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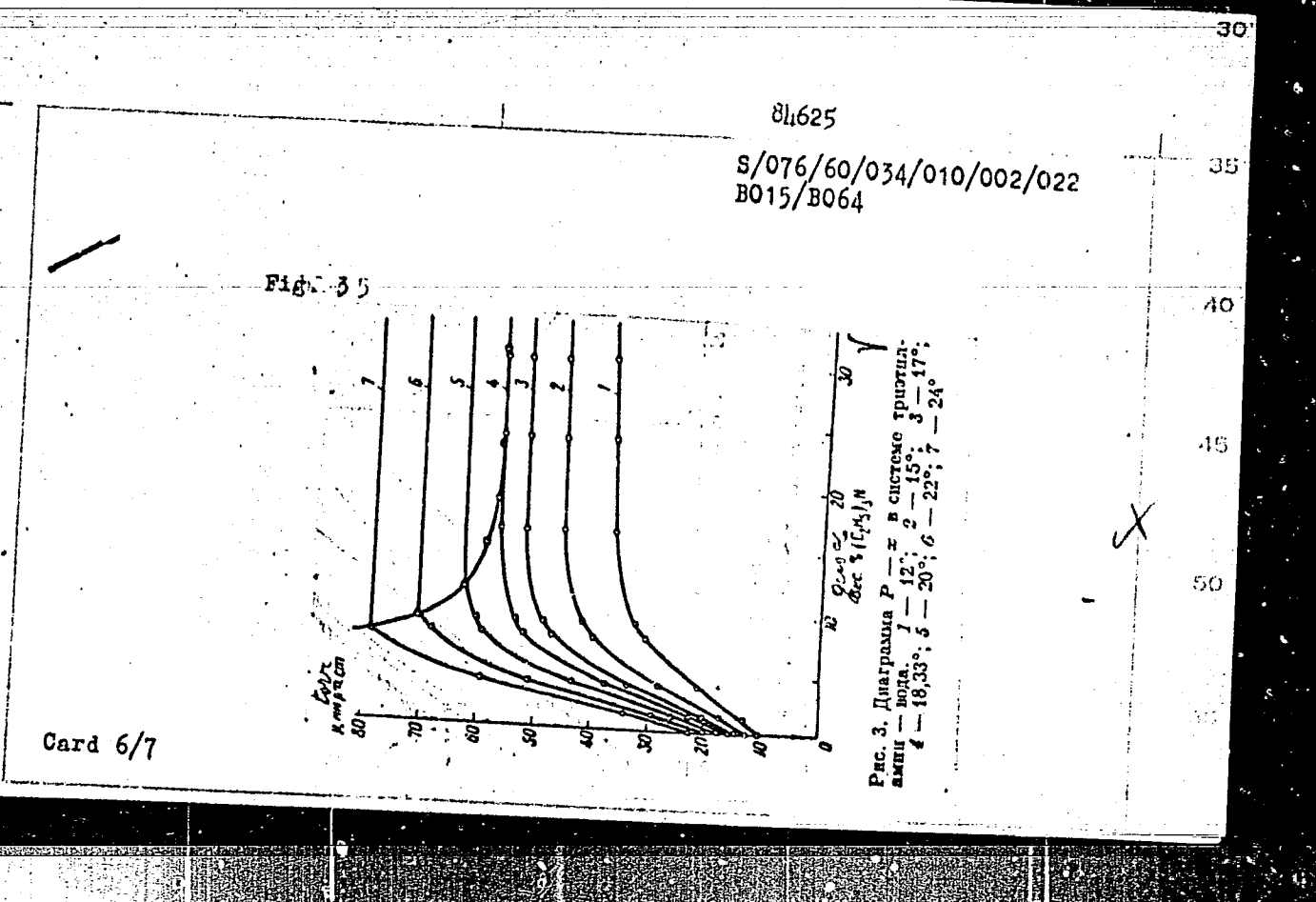
S/076/60/034/010/002/022
B015/B064

Table 5

Компенсация турбулентности, % мод.	12°	18°	17°	18,33°*	20°	22°	24°
5,0	23,6	31,9	37,7	42,3	49,5	57,5	66,8
10,0	33,5	42,6	49,9	54,5	61,6		
15,0	36,1	45,4	52,1	56,5	62,6**	70,4**	78,7**
20,0	36,6	45,5	52,1	56,6	62,6	70,4	78,7
25,0	36,9	45,6	52,1	56,6	62,6	70,4	78,7
30,0	37,2	45,6	52,1	56,6	62,6	70,4	78,7
32,0	37,3	45,7	52,1	56,6	62,6	70,4	78,7

Card 5/7

X



Report presented at the Conference on Heat and Transfer,
 Moscow, USSR, 5-10 June 51.

18

RN-4912
 X5

- 287. P. I. Poverzhi, Generalization of the Data on the Boiling Curve at Heat Flow in Tubes at the Temperature Below Saturation Temperature.
- 288. I. R. Krivonozkiy, M. B. Puzikova, L. N. Slonitskiy, Diffusion in Gases Near the Critical Point of Hydrogen.
- 289. V. I. Nalbandov, The Rate of Vapor Bubble Growth at Boiling of Liquid.
- 290. K. O. Spiridonov, New Investigation Results on Heat Transfer at Surface Boiling.
- 291. K. I. Izrael, The Theory of Convective Heat Transfer at Vaporization.
- 292. I. R. Krivonozkiy, N. V. Danilov, L. B. Lashovskiy, Diffusion in Gases at High Pressures.
- 293. P. I. Poverzhi, Thermodynamic Similarity Method for Liquid Surface Tension Calculation.
- 294. A. V. Anisimov, A. S. Koroly, Aerodynamic, Burnout and Heat Transfer in Cylindrical Channels at One-Phase Convection.
- 295. O. A. Ostrovskiy, Hydrodynamic Explanation of Electrical Properties of Insulating Liquids.
- 296. K. M. Jacobovitch, Aerodynamic Means of Heterogeneous Process Intensification.
- 297. S. M. Rips, Thermodynamic Investigation of the Liquid Oxygen Gasification Process.
- 298. O. V. Vaganova, L. S. Akhmedov, On the Determination of the Work Duration of Processes of Air Separation.
- 299. S. Zolotarev (EPR), Heat and Mass Transfer at the Heterogeneous Phase of Boiling at Convective and Conductive Heat Transfer Systems.
- 300. A. S. Glushko, Actual Problems of Boiling of Gases.
- 301. V. G. Karpenko, Heat and Mass Transfer at Boiling of Brown Coal, Combined with Oxidation.
- 302. P. I. Zubov, L. A. Lepilina, Investigation of Inner Stresses in Polymer Coatings.
- 303. A. P. Borodin, Yu. K. Kopylov, Reflective-Convective Pulsetion Devices of Polymer Coating Film.
- 304. V. M. Buzdakov, A. N. Ivanov, Experimental Investigation of Heat and Mass Transfer of the Nitric Oxide Burning Device.
- 305. O. A. Rukh, Investigation of Convective and Conductive Boiling of Viscous by Isobutyl Alcohol.

KHAZANOVA, N.Ye.; KAL'SINA, M.V.

Diffusion near the critical point of lamination of the system
triethylamine - water - phenol. Part 1. Diffusion in the
binary system triethylamine - water. *Inz.-fiz. zhur.* 4 no.12:
43-46 D '61. (MIRA 14:11)

1. Institut azotnoy promyshlennosti, Moskva.
(Diffusion) (Triethylamine) (Phenols)

KRICHEVSKIY, I.R.; KHAZANOVA, N.Ye.; LINSHITS, L.R.

Iodine diffusion in compressed carbon dioxide near the critical point. Dokl. AN SSSR 141 no.2:397-399 N '61. (MIRA 14:11)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza. Predstavleno akademikom S.I.Vol'fkovichem.
(Iodine) (Carbon dioxide)

38265
S/064/62/000/002/005/008
B101/B144

24.4500

AUTHORS:

Krichevskiy, I. R., Khazanova, N. Ye., Lesnevskaya, L. S.,
Polyakova, Z. A.

TITLE:

Diffusion in gases at high pressures

PERIODICAL:

Khinicheskaya promyshlennost', no. 2, 1962, 29-35

TEXT: The diffusion in the N₂ - CO₂ system under pressure was measured.

The method consists in filling capillaries (8 mm diameter, 70 mm length) with purified CO₂, while N₂ is in the chamber surrounding the capillaries.

The gas mixture contained in the capillaries after diffusion is analyzed. To prevent convection, the capillaries are filled with silver wire netting, width of mesh 0.04 mm². The diffusion coefficient calculated on the basis of Fick's equation was corrected, allowing for the apparatus constant 1.74, caused by filling with the net. The investigation was conducted at 25, 28.15 and 31.5°C and 6-74 atm. At 31.5°C, D_{N₂} · 10³ cm²/sec amounted to:

Card 1/2

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Diffusion in gases at high ...

S/064/62/000/002/005/008
B101/B144

Pressure atm	molar part of N ₂		
	0.25	0.30	0.45
24.0	4.97	5.03	6.10
47.0	2.03	2.43	2.83
58.6	1.65	2.00	2.37
70.0	0.90	1.05	1.20
74.0	0.33	0.43	0.53

A calculation of the diffusion coefficient on the basis of the Enskog-Chapman theory and its extension to gases by W. Jost, using the equation of state by I. R. Krichevskiy and Ya. S. Kazarnovskiy (ZhFKh, 13, 378 (1939)) and the constant by V. P. Markov (ZhFKh, 15, 410 (1941)) produced, up to 50 atm, a maximum deviation of 12%

between experiment and calculation. For higher pressures, there is a significant difference between experiment and theory. The absence of an exact diffusion theory caused the authors to start a series investigation of the diffusion in gases at high pressures. There are 6 figures, 2 tables, and 31 references: 7 Soviet and 24 non-Soviet. The four most recent references to English-language publications read as follows: Chan-Hue Chon, I. I. Martin, Ind. Eng. Chem., 49, 758 (1957); L. R. Mifflon, C. O. Bennett, J. Chem. Phys., 29, 975 (1958); H. H. Reamer, B. H. Sage, Transport Properties of Gases, Proc. Gas. Dynamics Symposium, 2-nd, Evanston, 1957, 62 (pub. 1958); Iigo Osugi, H. Hiraoka, D. Shinoda, Rev. Phys. Chem., 28, no. 1, 36 (1958).
Card 2/2

X

33475

24.5600

S/170/62/005/002/008/009
B104/B138AUTHORS: Krichevskiy, L. R., Khazanova, N. Ye., Lesenevskaya, L. S.

TITLE: Fick's diffusion equation

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 2, 1962, 101 - 103

TEXT: The system nitrogen - carbon dioxide has been studied in the light of Fick's equation near the critical point. At 15°C and 105 at, the volume is largely dependent on the composition in a certain range of concentrations (Fig. 1a). This dependence of volume on the molar fraction of the component results in a complex dependence between it and the volume concentration (Fig. 1b). In the section AB, the component diffuses from B to A, which requires a negative diffusion coefficient in Fick's equation $dm/dt = -DSgradC$, where m is the amount of substance diffusing in time t , D is diffusion coefficient, S is the diffusion area, and C is the volume concentration of the diffusing substance. According to Fick's equation, the rate of diffusion should be zero at point A; however, since diffusion also takes place here, the diffusion coefficient would become infinitely great. These difficulties can be overcome by regarding not the gradient of volume

Card 1/2

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S/170/62/005/002/008/009
B104/B138

Fick's diffusion equation

concentration, but that of the chemical potential, as the driving force of diffusion. Fick's equation can be used in spite of the complex dependence of molar volume on composition near the critical point. However, the results of investigation of molecular diffusion are extremely difficult to evaluate. The kind of concentration dependence of the molar volume near the critical point of the pure solvent, as described above, is a specific feature of all gas solutions. There are 1 figure and 4 Soviet references. U

ASSOCIATION: Institut azotnoy promyshlennosti i produktov organicheskogo sinteza, g. Moskva (Institute of the Nitrogen Industry and Products of Organic Synthesis, Moscow)

SUBMITTED: June 12, 1961

Card 2/3

KRICHEVSKIY, I.R.; KHAZANOVA, N.Ye.; LESNEVSKAYA, L.S.; POLYAKOVA, Z.A.

Diffusion in gases at high pressures. Khim.prom. no.2:105-111
F '62. (MIRA 15:2)

(Diffusion)

"APPROVED FOR RELEASE: 09/17/2001

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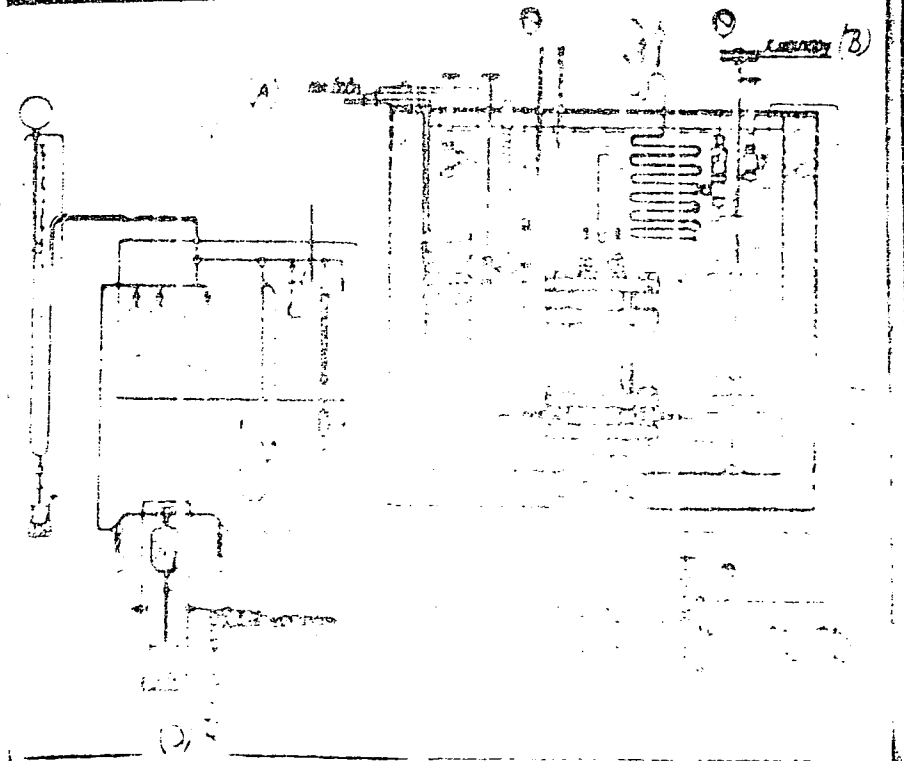
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KRICHEVSKIY, I.R.; KHAZANOVA, N.Ye.; LESNEVSKAYA, L.S.; SANDALOVA, L.Yu.

Equilibrium liquid - gas at high pressures in the nitrogen -
carbon dioxide system. Khim.prom. no.3:169-171 Mr '62.
(MIRA 15:4)

(Nitrogen) (Carbon dioxide) (Phase rule and equilibrium)

KRICHEVSKIY, I.R.; KHAZANOVA, N.Ye.; KAL'SINA, M.V.

Diffusion near the critical demixing point of the system
triethylamine - water - phenol. Inzh.-fiz. zhur. 5
no.6:93-96 fe '62. (MIRA 15:12)

1. Institut azotnoy promyshlennosti, Moskva.
(Diffusion)
(Systems (Chemistry))

KHAZANOVA, N.Ye.; ROTT, L.A.

Mass transfer and critical phenomena. Inzh.-fiz. zhur. 6
no.11:123-135 N '63. (MIRA 16:11)

KHAZANOVA, N.Ye.; LINSHITS, L.R.

Diffusion of hydrogen in cyclohexane at elevated pressure.

Khim. prom. no.8:579-782 Ag '63.

(MIRA 16:12)

KAL'SINA, M.V.; NIKIFOROVA, M.B.; KHAZANOVA, N.Ye.

Liquid - vapor equilibrium in the system triethylamine -
water - phenol near the point of demixing. Zhur. fiz. khim.
38 no.2:368-371 F '64. (MIRA 17:8)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut azotnoy
promyshlennosti, Moskva.

KHAZANOVA, N. Ye.

"Isothermal diffusion near the critical point."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12
May 1964.

Govt Inst of Nitrogen Industry

KHAZANOVA, N.Ye.; KAL'SINA, M.V.

Diffusion in three-component solutions near the critical demixing
point. Ukr. fiz. zhur. 9 no.5:486-491 My '64. (MIRA 17:9)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut
azotnoy promyshlennosti i produktov organicheskogo sinteza, Moskova.

KHAZANOVA, N.Ye.; LESNEVSKAYA, L.S.

Volumetric relationship in the system nitrogen- carbon dioxide.
Khim. prom. 41 no.5:344-347 My '65. (MIRA 18:6)

KHAZANOVA, N.Ye.; KAL'SINA, M.V.

Diffusion in two-component solutions near the critical
demixing point. Zhur. fiz. khim. 38 no.5:1223-1228 My '64.
(MIRA 18:12)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy
institut azotnoy promyshlennosti i produktov organicheskogo
sinteza, Moskva. Submitted June 20, 1963.

ACC NR: AP6035599

SOURCE CODE: UR/0387/66/000/010/0069/000

AUTHORS: Faytel'son, A. Sh.; Khazanova, P. B.; Petrova, M. M.

ORG: State Geological Committee SSSR, Office of Special Geophysical Exploration
(Gosudarstvennyy geologicheskii Komitet SSSR, Spetsgeofizika)

TITLE: Dependence of head-wave velocity on depth, and the structure of the upper parts of the crystalline basement (according to results of seismic and gravity field studies in the central and northwestern parts of the Russian platform)

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 10, 1966, 69-73

TOPIC TAGS: earth crust, earth gravity, seismic modeling

ABSTRACT: Seismic work on the central Russian platform and in the Baltic region in recent years has shown variations in head-wave velocities for different segments of the basement; these depend on rock densities (as revealed in size and sign of anomalies). Velocity data have been placed on a graph of velocity versus depth of basement, and comparisons have been made with curves, obtained from laboratory data, of velocity versus pressure, with depth indicated as a function of pressure. Pressure on basement rocks was computed according to the formula $P = \sigma H$, where σ is the density of the sedimentary layer, assumed to be 2.4 g/cm^3 . Curves for two possible types of basement rocks were selected for comparison: granite and gabbro. The effect of refraction is less than previously assumed, probably because of temperature effects.

UDC: 550.834

Card 1/2

ACC NR: AP6035599

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721930002

Comparisons were also made with gravity profiles. Lowest velocities correspond to zones with lowest gravity values, and highest velocities correspond to greatest gravity values. Three models of basement structure are proposed: gradual lateral change from material of one density to another, a sharp break along a vertical boundary, and a sharp break along an inclined boundary. The authors conclude that the third model is best for the investigated region. Orig. art. has: 3 figures.

SUB CODE: 08/ SUBM DATE: 14Sep65/ ORIG REF: 004/ OTH REF: 001

Card 2/2

Дубинин, А.Н., инж.

DUBININ, A.N., inzhener; KHAZANOVA, S.Z., inzhener.

Replacing soap by detergent powders. Tekst. prom. 17 no.3:43-44 Mr
'57. (MLBA 10:4)

1. Nachal'nik moyechnogo tsekha Khar'kovskoy fabriki imeni Mam-
il'skogo (for Dubinin).
(Woolen and worsted manufacture) (Scouring compounds)

KOZHEMYAKIN, V.A.; BERENGARD, A.S.; FILATOVA, N.A., Primali uchastiye:
KHAZANOVA, T.I.; KARASEV, Yu.V.

Purification of titanium tetrachloride from zirconium iron and
aluminum chlorides in the chlorination process of titanium-
zirconium concentrates. Tsvet.met. 34 no.9:70-74 S '61.
(MIRA 14:10)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut redkikh
metallov.

(Nonferrous metals--Metallurgy)

(Chlorination)

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133-5-10/27

AUTHOR: Khazanova, T.P., Iyakishev, N.P. and Grishankova, E.A.

TITLE: The influence of the mineralogical composition of molybdenum concentrates on the process of their roasting.
(Vliyaniye mineralogicheskogo sostava molibdenitovykh kontsentratov na protsess obzhiga)

PERIODICAL: "Stal'"(Steel), 1957, No.5, 425-429 (U.S.S.R.)

ABSTRACT: A laboratory investigation of the process of roasting molybdenum concentrates was carried out. Roasting temperature 600 and 650 and 700 °C. Sulphur content of the final product was taken as a roasting criterion. The behaviour of molybdenum concentrates during roasting is determined by their mineralogical composition. The individual minerals have the following influence on the process: a) calcite - negative, due to the formation of stable calcium sulphates which increase the final sulphur content in the roasted product; b) chalcopyrite in combination with calcite - negative; c) quartz - positive; d) galenite - has no influence but its content is limited by the conditions of subsequent production of ferro-molybdenum; and e) feldspars, hematite, grey copper ore have no noticeable effect on the roasting process. As the results of this investigation were not considered in the standard specifications for concentrates valid at present, it is recommended that,

Card 1/2

APPROVED FOR RELEASE: 09/17/2001

133-5-10/27
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The influence of the mineralogical composition of molybdenum concentrates on the process of their roasting. (Cont.)

after check experiments on industrial furnaces, new standards should be prepared. There are 4 tables, 2 figures and 3 Slavic references.

ASSOCIATION: TsNIChM.

AVAILABLE:

Card 2/2

Rad. active in the
phosphorylation system
of the
cellular
respiration

S/697/61/000/000/003/018
D228/D303

AUTHORS: Bibikova, V. I., Oleynikova, K. V., Postnikova, S. V.
and Khazanova, T. P.

TITLE: Behavior of rhenium during the roasting of molybdenite
concentrates and technologic methods of obtaining it

SOURCE: Akademiya nauk SSSR. Institut metallurgii im. A. A. Bay-
kova. Institut mineralogii, geokhimii i kristalloghimii
redkikh elementov. Mezhdudedomstvennaya komissiya po
redkim metallam. Vsesoyuznoye soveshchaniye po probleme
reniya. Moscow, 1958. Reniy; trudy soveshchaniya. Mos-
cow, Izd-vo AN SSSR, 1961, 37-41 ✓

TEXT: The authors describe their investigation of: (a) distribut-
ion of Re in almost all molybdenite concentrates being processed in
the USSR, (b) distribution of Re in Cu-Mo ore from three benefi-
ciation plants, and (c) general behavior of Re during the roasting
of molybdenite concentrates. They also suggest certain refinements
in the production technique for Re. Concentrates from deposits in

Card 1/3

Behavior of rhenium ...

S/697/61/000/000/003/018
D228/D303

Armenia, Kazakhstan and Uzbekistan are characterized by rather high Re contents which exceptionally rise to 0.1%; in those from other Siberian and Far Eastern deposits, however, the maximum concentration was not found to exceed 90 p.p.m. Data given in a table show that in the case of ore from three beneficiation plants the Mo-fraction holds up to 5 times as much Re as the Cu-fraction. Graphs are presented to illustrate the higher vapor-tension of Re_2O_7 as compared with MoO_3 at different temperatures. The authors stress the need for an excess of air during the roasting of concentrates if the formation of ReO_3 and ReO_2 , which have a lower vapor-tension, is to be avoided. It is also noted that Re is most fully sublimated in furnaces of the boiling-layer type; here, 95% of the metal passes into gaseous phase, whence it is best recovered by means of a wet Cottrell filter or a rapid foam-bubbler. Turning to the question of Re production technology, which is at present largely governed by the high and low solubilities of Re_2O_7 and KReO_4 , the authors describe their attempts to reduce KReO_4 and

Card 2/3

Behavior of rhenium ...

S/697/61/000/000/003/018
D228/D303

NH_4ReO_4 with H_2 . This was done in 2 two-hourly stages -- first at $480 - 500^\circ\text{C}$, and then at $900 - 1000^\circ\text{C}$. Washing the resulting powder with HCl increases the purity of Re, but decreases the direct yield of metal from 95 - 98 to 92 - 93%. There are 2 tables and 1 figure.

Card 3/3

ACC NR: AP6033464

SOURCE CODE: UR/0413/66/000/018/0042/0042

INVENTOR: Kost, A. N.; Khazanova, T. S.

ORG: 'none'

TITLE: Preparation of N-substituted or unsubstituted 3-(ω -aminoalkyl)-indoles or 3-(ω -dialkylaminoaryl)indoles. Class 12, No. 185923
[announced by Chemistry Department, Moscow State University im. M. V. Lomonosov (Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)]

SOURCE: Izobret prom obraz tov zn, no. 18, 1966, 42

TOPIC TAGS: substituted aminoalkylindole, unsubstituted dialkylamino-arylindole, *carboxylic acid, amine*

ABSTRACT: In the proposed method, N-substituted or unsubstituted 3-(ω -aminoalkyl)indoles or 3-(ω -dialkylaminoaryl)indoles are obtained by the reaction of ω -(3-indolyl)- ω -oxocarboxylic acids with amines and a chloroformate in an organic solvent, with subsequent reduction of the reaction products with lithium aluminum hydride in tetrahydrofuran at 60—70°C. [W.A. 50]

SUB CODE: 07/ SUBM DATE: 26Aug65

Card 1/1

UDC: 547.752.07

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721930002

KUVAYEVA, I.B.; KHAZANOVA, V.V.

Effect of varied quantity and quality of fat in the diet on some physiological processes and normal microflora composition in the large intestine of dogs. Vop. pit. 22 no.2: 49-55 Mr-Ap '63. (MIRA 17:2)

1. Iz laboratorii fiziologii pishchevareniya (zav. - prof. G.K. Shlygin) i laboratorii mikrobiologii (zav. - kand. biolog. nauk Yu.I. Rubinshteyn) Instituta pitaniya AMN SSSR, Moskva.

KHAZANOVA, V.V.

Reconstruction of alimentary colitoxicosis in experiments on
animals. Zhur. mikrobiol., epid. i immun. 41 no.12:98-103
D '64. (MIRA 18:3)

1. Institut pitaniya AMN SSSR.

KHAZANOVA, V.V.

Bacteria of the *Escherichia coli* group as possible pathogens in
food poisoning. Gig. i san. 26 no.4:81-85 Ap '61. (MIRA 15:5)

1. Iz Instituta pitaniya AMN SSSR.
(FOOD POISONING) (ESCHERICHIA COLI)

KHAZANOVA, V.V.

Diagnosis of food poisoning caused by Escherichia coli. Vop.
pit. 22 no.6:46-52 N-D '63. (MIRA 17:7)

1. Iz mikrobiologicheskoy laboratorii (zav. - kand. biologicheskikh
nauk Yu.I. Rubinshteyn [deceased] Instituta pitaniya AMN SSSR,
Moskva.

ИЗВЕЩАНИЕ, А.А.
AYZEN, A.M.; KHAZANOVICH, A.I.

V.D. Soldatov and K.I. Oleinichuk's book "Food industry mechanic's handbook." Reviewed by A.M. Aizen, A.I. Khazanovich. Khleb. 1 kond. prom. 1 no.12:43-44 D '57. (MIRA 11:1)
(Food industry--Equipment and supplies)
(Soldatov, V.D.) (Oleinichuk, K.I.)

GOYKHIN, A.N.; KHAZANOVICH, E.S.

[Method for the operational planning of machinery manufacture according to a fixed schedule; basic principles and practical application] Metodika operativnogo planirovaniia mashinostroitel'nogo proizvodstva po nezmennomu grafiku; osnovnye polozenia i opyt prakticheskogo primeneniia. Perm', 1964. 47 p. (MIRA 17:8)

1. Perm. Politekhniceskii institut. Kafedra ekonomiki.

Khazanovich, G.B.
KHAZANOVICH, G.B.

Errors in diagnosing neurological diseases in patients sent to
Kislovodsk for treatment. *Vop.kur.fizoter. i lech.fiz. kul't.*
23 no.1:76 '58. (MIRA 11:3)

1. Iz Tsentral'nogo kislovodskogo voyennogo sanatoriya No.1 (nach.
T.A.Tolopillo)
(NERVOUS SYSTEM--DISEASES)

SIL'NYA, V.G.; GAGIN, O.D.; IVANOV, O.P.; KHAZANOVICH, G.Sb.

Methods of determining bucket-loading machine parameters.
Trudy NPI 158:69-78 '64.

Geometry of the operating part of bucket-loading machines.
Ibid.:79-89 (MIRA 18:11)

SIL'NYA, V.G.; GAGIN, O.D.; KHAZANOVICH, G.Sh.

Experimental study of a model of a bucket loader in an inclined
working. Trudy NPI 130:19-34 '61. (MIRA 15:4)
(Coal handling machinery--Models)

Khazanovich, I. G.

S/138/59/000/012/003/006

AUTHORS: Peyzner, A. B., Uzina, R. V., Fermor, N. A., Khazanovich, I. G.

TITLE: The Basic Factors Determining the Type of Divinyl-Styrene¹⁵
Latex in Tire Cord₁₅ Impregnation

PERIODICAL: Kauchuk i Rezina, 1959, No. 12, pp. 10-14

TEXT: The effect of the emulsifier, the polymerization depth, the polymerization temperature, the plasticity of the polymer, the ratio of divinyl and styrene in the polymerizing mixture on the strength of the bond of the rubber-cord system in the polymerization of divinyl-styrene latexes was studied. 1) The emulsifier: It was found that by replacing Nekal with soaps of paraffinic acids and hydrated colophony the strength of the bond system is increased significantly. This is explained by an increase in the physico-mechanical properties of the adhesive film and by the intensity of the intermolecular interaction at the adhesive-rubber interface (Ref. 7) (Table 2). In switching over to low-temperature polymerization latexes the stated advantages are retained. 2) The polymerization depth: The bond strength of the impregnated cord decreases in the case of divinyl-styrene latexes of low-temperature polymerization at a conversion depth of 60%. ✓

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S/138/59/000/012/003/006

The Basic Factors Determining the Type of Divinyl-Styrene Latex in Tire Cord Impregnation

3) The polymerization temperature: It was found that the highest bond stability was obtained at a temperature of 20°C (Fig. 3). This is explained by the combination of good elastic properties of the polymer at low-temperature polymerization and a certain branching of the chains observed in a switch-over from 5 to 20°C. At 20°C the polymerization takes place more rapidly, the 60% conversion depth is reached after 9 hours instead of 24 hours (Fig. 4). 4) The polymer plasticity: With an increase in the polymer plasticity the bond stability of the system and the physico-mechanical properties of the adhesive film pass through their optimum value at a plasticity of 0.15-0.25 according to Karrer (1,500-2,800 g hardness according to Defoe) (Fig. 6). This is explained by the fact that the high plasticity of the polymer ensures favorable conditions for molecule diffusion from the adhesive into the rubber lining, but does not ensure the necessary mechanical properties of the adhesive (Refs. 4, 9). A decrease in the plasticity of the polymer raises the mechanical properties of the adhesive and thus limits the mobility of moleculars and lowers their diffusibility which leads to a decrease in the bond strength. A polymer with an average plasticity (0.15-0.25 according to Karrer) ensures the best adhesion. ✓

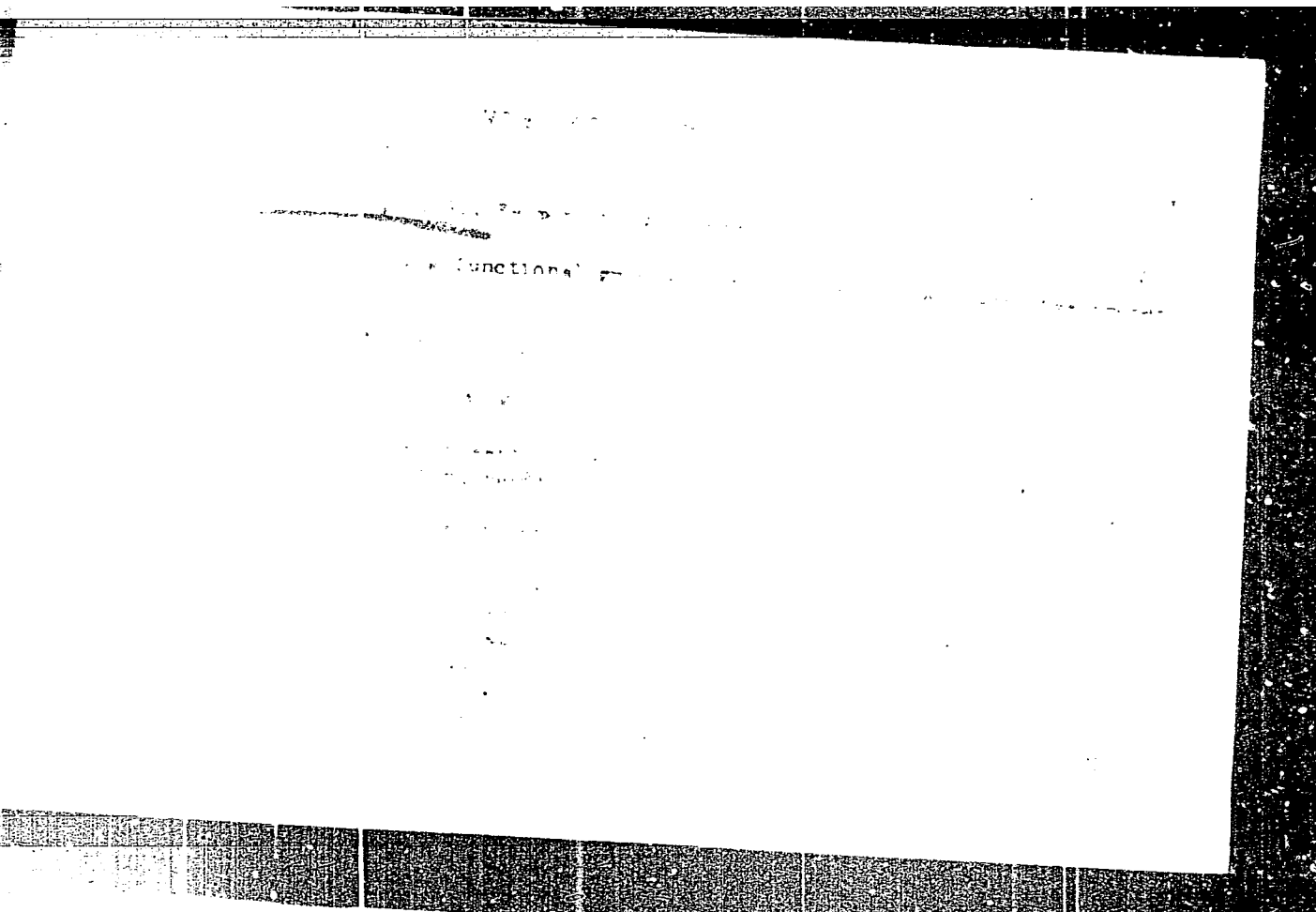
Card 2/4

S/138/59/000/012/003/006

The Basic Factors Determining the Type of Divinyl-Styrene Latex in Tire Cord Impregnation

5) The styrene ring content: The presence of styrene in the divinyl-styrene latex (over 30 weight parts) does not increase the strength of the adhesive-rubber system. Fig. 7 shows that an increase in the styrene content in the polymerizing hydrocarbon mixture increases the physico-mechanical properties of the film adhesive; the stability of the bond between the impregnated cord and the rubbers reaches its optimum value at 30 weight parts of styrene. At a styrene content of more than 30 weight parts the adhesive hardness increases. This brings about unfavorable conditions for the diffusion of the adhesive polymer rings and for the polymer compatibility. 8) Selection of the divinyl-styrene latex type for the impregnation of the tire cord: As a result of the investigations conducted a specific latex is recommended for this purpose. The CKC-30WKP (SKS-30ShKhP) divinyl-styrene latex was obtained according to given specifications and was found to surpass the CKC-30W (SKS-30Sh) latex both in the bond strength between the impregnated cord and the rubbers and by the physico-mechanical properties of the adhesive film (Table 3). The authors point out that by using the recommended latex the strength of the bond between the individual parts of the tire, the durability of the tires in stationary tests and the roadability of the

Card 3/4



"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721930002-7

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721930002-7"

ACCESSION NR: AP4010251

S/0138/63/000/012/0005/0010

AUTHORS: Mylen, D. A.; Selivanovskiy, S. A.; Fernor, N. A.; Khazanovich, I. G.; Yakovlev, Yu. M.

TITLE: Continuous polymerisation of monomers in the synthesis of latexes

SOURCE: Kauchuk i rezina, no. 12, 1963, 5-10

TOPIC TAGS: polymerization, monomer polymerization, polymerization product dispersion, latex, batch process, continuous process, emulsion polymerization, reactor, productivity, particle size, surface tension, surface film saturation

ABSTRACT: The accumulated experience of VNIISK in the production of synthetic latexes by continuous process is compared with the batch process. Latexes SKS-650P, SKS-50PO, SKN-10P and SK-30ShKhP were synthesized by both procedures for 15 weeks. The particle size was determined by soap titration and by means of Tesla's electron microscope model BS-242, using as standard styrene latex with a particle size of 250 millimicrons. To counteract the flattening out of the particles and to increase the outline sharpness, the emulsions were stabilized with Leukanol and subjected to bromination. The surface tension in the latex-air interface and the degree of saturation of the globular membrans with the emulsifier were also deter-

ACCESSION NR: AP4010251

mined. The average volume-surface diameter of the latex particles obtained by continuous polymerisation was in all instances larger than those synthesized in batches. The surface tension in latexes produced continuously was smaller, the polydispersity of particles much higher, and the degree of saturation of the particle membranes with the emulsifier greater than in latexes produced in batches. It is expected that the enumerated colloidal changes in the latexes produced by the continuous process would affect their technical and technological properties. The productivity coefficient η for the apparatus used with a series of polymerizers can be computed from the A. N. Planovskiy formula

$$\eta = \frac{\int_{x_0}^{x_2} \frac{dx}{f(x)}}{\frac{x_1 - x_0}{f(x_0)} + \frac{x_2 - x_1}{f(x_1)} + \dots + \frac{x_n - x_{n-1}}{f(x_n)}}$$

where x is the amount of material used, f(x) is the velocity of reaction. Orig. art. has: 2 charts, 4 tables, and 1 equation.

Card 2/3

ACCESSION NR: AP4010251

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo
kauchuka im. S. V. Lebedeva (All-Union Scientific Research Institute of Synthetic
Rubber)

SUBMITTED: 00

DATE ACQ: 03Feb64

ENCL: 00

SUB CODE: CH

NO REF SOV: 007

OTHER: 005

Card 3/3

MIYLEN, D.A.; SELIVANOVSKIY, S.A.; FERMOR, N.A.; KHAZANOVICH, I.G.;
YAKOVLEV, Yu.M.

Continuous polymerization of monomers in latex synthesis.
Kauch. i rez. 22 no.12:5-10 D '63. (MIRA 17:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo
kauchuka imeni Lebedeva.

ACCESSION NR: AP4041457

S/0138/64/000/006/0009/0013

AUTHOR: Khazanovich, I. G., Fermor, N. A., Peyzner, A. B., Lebedev, A. V.,
Yezriyelev, A. I.

TITLE: Latexes containing nitrile groups in the copolymer and their adhesive properties

SOURCE: Kauchuk i rezina, no. 6, 1964, 9-13

TOPIC TAGS: latex, synthetic rubber, tire cord, butadiene-nitrile, latex SKN-5, adhesive property, latex polymerization, acrylonitrile latex, latex structure

ABSTRACT: Since the Na-dibutyl-naphthalenesulfonate which is commonly used as an emulsifying agent in butadiene-nitrile rubber has an adverse effect on the adhesive properties of latexes, and since the poor adhesive properties of the latexes SKN-40, SKN-26 and SKN-18 may be due to the extremely high content of polar groups, the authors investigated the adhesive properties (in the impregnation of tire cord) of butadiene-nitrile latexes prepared at 5, 30 or 50C with a butadiene: acrylic acid nitrile ratio varying from 60:40 to 97:3 and using the K scaps of synthetic fatty acids which are also used as emulsifying agents in the preparation of latex SKS-30 ShKhP. Studies showed that the polymerization rate

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ACCESSION NR: AP4041457

increases with the nitrile content. The best adhesive properties were obtained with 5-7 parts nitrile, especially at 5C; the latex SKN-5 prepared at 5C was therefore investigated further. Since lack of homogeneity in the latex may have a favorable effect on the adhesive properties, the following formula was developed for calculating the integral and differential composition of the copolymer and the degree of conversion of the monomers in relation to the overall degree of polymerization during the preparation of latex SKN-5:

$$\ln \frac{m_2}{(M_2)_0} = \frac{1}{0.48} \ln \frac{1-0.48y_0}{1-0.48y} \quad (1)$$

$$\frac{M_2}{(M_2)_0} = \left(\frac{0.48y_0 - 1}{0.48y - 1} \right)^{0.48}$$

where $(M_2)_0$ is the number of mols of nitrile before polymerization, y_0 is the ratio of the molecular concentrations of butadiene and nitrile before polymerization, and M_2 and y represent the corresponding values at any other given degree of polymerization. Experiments showed that this structural heterogeneity can best be achieved by adding the nitrile in batches during polymerization, so that addition of the nitrile in 5 aliquots, for example, leads to better adhesive properties even though the content of bound nitrile in the copolymer is decreased. Orig. art. has: 4 formulas, 3 figures and 3 tables.

Card 2/3

ACCESSION NR: AP4041457

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut sinteticheskogo kauchuka
im. S. V. Lebedeva (All-Union Scientific Research Institute for Synthetic Rubber)

SUBMITTED: 00

DATE: 1971.10.10

ENCL: 00

SUB CODE: OC, MT

NÓ REF SOV: 002

OTHER: 002

Card 3/3

KHAZANOVICH, I.G.; FERMOR, N.A.; PEYZNER, A.B.; LEBEDEV, A.V.;
YEZRIYELEV, A.I.

Synthetic latexes containing nitrile groups in the copolymer,
and their adhesive properties. Kauch. i rez. 23 no.6:9-13
Je '64. (MIRA 17:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut
sinteticheskogo kauchuka im. S.V. Lebedeva.

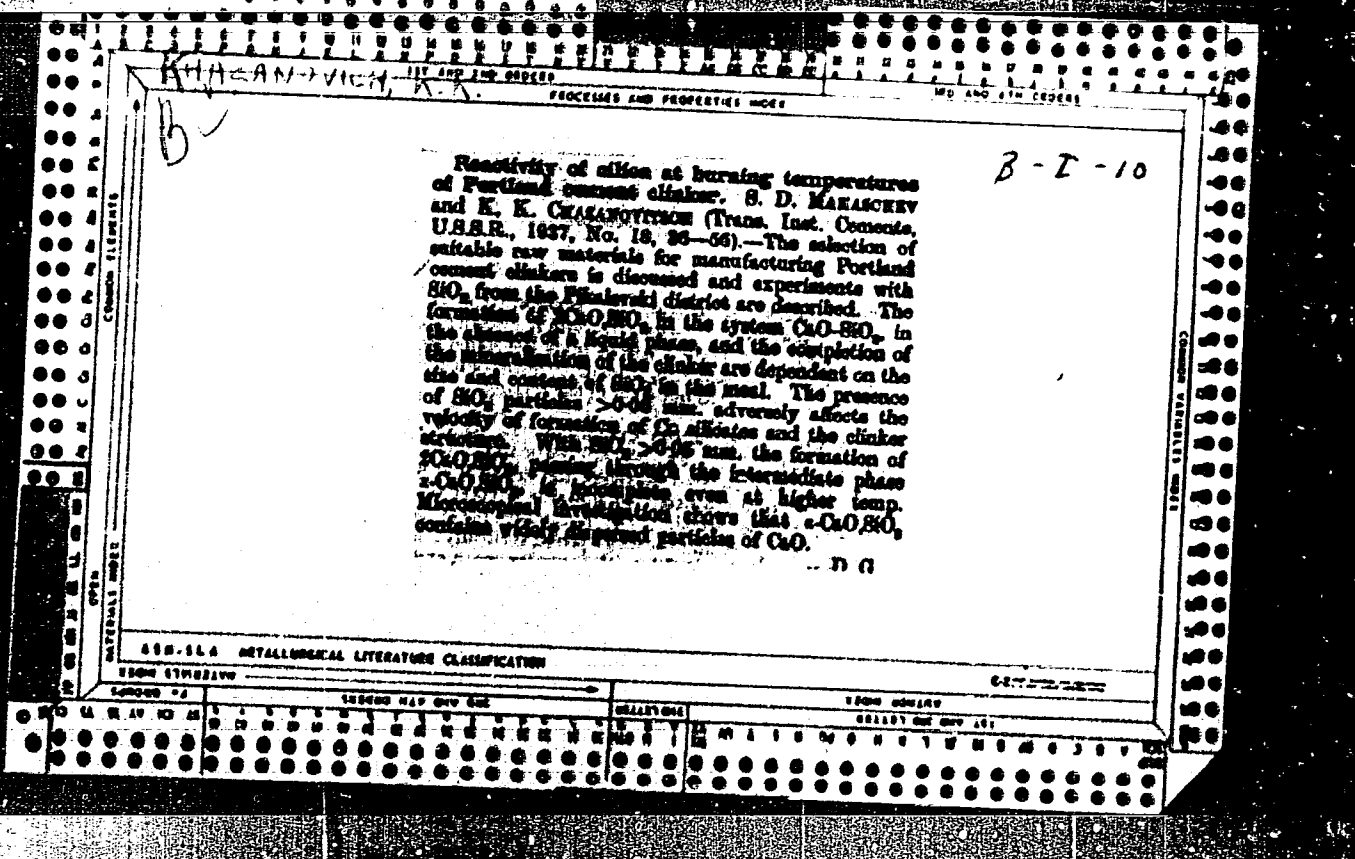
KHAZANOVICH, K.

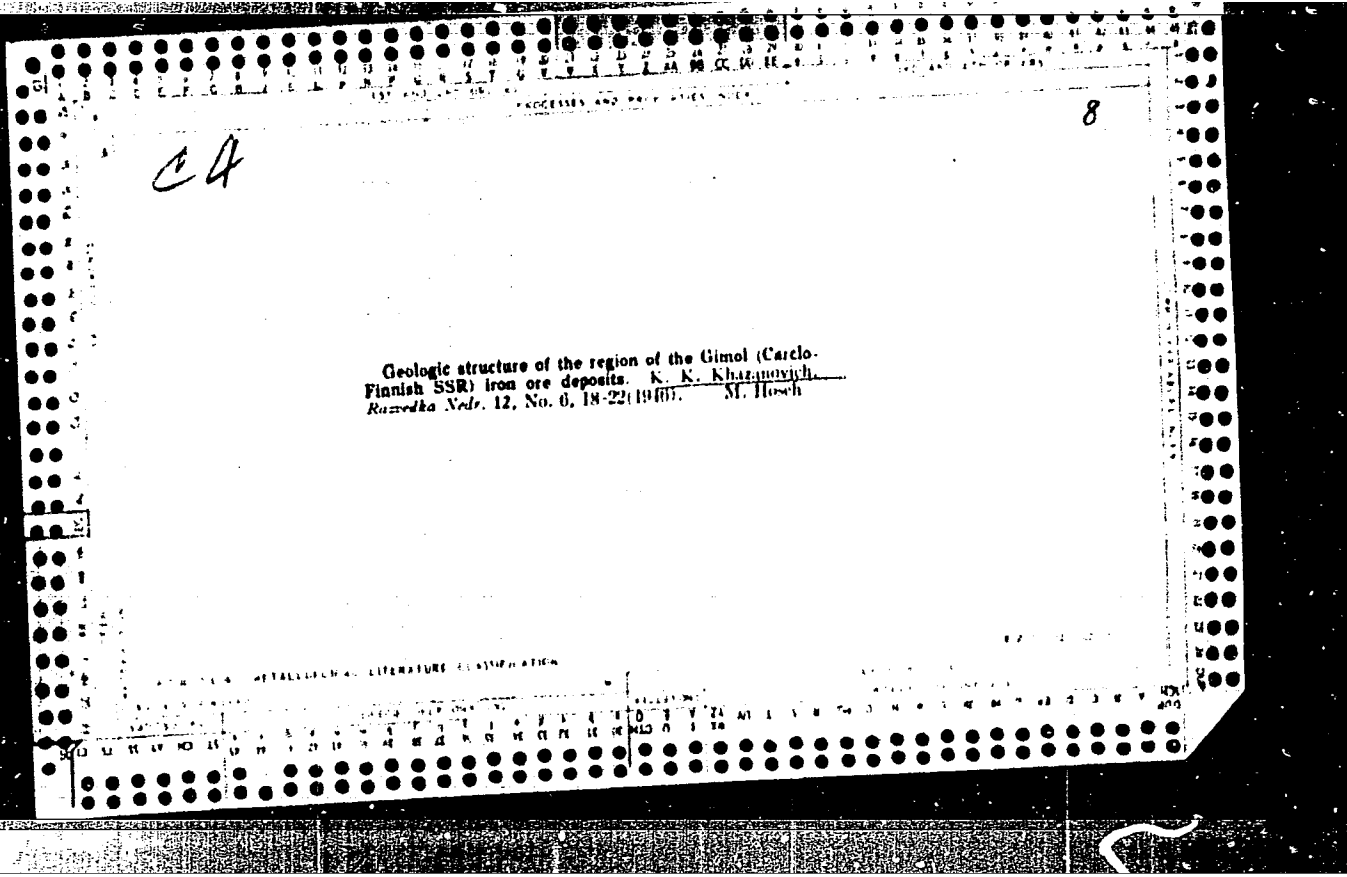
Age of Cambrian Izhora (fucoid) layers in the northwestern
Russian Platform. Izv. AN SSSR. Ser.geol. 27 no.12:102-104
D '62. (MIRA 16:2)

1. Vsesoyuznyy neftyanoy nauchno-issledovatel'skiy geologo-
razvedochnyy institut (VNIGRI), Leningrad.
(Russian Platform--Geology, Stratigraphic)

KHAZANOVICH, K.K., dots., kand. geol.-min. nauk; KHAGEMEYSTER, Ye.,
red.

[Crystallography] Kristallografiia; posobie k labora-
tornym rabotam. Fakul'tety: metallurgicheskii i khimiko-
tekhnologicheskii. Leningrad, Severo-Zapadnyi zaachnyi
politekhnikheskii in-t, 1963. 62 p. (MIRA 17:1)





KHAZANOVICH, K. K.

FA 78T65

USSR/Mining Methods
Mica

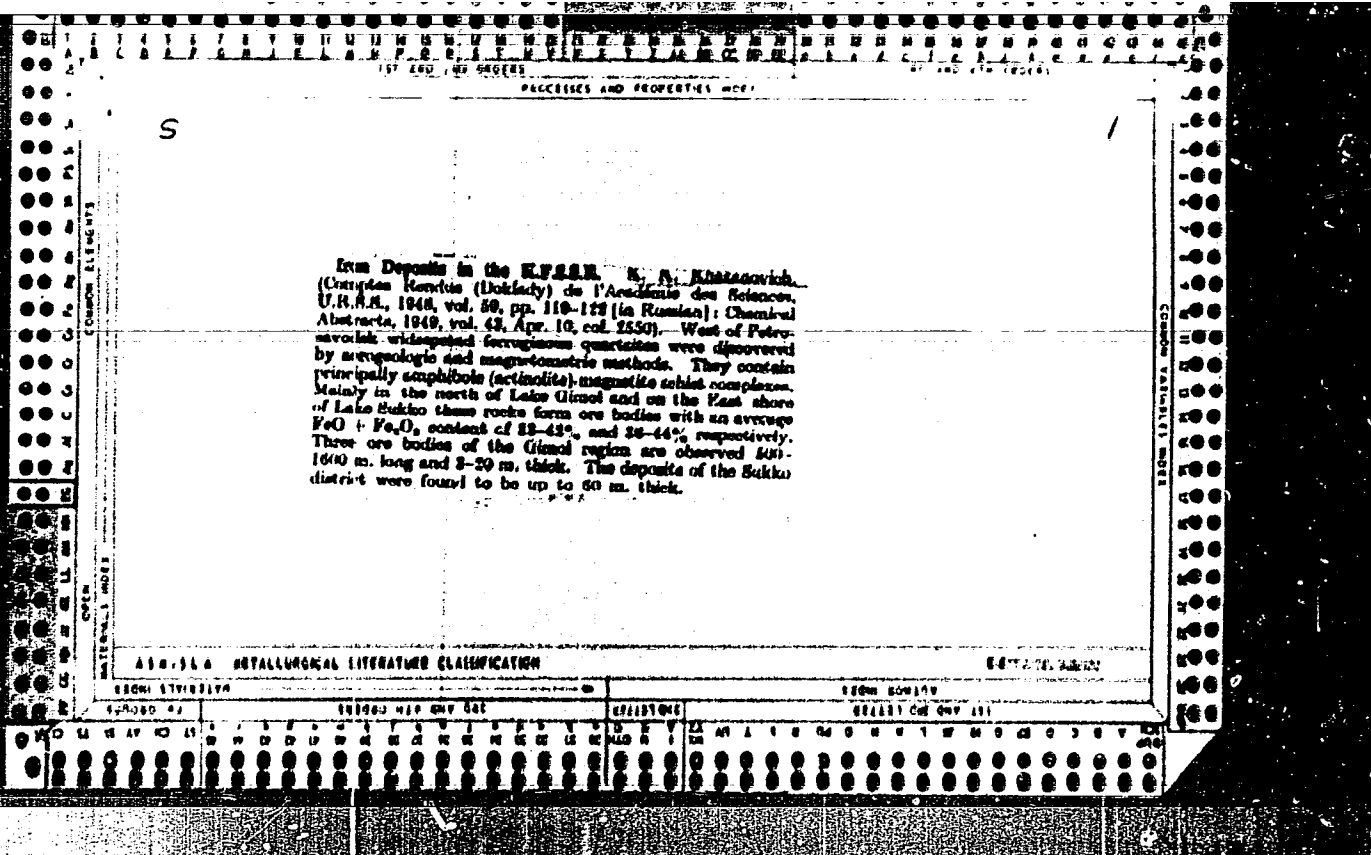
Apr 1948

"Ancient Subterranean Mining in Northern Karelia,"
K. K. Khazanovich, $\frac{1}{2}$ p

"Priroda" No 4

Reports accidental discovery of abandoned mica mine
during drilling operations in the Pulongsk Lake
district. Investigation showed that mine was worked
15th - 18th century.

78T65



KHAZANOVICH, K.K., kandidat geologo-mineralogicheskikh nauk.

Study of clay minerals. Priroda 45 no.7:91-93 J1 '56.(MIRA 9:9)

1.Chernevitskiy gosudarstvennyy universitet.
(Clay)

А.А.З.А.А.А.А.А.
BLAGOVESHCHENSKAYA, M.H.; KHAZANOVICH, K.K.

Sulfates in pre-Cambrian shales of the Yenisey Ridge. Zap. Vses.
min. ob-va 86 no.4:499-501 '57. (MIRA 11:1)
(Yenisey Ridge--Shales)
(Sulfates)

KHAZANOVICH, K.K.

AUTHOR: Khazanovich, K.K.

11-7-2/23

TITLE: "About the Correlation Between Cambrian and Pre-Cambrian Periods in the Foothills of the East Sayan" (K voprosu o sootnoshenii kembriya idokembriya v predgornoy chasti Vostochnogo Sayana)

PERIODICAL: "Izvestiya Akademii Nauk SSSR", Seriya geologicheskaya, 1957, No. 7, pp. 27-33, (USSR)

ABSTRACT: Up to the present, no uniform geologic maps exist about Cambrian and Pre-Cambrian deposits. The breaking up of the Lower Cambrian into separate layers is rendered impossible by the absence of faunal fossils. Based on detailed lithologic studies of sedimentary rocks and by analyzing general tectonics and by comparing different cuts (Uda and Iya rivers, Irkutsk cirque), attempts are made to define more accurately the correlation between the Cambrian and Pre-Cambrian sediments of this area. A strip of carbonate-terrigenous layers located between the Uda and Iya rivers along the foothills of the Sayan has been transgressively deposited on dislocated and metamorphosed Pre-Cambrian and Proterozoic rocks as well as partly on Archean gneiss formations. Geologic examinations along these rivers have shown that classification of deposits

Card 1/2

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721930002

"About the Correlation Between Cambrian and Pre-Cambrian Periods in the Foothills of the East Sayan"

of this area into 4 layers according to facies and lithologic characteristics hold out with remarkable constancy over a considerable expanse. These layers are identical with the Cambrian deposits of the Irkutsk cirque. By the general tectonic structure the deposits of the Lower Cambrian may be considered as belonging to typical plateau formations. Complex metamorphosed layers and volcanic rocks deposited under the basic level of the Lower Cambrian are of Pre-Cambrian formation (Upper Proterozoic). The plicature of this complex is of geosyncline nature, since the strata of metamorphosed layers have been agglomerated into rather steep folds. The article contains 2 schematic drawings. The bibliography lists 6 references, all Slavic (Russian).

ASSOCIATION: State University of Tschernovitse (Chernovtsy gosudarstvennyy universitet)

SUBMITTED: February 29, 1956

AVAILABLE: Library of Congress

Card 2/2

MAYOROV, B.A.; MOTIN, Yu.D.; OZEROV, I.M.; KHAZANOVICH, K.K.

Producing a light filler from shale ash by the agglomeration
method. Trudy VNIIT no.12:109-118 '63. (MIRA 18:11)

KHAZANOVICH, K. N. and PALEY, A. H.

"The Diameter of Drilled Shafts During Prospecting for Rock
Constructional Materials," *Razvedka i Otkrytiya Nedr*, No. 2, p 62, 1954

SO: W-31429, 2 Sep 55

KHAZANOVICH, M.P.; DEMENT'YEV, S.I., inzh., red.; MIKHAYLOVA, V.V.,
tekhn.red.

[Transportation in ferrous metal plants] Vnutrisavodskii
transport zavodov chernoi metallurgii. Moskva, Gos.nauchno-
tekh.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1951.
243 p. (MIRA 14:1)

(Metallurgical plants--Equipment and supplies)
(Railroads, Industrial) (Materials handling)

DORFMAN, B.A., inzh., nauchnyy sotrudnik; FAYVISHENKO, L.I., inzh., nauchnyy sotrudnik; KHAZANOVICH, N.L., inzh., nauchnyy sotrudnik; KHALIN, P.G., inzh., nauchnyy sotrudnik; PEYCHEV, G.P., otv.red.; BELINA, R.A., red.izd-va; ANDREYEV, S.P., tekhn.red.

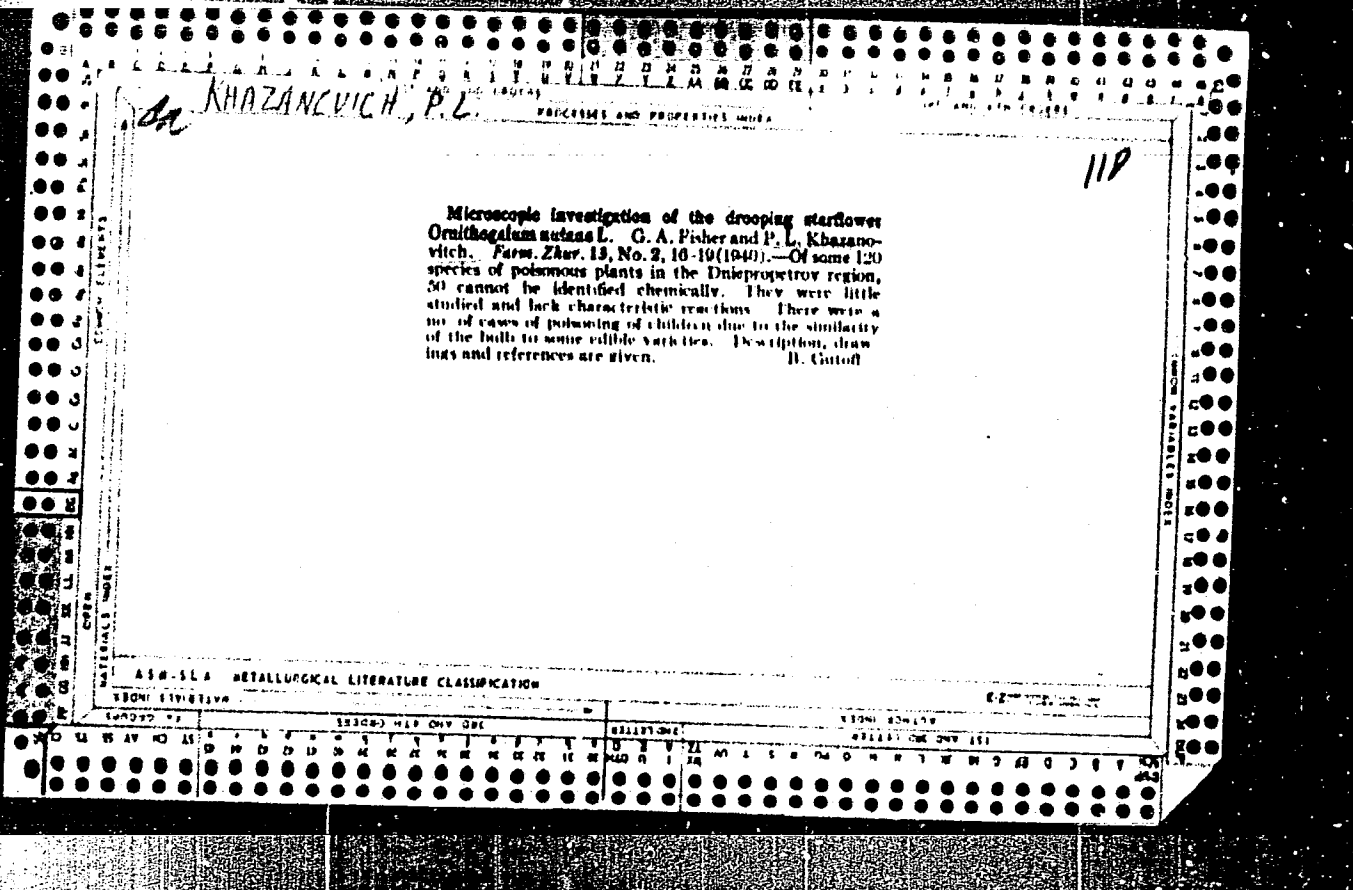
[Track maintenance at iron and steel mills] Opyt raboty putsitsev zheleznodorozhnogo transporta predpriatii chernoi metallurgii. Khar'kov, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1959. 101 p. (MIRA 12:10)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii proizvodstva i truda chernoy metallurgii. 2. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii proizvodstva i truda chernoy metallurgii. (for Dorfman, Fayvishenko, Khazanovich, Khalin).
(Railroads, Industrial) (Railroads--Track)

MINENKO, V.A.; ALEKSANDROV, A.A.; SVETS, V.Ye.; BORZENKO, V.P.; KURILOV,
P.G.; KHAZANOVICH, N.L.; Primali uchastiye: POPOV, A.I.;
KONOVALOV, A.N.; TERTYCHNAYA, I.Yu.; POSHKREBNEV, V.P.;
DMITRIYEVA, S.M.; KORNILOVA, A.V.

Work organization in the section, of metal feed to blooming
mills. Met. i gornorud. prom. no.2:67-68 Mr-Ap '64.

(MIRA 17:9)



1ST AND 2ND ORDERS 3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Handwritten: KHANZANOVICH, R. L. 7

Handwritten: CB

Determination of phosphoric acid. S. M. Umanski and R. L. Khanzovich. *Farm. Zhur.* 11, No. 2, 25-7 (1938); *Chemie & Industrie* 41, 100.—To the (approx. 0.1 N) H₃PO₄ soln. add 2 drops of phenolphthalein soln. and titrate hot with 0.1 N Ba(OH)₂. A. Papineau-Croft

COMMON ELEMENTS

MATERIAL INDEX

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

ESONS BOMERS

GROUPS

CLASSIFICATION

CA

17

Examination of *hirsuta* (L.) Kuntze: *complanata* Willd.
 chemical analysis. R. J. Khasanovskiy, *Paruzhnik*,
 1940, No. 12, 94-8; cf. C. A. 13, 6288. The ash from
 leaves and stems is all calc. in eq. HCl except a small amt. of
 silicate occurring only in the fruit ash. Leaves and stems
 contain 7.7, roots and rhizomes 7.4% and fruits 2% ash.
 The corresponding amts. of CaCO₃ are about 9, 8 and
 1.3%; of tannins, 12, 7 and 6%. The roots and rhizomes
 contain about 0.2 and fruits about 0.04% essential oil.
 Pyrocatechol- and pyrogallol-type tannins are present, in
 combination with ellagic acid and phloroglucinol. No
 alkaloids, saponins, bitter principles or anthraquinone were
 found. The plant is definitely useful as a source of high-
 grade tannins. The epigallocatechin gallate has not yet been
 investigated. With respect to therapeutic action it has
 been observed that galls yield only tannins in prep.
 drugs from the plant, whereas hide powder yields tannins
 and also the tannases which have no tanning action.

J. H. Smith

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS

FROM LITERATURE SOURCES

COMMON ELEMENTS		FROM LITERATURE SOURCES	
GROUP	SYMBOL	GROUP	SYMBOL
1	Li	11	Na
2	Be	12	Mg
3	B	13	Al
4	C	14	Si
5	N	15	P
6	O	16	S
7	F	17	Cl
8	Ne	18	Ar
9	Na	19	K
10	Mg	20	Ca
11	Al	21	Sc
12	Si	22	Ti
13	P	23	V
14	S	24	Cr
15	Cl	25	Mn
16	Ar	26	Fe
17	K	27	Co
18	Ca	28	Ni
19	Sc	29	Cu
20	Ti	30	Zn
21	V	31	Ga
22	Cr	32	Ge
23	Mn	33	As
24	Fe	34	Se
25	Co	35	Br
26	Ni	36	Kr
27	Cu	37	Rb
28	Zn	38	Sr
29	Ga	39	Y
30	Ge	40	Zr
31	As	41	Nb
32	Se	42	Mo
33	Br	43	Tc
34	Kr	44	Ru
35	Rb	45	Rh
36	Sr	46	Pd
37	Y	47	Ag
38	Zr	48	Cd
39	Nb	49	In
40	Mo	50	Sn
41	Tc	51	Pb
42	Ru	52	Bi
43	Rh	53	Po
44	Pd	54	At
45	Ag	55	Fr
46	Cd	56	Ra
47	In	57	Ac
48	Sn	58	Th
49	Pb	59	Pa
50	Bi	60	U
51	Po	61	Np
52	At	62	Pu
53	Fr	63	Am
54	Ra	64	Cm
55	Ac	65	Bk
56	Th	66	Cf
57	Pa	67	Es
58	U	68	Fm
59	Np	69	Md
60	Pu	70	No
61	Am	71	Lr
62	Cm		
63	Bk		
64	Cf		
65	Es		
66	Fm		
67	Md		
68	No		
69	Lr		

KHAZANOVICH, R. L.

"A Study of the Medicinal Plants of Uzbekistan Having Purgative and Astringent Action." Dr Pharm Sci, Tbilisi State Medical Inst, Tashkent, 1954. (KL, No 13, Mar 55)

SO: Sum. No. 670, 29 Sep 55--Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000721930002

Uz
Tashkent
SSR
Name: KHAZANOVICH, Rakil' L'vovna

Dissertation: Study of laxative and astringent med plants of Uzbekistan

Degree: Doc Pharm Sci

Affiliation: Tashkent Pharm Inst

Defense Date, Place: 8 Mar 55, Council of Tbilisi State Med Inst

Certification Date: 7 Jul 56

Source: BITO 5/57

PULATOVA, T.P.; KHAZANOVICH, R.L.

Alkaloid content of some *Lagochilus* species and on the nature
of lagochiline. *Apt. delo* 11 no.6:29-32 N-D 62 (MIRA 17:7)

1. Tashkentkiy farmatsevticheskiy institut.

KHAZANOVICH, R.L.; KHALMATOV, Kh.Kh.; AKHMEDOVA, F.G.;
AVAKIMOVA, L., red.; TSAY, A., tekhn. red.

[Study of some medicinal plants of Uzbekistan] Izuchenie
nekotorykh lekarstvennykh rastenii Uzbekistana. Tashkent,
Medgiz UzSSR, 1963. 138 p. (MIRA 17:1)

MANULKIN, Z.E.; KHAZANOVICH, R.L.; KHAKIMOV, Kh.Kh.; IKRAMOV, I.T.;
AKOPOV, T.E.; YADROVA, V.M.

Reviews and bibliography. Apt. delo 13 no.3:83-87 My-Ja '64.
(MIRA 18:3)

AKHAROVICH, T. N.

183781

USSR/Nuclear Physics - Mesons, Production of

May 51

"Contribution to the Problem on the Production of Mesons," T. N. Khazanovich, Moscow State U

"Zhur Eksper i Teoret Fiz" Vol XXI, No 5, pp 581-7

Calculates effective cross section for processes of meson production during absorption of high-energy photons by nucleons. Considers neutral, scalar and pseudo-scalar mesons. Uses nonrelativistic approximations in calcns. In conclusion, gives several notes in connection with similar calcns for charged mesons. Submitted 19 Oct 50.

183781

5(4) 5.3830

AUTHOR: Khazanovich, T.N.

SOV/155-58-4-28/34

TITLE: The Excluded Volume in the Theory of Deformations of Swollen Network Polymers (Isklyuchenny ob'yem v teorii deformatsii nabukhshikh setochnykh polimerov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 4, pp 171 - 174 (USSR)

ABSTRACT: The author starts from his former publication [Ref 1], where he shows by the model of the so-called "chain of pearls" that the effect of the excluded volume is of essential importance in the theory of deformations of network polymers. In the present paper the author considers the series expansion.

$$(1) \Psi = \Psi_0 - kT \left[B Q_2 + B^2 (Q_{22} - Q_2^2) / 2 + \dots \right]$$

for the free energy of the network. Here Ψ_0 is the free energy without interaction,

$$B = \int \left(e^{-u_{ik}/kT} - 1 \right) d\mathbf{r}_{ik}, \text{ where}$$

Card 1/2

The Excluded Volume in the Theory of Deformations
of Swollen Network Polymers

SOV/155-58-4-28/34

u_{ik} is the energy of the interaction of the segments i and k ,
and \vec{r}_{ik} is the vector connecting these segments; Q_1, Q_2
are the sums of the probabilities for the collision of the seg-
ments i and k . The author investigates the legality of the
formal expansion (1). A general proof of convergence is not
obtained. By the example of some regular networks, however,
it is shown that (1) is well applicable in general.
The author thanks Professor G.M. Bartenev for the interest in
the paper. - There are 2 figures, and 6 references, 2 of which
are Soviet, 2 French, 1 American, and 1 Japanese.

ASSOCIATION: Moskovskiy gorodskoy pedagogicheskiy institut imeni V.P. Po-
temkina (Moscow Municipal Pedagogical Institute imeni V.P.
Potemkin)

SUBMITTED: June 6, 1958

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AUTHOR: Khazanovich, T. N.

SOV/57-28-7-12/35

TITLE: The Role Played by the Volume Effects in the Theory of the Deformation of Reticular Polymers (Rol' ob'yemnykh effektov v teorii deformatsiy stochnykh polimerov)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Vol. 28, Nr 7, pp.1437-1440 (USSR)

ABSTRACT: The author refers to the paper by E. Guth and H. B. James (Ref 1). Their work is not accurate and not convincing. In order to explain the role played by the effect of an excluded volume the deformation of a sufficiently swollen polymer is investigated. Obviously the effect is small in this case. The author uses the known model of the "pearl necklace" for the chains which had already been used several times in the works on the theory of polymer solutions; viz. it is assumed that the chains consist of individual segments attached to one another. Their potential interaction energy is $U = \sum_{i < k} u_{ik}$; u_{ik} denoting the potential energy of the inter-

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action of the i -th and k -th segment. The sum refers to all segment pairs. As the dimensions of the segments are small compared to that of the chains the position of the i -th segment in the space at the "pearl necklace" model is determined by its radius vector \vec{r}_i . On this occasion it is assumed that $u_{ik} = u(r_{ik})$ holds, where $r_{ik} = |\vec{r}_i - \vec{r}_k|$. According to James (Ref 2) all segments of the reticulum chains are divided into fixed $\vec{r}_\alpha, \vec{r}_\beta \dots$ and free $\vec{r}_1, \vec{r}_2 \dots, \vec{r}_1 \dots$ ones.

The configuration integral of the reticulum with interaction is expressed by the formula (1). In the case of a sufficiently great degree of swelling, as well as in sufficiently weak solutions and sufficiently diluted gases only the interaction of the pairs can be taken into account. The formula (2) is obtained for this case. In it the quantity Q occurs, Q denoting the density of the probability of a "collision" of the i -th with the k -th segment in a reticulum without interaction. The order of Q is estimated and it is shown that in the theory of the deformations in reticular polymers the volume effects can not be neglected, as they result in a term

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of the same order as the basic term for a reticulum without interaction. In order to obtain concrete formulae with the effect of the excluded volume being taken into account the distribution function $P(Z, r^0)$ must be found. This is, however, a complicated problem. In a later work the results of the calculations of Q for a regular cubic reticulum will be given. In that case the function $P(Z, r^0)$ can be found relatively easily. G. M. Bartenev showed interest in this work. B. M. Yavorskiy discussed the work with the author. There are 7 references, 1 of which is Soviet.

ASSOCIATION: Moskovskiy pedagogicheskiy institut im. V. P. Potemkina
(Moscow Pedagogical Institute imeni V. P. Potemkin)

SUBMITTED: July 16, 1957

Card 3/4

SOV/57-23-7-13/35

AUTHOR: Khazanovich, T. N.

TITLE: ~~On the Tension of a Polymer Chain in a Network~~ (O natyazhenii polimernoy tsepi v setke)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Vol. 28, Nr 7, pp.1441-1443 (USSR)

ABSTRACT: Vol'kenshteyn and Ptitsyn (Ref 1) investigated the tension f as an external parameter of the chain and found the statistical integral of the polymer chain in the case of constant tension (formula (1)). When the chain is regarded with one end fixed the formula (2) for the mean tension is obtained. The two formulae also hold for a chain being in any interaction with the medium in case that by the Gibbs distribution for such a chain such a distribution is understood, which is integrated through the phase coordinates of the medium for the chain and the medium. In a real network the tension as well as the position of the chain ends fluctuate, and these fluctuations can be very great. It is shown that with an accuracy up to terms of the order

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$\sqrt{h^2}/L$ the mean tension is determined by the formula (2), where L denotes the total chain length and $\sqrt{h^2}$ the mean square distance between the ends of the free chain. First the fluctuation in the network of independent Gaussian chains is investigated. Then an approximation formula for the fluctuation distribution of the chain end in relation to the chain beginning is deduced. The equation (8) is obtained. The distribution (8) corresponds exactly to the distribution of the relative fluctuations of the neighboring network nodules for a linear ($q = 2$) and for a cubic network ($q = 6$) by James (Ref 2). It is shown that an increase of the functionality (?) leads to an increase of ν or to a decrease of the fluctuations. As it has to be assumed that the general final conclusion also holds for non-Gaussian networks a one-dimensional network of non-Gaussian chains is investigated. It is shown that with an accuracy up to terms of the order $\nu^{-1/2}$ the formula for the mean force coincides with that for the tension of a chain with ends fixed at a distance t . In the case of a model with freely joined members ν is proportional to the number of members which again points to

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the similarity of this model to an ideal gas. The considerations made refer to independent chains (not being in interaction). As in an interaction the fluctuation can not become greater but only smaller they are also to be used in the case of chains with interactions. Thus the fluctuations can be neglected in the determination of the mean tension in the case of sufficiently long and elastic chains.

G. M. Bartenev and B. M. Yavorskiy discussed the work with the author. M. V. Vol'kenshteyn and O. B. Ptitsyn pronounced useful criticism. There are 3 references, 1 of which is Soviet.

ASSOCIATION: Moskovskiy pedagogicheskiy institut im. V. P. Potemkina
(Moscow Pedagogical Institute imeni V. P. Potemkin)

SUBMITTED: January 7, 1957

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KHAZAROVICH, T.N., Cand Phys Math Sci -- (diss) "Concerning highly elastic deformation^s of reticular polymers." Mos, 1959, 11 pp (Mos Municipal Pedagogical Inst in V.P. Potemkin) 150 copies
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S/081/62/000/024/036/052
B106/B186

AUTHORS: Bartenev, G. M., Khazanovich, T. N.

TITLE: Theory of elastic deformation of rubber

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24(II), 1962, 922 - 923,
abstract 24P776 (Uch. zap. Mosk. gor. ped. in-ta im.
V. P. Potemkina, v. 86, 1960, 141 - 156)

TEXT: Based on the concepts of molecular rubber structure, a theory is developed which establishes a relationship between stress and deformation and which makes no allowance for the independence of the molecular chains. The tensile strength along the chain is assumed constant, which approaches the hypothesis on the orienting force acting upon each chain segment. σ_j , the projection of the mean tensile strength onto the j-th axis, is a function of the relative elongation $\vec{t} = \vec{r}/L$ (\vec{r} is the chain vector, L is the full contour length of the chain). For a non-swelled network,

$$\sigma_j = 1/S_j \int f(t) \cos \theta \cos x \, dW(t, \theta) \quad (S_j - \text{surface for one intersection; } x \text{ is the angle between the force } f \text{ in the intersection point and } \vec{t}; \theta \text{ is the angle between the force } f \text{ and the chain vector } \vec{r})$$

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angle between \vec{r} and the j -th axis; dW is the probability for the case that below the chains, intersecting the given surface element, there will be chains with a relative elongation between t and $t + dt$). For a swelled network: $\sigma_j^* = 1/S_j^* \int f(t) \cos \theta dW(t, \theta)$ since for the small deformations $t < 1$ and the functions entering the expression for σ_j are decomposed into a power series of t where the first term which does not cancel out is left over; then, $\sigma_j^* = Ct_j/2S$. On the assumption that $L = \text{const}$, $\sigma_j^* = C\bar{r}_j/2LS_j$; $\sigma_j^* = C\bar{r}_j LS_j^*$ (\bar{r}_j is the averaged value of r); C is the coefficient of the first term not cancelling out when $f(t)$ is decomposed). In non-deformed state: $\sigma_0 = C(G/V)^{2/3}/2g$ for non-swelled chains, $\sigma_0^* = C(G/V)^{1/3}/L$ for swelled chains (g is the factor depending on the chain structure; G is the complete amount of chains in volume V). For the small deformations considered $\sigma_j^* = \sigma_0^* \lambda_j$; $\sigma_j^* = \sigma_0^* \lambda_j^2$ ($\lambda_j = \bar{r}_j/\bar{r}_{0j}$ is the main multiplicity of elongation). Since $C = 3 kTL/L^2$ (L^2 is the RMS distance between the ends of the

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free chain), $\sigma_0^* = 3(G/V)kTr_0^2/\overline{eh^2}$ and the elastic constant in the theory considered differs from the James and Gut elastic constant by a constant factor. The theory was compared with experimental data of other authors. It is possible to extend the theory to rubber of medium swelling.
[Abstracter's note: Complete translation.]

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KHAZANOVICH, T.N.

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(Thermodynamics) (Elasticity)