting layer on the side of the electrolyte and a thin n-type semiconducting layer on the side of the metal. These two layers are separated by the i-layer of the metal oxide which shows regular stoichiometric composition. Problems of the recti-

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B102/B214

The electric properties... 24928

fication mechanism are finally discussed. B. M. Tareyev and M. M. Lerner are mentioned. There are 5 figures, 1 table, and 14 references: 2 Soviet-bloc and 10 non-Soviet-bloc. The most important references to English-language publications read as follows: R. J. Taylor, H. E. Haring, Journ. of Electrochem. Soc., 103, 11, 611, 1956; 99, 1, 30, 1952; J. Sasaki, Phys. a. Chem. of Sol., 13, 3/4, 177, 1960; D. Sloan, R. Berry. Proc. IRE, 47, 6, 1070, 1959.

SUBMITTED: December 26, 1960 (initially),  
January 24, 1961 (after revision)

Оксидный слой ⊙	20° C		100° C	
	запрещенное направление Δ	проедущее направление Δ	запрещенное направление Δ	проедущее направление Δ
Ta <sub>2</sub> O <sub>5</sub> ..	5 · 10 <sup>18</sup>	1 · 10 <sup>18</sup>	2 · 10 <sup>16</sup>	7 · 10 <sup>18</sup>
ZrO <sub>2</sub> ..	7 · 10 <sup>18</sup>	5 · 10 <sup>18</sup>	1 · 10 <sup>16</sup>	5 · 10 <sup>18</sup>
Al <sub>2</sub> O <sub>3</sub> ..	7 · 10 <sup>18</sup>	1 · 10 <sup>18</sup>	6 · 10 <sup>16</sup>	1 · 10 <sup>18</sup>

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SELOVA, A. P., MASHBITS, F. D.

"The Effect of a low Protein Diet on the Growth of Transinjected Tumors"  
Tr. Akad. Med. Nauk SSSR, Vopr. Onkologii, 1953, Vol 26, No 6, pp 85-90

Authors studied the effect of a low protein diet by feeding a diet containing 3.79 percent protein (with respect to calories) to some of the test animals and a diet with 18.26 percent protein to the control rats. A total of 120 male rats, 5 to 8 weeks old, were used. The transinjected tumor was a spindle-cell sarcoma. The growth of the tumors in the test animals slowed down in comparison to growth in the rats on normal diet. Growth continued however, in spite of the stabilization and even drop in weight of the rats. When the low protein diet was replaced with the normal diet after transinjection, the tumor grew as fast as in the control animals. (RZhbiol, No 3, Oct 1954)

SO: Sum. 492, 12 May 55



BELOVA, A. P. Cand Med Sci -- (diss) <sup>10m</sup> "The Problem of ~~the~~ the  
State of ~~XXXX~~ Venous and Arterial Pressure <sup>W</sup> ~~in~~ Botkin's Disease  
<sup>any</sup> ~~in~~ Children." Len., 1957. 12 pp 20 cm. (Len Pediatric Medical  
Inst and Len Sanitary-Hygiene <sup>4</sup> Inst), 200 copies (KL, 19-57, 88)

EXCERPTA MEDICA Sec 7 Vol 13/11 Pediatrics Nov. 59 . . . .

3072. USE OF THE NEW PHYSIOLOGICAL METHOD OF STUDYING THE STATE OF THE VENOUS AND ARTERIAL PRESSURE IN CHILDREN WITH EPIDEMIC HEPATITIS (Russian text) - Igelova A. P. - PEDIATRIYA 1958, 4 (24-29) Graphs 1 Illus. 1

In 74 cases of hepatitis the arterial and venous pressure was determined by the method of Arintchin, which consists in a combination of sphygmomanometry and plethysmography. The results indicated in all cases some changes in the cardiovascular system. The method was controlled by direct measurement of the venous pressure (Waldmann) and the auscultatory method of determination of the blood pressure and the results agreed very well. As the method Arintchin includes bloodless measurement of the venous pressure, it is recommended.

Najman - Zagreb (VII,18)

BELOVA, A.F., kand.med.nauk; PELOV, B., subordinator

Case of acute myeloid leukosis with rare localization of a pronounced tumor growth in 4-year-old girl. Vop. okh. mat. i det. 5 no. 5:85-87 S-0 '60. (MIRA 13:10)

1. Iz kafedry gospital'noy pediatrii (zav. - deystvitel'nyy chlen AMN SSSR prof. A.F. Tur) Leningradskogo pediatricheskogo meditsinskogo instituta (dir. - prof. N.T. Shutova).  
(LEUKEMIA) (EAR--TUMORS)

BELOVA, A.P., kand.med.nauk

Late results of the climatotherapy of children with diseases of the kidneys at the Rosa Luxemburg Sanatorium on the southern coast of the Crimea (Koreiz-Gaspra). *Pediatrics* no.8:36-40 '62.

(MIRA 15:10)

1. Iz kafedry gosital'noy pediatrii (zav. - deystvitel'nyy chlen AMN SSSR prof. A.F.Tur) Leningradskogo pediatricheskogo instituta.

(KIDNEYS--DISEASES)

(CRIMEA--CLIMATOLOGY, MEDICAL)

KOSHKIN, Viktor Gavrilovich; CHERKINSKIY, Yuliy Samuilovich;  
LARKINA, Vera Ivanovna; ISAKOVICH, Grigoriy Aleksandrovich;  
SLIPCHENKO, Galina Fedorovna; BELOVA, Aleksandra Panteleymonovna;  
GURVICH, E.A., red.izd-va; SHERSTNEVA, N.V., tekhn. red.

[Synthetic materials for floor coverings in industrial buildings] Sinteticheskie materialy dlia pokrytii polov promyshlennykh zdaniy. [By] V.G.Koshkin i dr. Moskva, Gosstroizdat, 1963. 128 p.

(MIRA 17:2)

BELOVA, A.P., inzh.; GORBUNOVA, A.A., kand. tekhn. nauk;  
LAZGUNOVA, E.P., inzh.; LYUBIMOVA, I.E., inzh.

Multilayered polyvinyl chloride linoleum. Stroi. mat. 9  
no.10:20-22 0 '63. (MIRA 16:11)

BELOVA, A.V.

"Microcrystalloscopic reactions to alkaloids" by V.T. Pozdniakova.  
Reviewed by A.V.Belova. Apt. delo 11 no.2:88-89 Mr-Ap '62.

(MIRA 15:5)

(ALKALOIDS)

(CRYSTALLOGRAPHY)

(POZDNIAKOVA, V.T.)

25493

S/043/61/000/002/003/009  
D207/D306

24.4300

AUTHORS: Belova, A.V., and Vallander, S.V.

TITLE: Equations of the kinetic theory of monoatomic gases  
in the presence of the external field of mass forces

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya matematiki,  
mekhaniki i astronomii, no. 2, 1961, 75 - 80

TEXT: This article presents a system of equations for the case of a moving gas acted upon by the constant external field of mass forces. However, for the exponential character of diminishing probability of free motion  $\square$  the established equations are true in alternating fields of forces if the change of fields is negligible within 5 - 10 average length of free run, and in the interval of 5 - 10 average time periods between colliding atoms. An atom at any instant  $2(\tau \leq q \leq t)$  while freely moving in an interval of time  $(\tau, t)$  is described by the radius vector  $\vec{r}_2$  and vector  $u_2$ .

Let  $t$  be time of an atom at a point with radius vector  $\vec{r}$  having a

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Equations of the kinetic ...

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D207/D306

velocity  $\bar{u}$ . Let  $\bar{g}$  be an acceleration vector in a constant field of mass forces.

$$\bar{r}_q = \bar{r} - \bar{u}(t - q) + \bar{g} \frac{(t - q)^2}{2}, \quad \bar{u}_q = \bar{u} - \bar{g}(t - q) \quad (5)$$

$\Delta q_1$  - element of an interval of time ( $\tau$ ,  $t$ )

$$\tau + \sum_{k=1}^1 \Delta q_k = q_1. \quad (6)$$

When an atom is at a point with the radius vector  $\bar{r}_1$  having a velocity  $\bar{u}_1$  in  $\Delta q_1$  time, then when colliding with another atom is expressed in the following form

$$Q_1 = \Delta q_1 \iiint |\bar{u}_1 - \bar{u}'| \sigma(|\bar{u}_1 - \bar{u}'|) f(\bar{r}_1, \bar{u}', q_1) d\omega'. \quad (7)$$

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Equations of the kinetic ...

Then the probability of free motion  $\Pi$  of an atom in an interval of time  $(\tau, t)$  is at that moment  $\tau$  in point with radius vector  $\bar{r}_\tau$  and having velocity of  $\bar{u}_\tau$ , but at an instant  $t$  the atom will be in point with radius vector  $\bar{r}$  having a velocity  $u$ , will be

$$\Pi(\bar{r}, \bar{u}, t, \tau) = \int_{-\infty}^{\infty} \left[ \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} |\bar{u} - \bar{r}(t-\tau) - \bar{u}'| \cdot \exp(-|\bar{u} - \bar{r}(t-\tau) - \bar{u}'|) \cdot \left( \bar{r} - \bar{u}(t-\tau) + \bar{r} \frac{(t-\tau)^2}{2}, \bar{u}' \right) d\omega' \right] d\omega \quad (8)$$

On the other hand the expression for  $dn$  can be obtained by introducing the function  $\Phi$  and  $\bar{\Phi}$ . Let  $X_1$  be a point (Fig. 1). Radius vector  $\bar{r}_1$  of point  $X_1$  is marked as  $\bar{r}_1$ . Through point  $X_1$  with velocity  $\bar{u}$ . This trajectory will intersect the stationary area of the streamlined body at some point  $X_s$  with radius vector  $\bar{r}_s$ . From  $q = \tau_s$  this indicates the notation of the vector  $\bar{r}_s$  and velocity  $\bar{u}_s$ .

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Equations of the kinetic ...

If the established trajectory will not meet the surface of the streamline body then  $x_s$  is infinity. Consider an element of stationary surface  $dS$  around  $X_s$ . It is obvious from Fig. 1 that particles leaving at the instant  $\tau_s$  from different points of an element  $dS$  at the same velocity will fill the area  $dS_\tau$  equal and parallel to element  $dS$ . For determining the number of quantities  $dn$  it is necessary to introduce around point  $X_1$  the element of volume  $d\Omega$ . The element of interval of time will be  $dT$ . The element of volume  $d\Omega$  is taken as a curved cylinder whose lower base  $dS_1$  is around point  $X_1$  and upper around the point  $dS_2$  all being parallel. A portion of the trajectory of an atom parallel and equal to  $d\Omega$  is considered. The atom passes through the base  $dS_1$  at instant  $t-dT$  with a velocity  $\bar{u}_{t-dT}$ , in time  $t$  having a velocity  $\bar{u}$  will reach the upper base of the cylinder  $dS_2$ . In all calculations it is necessary

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Equations of the kinetic ...

to retain small quantities of the first order only in respect of  $dT$ . Then the height of cylinder  $dH = \int (u_{t-dT}) / dT$  can be accepted as  $dH/u_n/dT$ , and volume  $d\Omega = \int u_n/dS \cdot dT$ . Representing cylinder  $d\Omega$  will be directed as  $u$  and trajectory of atoms at an instant  $t$  with velocity  $\bar{u}$  will coincide with corresponding points  $dS_1$  and  $dS_2$ . The number of particles  $dn$  entering  $d\Omega$  from cylinder ABCD is counted. Cylinder with bases  $dS$  and  $dS_1$  shows atoms coming out from the boundary  $dS$  with velocity  $u_s$ . On trajectory  $X_s X_1$  a point  $X$  is taken and volume  $G$  established with base  $dS$  and height  $dH$ . Particles leaving  $dS_\tau$  at instant  $\tau$  with velocity  $\bar{u}_\tau$ , and in the case of its free motion at time  $t$  will intersect  $dS_1$  having velocity  $\bar{u}$ . Particles belonging to volume  $G$  at time  $t$  with velocity  $\bar{u}$  will reach the upper base of volume  $d\Omega - dS_2$ , they should emerge from  $dS_\tau$  at instant  $\tau - dT$  with velocity  $\bar{u}_\tau - dT$ . Relationship  $dT$

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Equations of the kinetic ...

with  $dT$  is as follows:

$$\int (u_{\tau})_n / d\tilde{T} = \int u_n / dT = dH \quad (10)$$

whilst counting the numbers of atoms in a volume  $d\Omega$  at interval of time  $dT$  the change of functions  $\Phi, \Pi$  can be ignored because its change gives quantities of a higher order. Then for the whole interval of time  $d\tilde{T}$  inside  $G_1$  functions  $\Phi$  and  $\Pi$  will be considered as equal  $\Phi(\bar{r}_{\tau}, \bar{u}_{\tau}, \tau)$  and  $\Pi(\bar{r}, \bar{u}, t, \tau)$  then the number of atoms  $dn_{\tau}$  which supply  $G$  in time  $dT$  to volume  $d\Omega$  with the necessary velocities can be written in the form

$$dn_{\tau} = dS_{\tau} \cdot dh \cdot d\omega_{\tau} \cdot (\bar{r}_{\tau}, \bar{u}_{\tau}, \tau) \cdot (\bar{r}, \bar{u}, t, \tau) d\tilde{T} \quad (11)$$

changing  $d\tilde{T}$  for  $dT$  from (10) taking into account equalities

$$dS_{\tau} = dS, \quad d\Omega = \int u_n / dS dT, \quad d\omega_{\tau} = d\omega \quad (12)$$

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Equation of the kinetic ...

selecting an independent variable  $\tau$  and, then introducing  $\frac{dh}{(u_\tau)_n} =$   
 $= d\tau,$

$$dn_\tau = d\Omega d\omega \Phi(\bar{r}_\tau, \bar{u}_\tau, \tau) \Pi(\bar{r}, \bar{u}, t, \tau) d\tau. \quad (13)$$

There are 1 figure and 2 Soviet-bloc references.

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54500

AUTHORS: Vallander, G.V., and Belova, A.V.

TITLE: An integrāl kinetic equation for a mixture of gases possessing internal degrees of freedom

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 2, 1961, 81 - 86

TEXT: A mixture of polatomic gases in which chemical reactions may occur is considered, in the presence of constant external gravitational field. However, only binary collisions are taken into account and coulombic forces are assumed to be absent. Also the particles are to be distinguished only by their energy states. The state of such a mixture can be described by a finite number of distribution functions  $f_i(\vec{r}, \vec{u}, t)$  where  $i$  denotes a particular energy state,  $\vec{r}$  = radius vector,  $\vec{u}$  = velocity vector of a particle at a moment  $t$ , and the purpose of the present work is to derive a complete system of integral equations, from which functions  $f_i$  can be

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An integral kinetic equation ...

found. Eqs.

$$\Pi_l(\bar{r}, \bar{u}, t, \epsilon) = \prod_k \Pi_{lk} \exp \sum_k \left\{ - \int \left[ \int \int \int |\bar{u} - \bar{g}(t-q) - \bar{u}'| \times \right. \right. \\ \left. \left. \times \sigma_{ik} (|\bar{u} - \bar{g}(t-q) - \bar{u}'|) \cdot f_k(\bar{r} - \bar{u}(t-q) + \bar{g} \frac{(t-q)^2}{2}, \bar{u}', q) d\omega' \right] dq \right\}. \quad (5)$$

$$f_1(\bar{r}, \bar{u}, t) = \frac{1}{\gamma(\bar{u}_s)_N} \tilde{\Phi}_1(\bar{r}_s, \bar{u}_s, \tau_s) \Pi_1(\bar{r}, \bar{u}, t, \tau_s) + \\ + \int \Phi_l \left[ \bar{r} - \bar{u}(t-\epsilon) + \bar{g} \frac{(t-\epsilon)^2}{2}, \bar{u} - \bar{g}(t-\epsilon), \epsilon \right] \Pi_l(\bar{r}, \bar{u}, t, \epsilon) d\epsilon. \quad (8)$$

$$\Phi_l(\bar{r}, \bar{u}, t) = \frac{1}{2} \sum_k \sum_{l'} \int \int \int \int \int |\bar{u}_1 - \bar{u}_2| \sigma_{kl'} (|\bar{u}_1 - \bar{u}_2|) f_k(\bar{r}, \bar{u}_1, t) \times \\ \times f_{l'}(\bar{r}, \bar{u}_2, t) T_{kl'}(\bar{u}_1, \bar{u}_2, \bar{u}) d\omega_1 d\omega_2. \quad (13)$$

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An integral kinetic equation ...

and 
$$\tilde{\Phi}_l(\bar{r}_s, \bar{u}, t) = \sum_k \iiint_{(\bar{u}_s)_n < 0} |(\bar{u}_s)_n| f_k(\bar{r}_s, \bar{u}_s, t) \tilde{T}_k^l(\bar{u}_s, \bar{n}, \bar{u}, \theta) d\omega_s \quad (16)$$

give 
$$f_l(\bar{r}, \bar{u}, t) = \frac{1}{|(\bar{u}_s)_n|} \tilde{\Phi}_l(\bar{r}_s, \bar{u}_s, \tau_s) \Pi_l(\bar{r}, \bar{u}, t, \tau_s) + \int_0^t \Phi_l \left[ \bar{r} - \bar{u}(t-\tau) + \bar{g} \frac{(t-\tau)^2}{2}, \bar{u} - \bar{g}(t-\tau), \tau \right] \cdot \Pi_l(\bar{r}, \bar{u}, t, \tau) d\tau \quad (17)$$

$$\Pi_l(\bar{r}, \bar{u}, t, \tau) = \exp \sum_k \left\{ - \int_0^{\tau} \left[ \iiint_{\bar{u}-\bar{g}(t-q)-\bar{u}'} | \bar{u} - \bar{g}(t-q) - \bar{u}' | \times \right. \right. \\ \left. \left. \times \sigma_{kl} (| \bar{u} - \bar{g}(t-q) - \bar{u}' |) f_k \left( \bar{r} - \bar{u}(t-q) + \bar{g} \frac{(t-q)^2}{2}, \bar{u}', q \right) d\omega' \right] dq \right\} \quad (18)$$

$$\Phi_l(\bar{r}, \bar{u}, t) = \frac{1}{2} \sum_k \sum_l \iiint_{\bar{u}_1-\bar{u}_2} | \bar{u}_1 - \bar{u}_2 | \sigma_{kl} (| \bar{u}_1 - \bar{u}_2 |) \times \quad (19)$$

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An integral kinetic equation ...

$$\times f_k(\bar{r}, \bar{u}_1, t) f_l(\bar{r}, \bar{u}_2, t) T_{kl}^i(\bar{u}_1, \bar{u}_2, \bar{u}) d\omega_1 d\omega_2, \quad (19)$$

$$\tilde{\Phi}_i(\bar{r}_s, \bar{u}, t) = \sum_k \iiint_{(u)_n < 0} |(u)_n| f_k(\bar{r}_s, \bar{u}_1, t) \tilde{T}_k^i(\bar{u}_1, \bar{n}, \bar{u}, \theta) d\omega_1. \quad (20)$$

from which by elimination of  $\Pi_1$ ,  $\Phi_1$  and  $\tilde{\Phi}_1$ , the equation

$$f_1 = V_1(f_1, \dots, f_k, \dots) \quad (21)$$

is obtained, where  $V_1$  are easily found integral operators acting on functions  $f_1$ . If. Eq. (21) is multiplied on both sides by

$$\frac{\partial}{\partial t} + u_1 \frac{\partial}{\partial x_1} + u_2 \frac{\partial}{\partial x_2} + u_3 \frac{\partial}{\partial x_3} + g_1 \frac{\partial}{\partial u_1} + g_2 \frac{\partial}{\partial u_2} + g_3 \frac{\partial}{\partial u_3}, \quad (22)$$

integro-differential equations obtained are seen to be generalized Boltzman equations, suitable for investigating mixtures of gases

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An integral kinetic equation ...

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chemically dissimilar. In many cases the solution of (21) can be obtained by means of successive approximations. There are 2 Soviet-bloc references.

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BELOVA, A. V.

PLANS I BOOK REVISIONS 807/1630

Institute, University

Moscow (Belovsk) [Belovsk] 1. No. 34 p. (Series 191) Chelnyy slyt, no. 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

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Rep. No. 1. R. P. Belovsk, Professor; No. 1. L. Belovsk; No. 1. V. O. Belovsk.

Purpose: This collection of articles is intended for scientists, engineers at the Institute of Science and Technology and design offices and also for students of advanced courses in related fields.

CONTENTS: The collection consists of original investigations in the field of modern mechanics including general mechanics, theory of elasticity, hydrodynamics, etc. The articles are written in Russian. The Russian acronym for articles is: 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

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