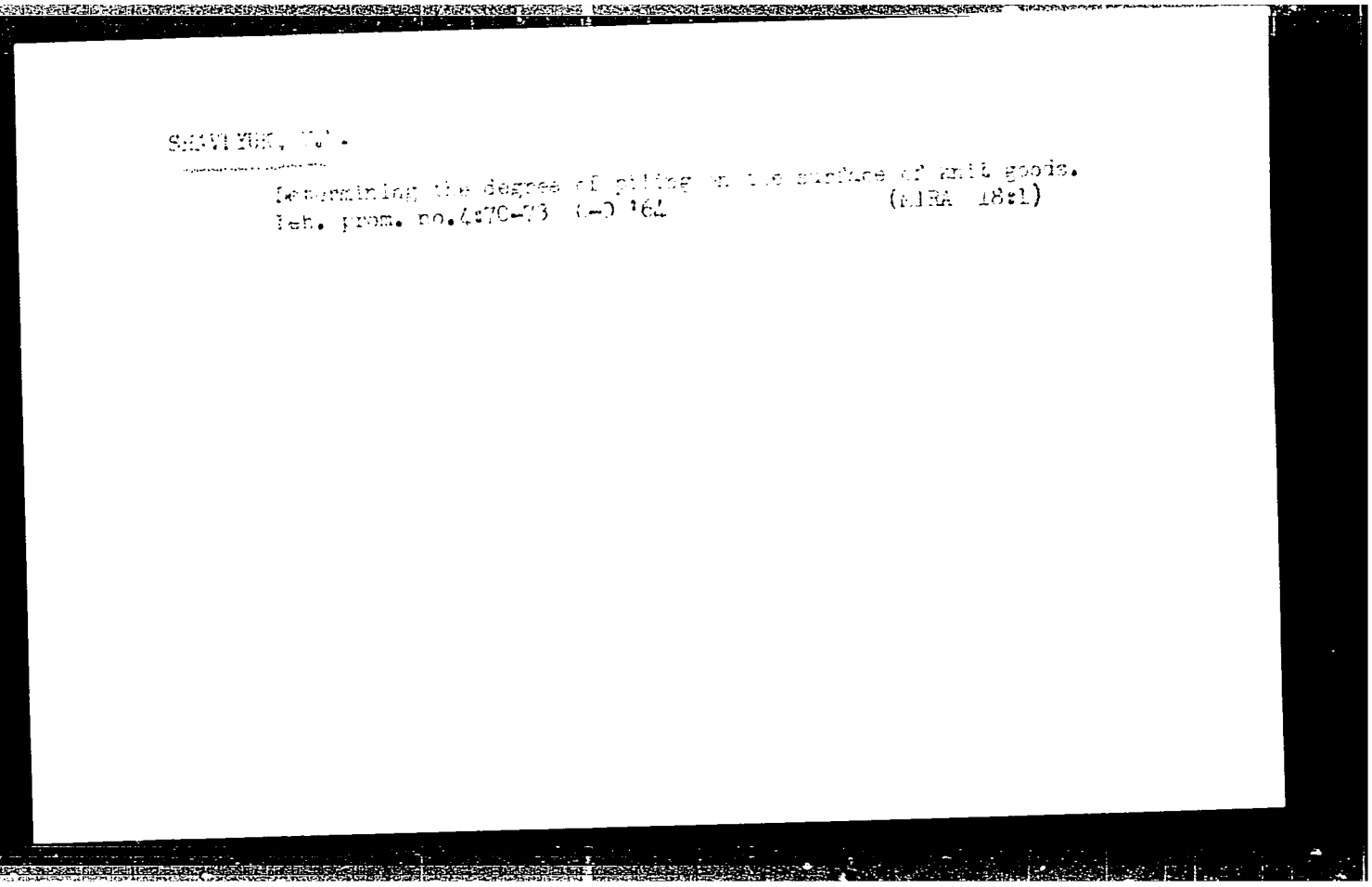


SHEVTSOV, Yu. I.

Determining the degree of pilling in the surface of wool goods.
Leh. prom. no.4:70-73 O-D '64 (MIRA 18:1)

PERKOVSKIY, Boris Borisovich; SHAVNYA, A.A., red.; ZIMA, Ye.G., tekhn. red.

[Protect the beauty and natural resouces of your country] Beregi krasotu i bogatstvo rodnoi Zemli. Minsk, 1962. 37 p. (Obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii Belorusskoi SSR, no.29) (MIRA 15:2)
(White Russia—Wildlife, Conservation of)

SHAVOLIN, F.M., fel'dsher (selo Derevyaginc Ryazanskoy oblasti)

Sacrolumbar radiculitis and possibilities of its treatment at a feldsher-midwife center. Fel'd. i akush. no.9:35 S '54. (MLRA 7:11)
(NERVES, SPINAL, diseases
radiculitis, sacrolumbar, ther.)
(MEDICAL CENTERS
facilities for ther. in radiculitis, in Russia)

SHAVOLINA, N.V.

4510. SOME PROBLEMS OF VAPOUR PHASE HYDROGENATION OF AROMATIZED FEED STOCKS. II. Slifchenko, E.I., Shavolina, N.V. and Orochko, D.I. (Trud. vsesoyuz. nauch.-issled. inst. Iskusst. zhid. Topliva i Gaza (Proc. All Union. Sci.-Res. Inst. Synthetic Liquid Fuel and Gas), 1954, (6), 46-54; abstr. in Chem. Abstr., 1957, vol. 51, 10039, 10040). The vapour phase hydrogenation of highly aromatized gas oils over a tungsten-nickel catalyst was studied to determine the variables for the case that different groups of aromatic hydrocarbons are present simultaneously. Two and three ring compounds represented about 82% of the total aromatic hydrocarbons. The three ring aromatic hydrocarbons were found to hydrogenate about forty times faster than the two ring compounds. Hydrogenation of polycyclic compounds at high space velocities results in increased formation of benzene derivatives, which confirms the hypothesis that the mechanism of the hydrogenation of condensed aromatic rings consists in consecutive hydrogenation of the rings. C.A.

SIL'CHENKO, Ye.I.; KARZHEV, V.I.; OROCHKO, D.I.; VAVUL, A.Ya.; ROBOZHEVA, Ye.V.; BIRMAN, M.I.; SHAVOLINA, N.V.; MASINA, M.P.; GONCHAROVA, N.V.

In memory of Mariia Sergeevna Sudzilovskaia. Trudy VNIGI no.6: 146-158 '54. (MLRA 7:11)
(Sudzilovskaia, Mariia Sergeevna, 1904-1953)

SULIMOV, A.D.; KARZHEV, V.I.; ZHOKHOVSKAYA, T.V.; OLEVSKIY, V.M.; VENDEL'SHTEYN, Ye.G.; SIL'CHENKO, Ye.I.; SHAVOLINA, N.V.; VOYTEKHOV, A.A.

Producing the raw material for synthetic fibers using petroleum products. Khim.i tekh.topl. no.1:33-43 Ja '56. (MLRA 9:7)
(Petroleum) (Fibers)

Shavolina, N.V.

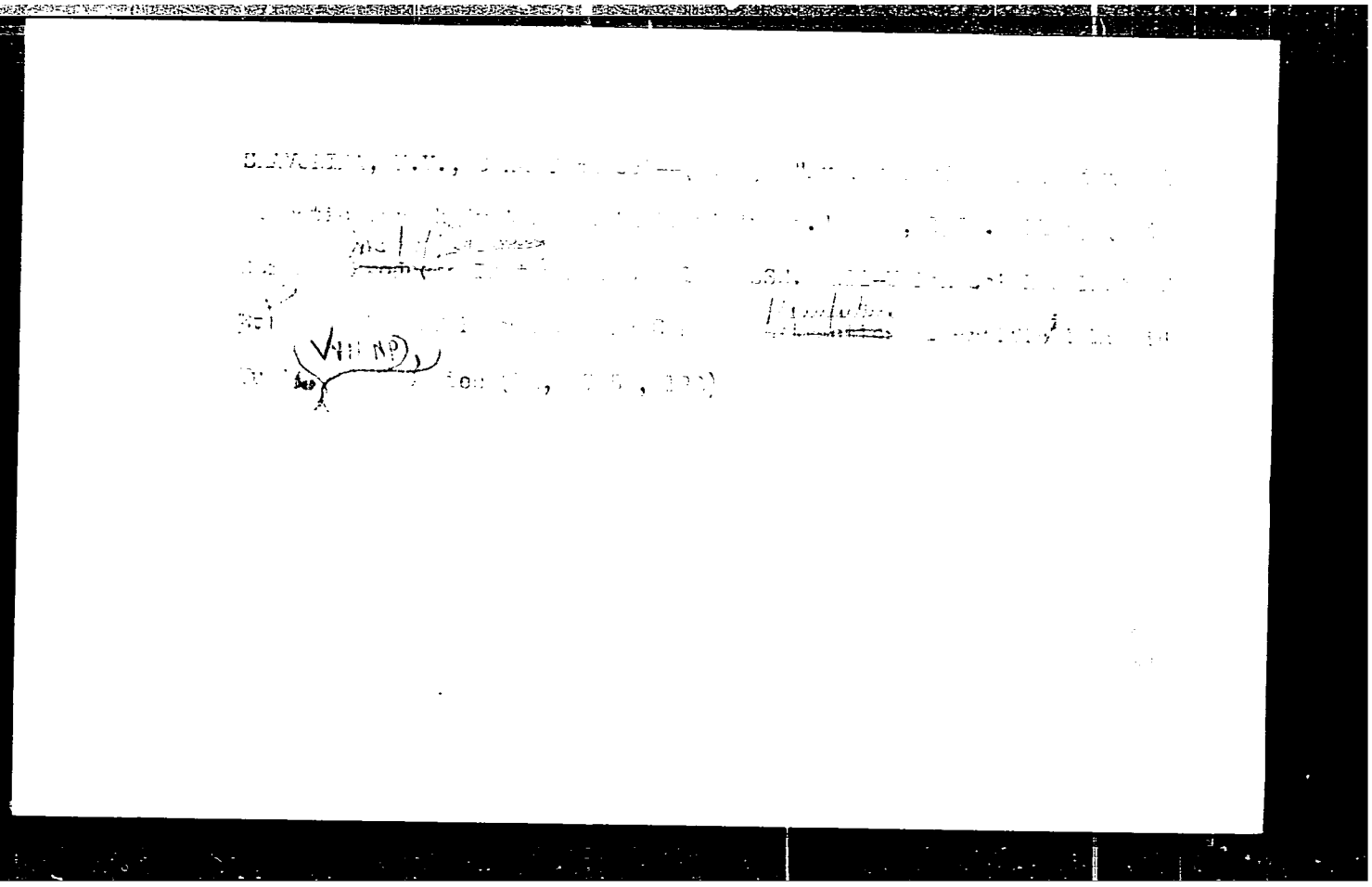
4641. USE OF HYDROGEN AND CARBON IN THE DESTRUCTIVE HYDROGENATION OF FUELS. Karzhev, V.I. and Shavolina, N.V. (Khim. Tekhnol. Topliva (Chem. Technol. Fuel, Moscow), (2), 50-54; abstr. in Chem. Abstr., 1956, vol. 50, 10379). A review of the effects of various catalysts and operating conditions on the yields in hydrogenation of coal, tars, and oil residues. C.A.

2

SHAVOLINA, N. V.

Effect of oxygen- and nitrogen-containing compounds on the rate of hydrogenation of aromatic hydrocarbons. V. I. Karzhev, D. I. Orochko, B. I. Sil'chenko, and N. V. Shavolina. *Khim. i Tekhnol. Topliv* 1950, No. 12, 20–32.—Hydrogenation was carried out under 300 atm. H with $WO(SO_4)_2$-Ni catalyst at 300–400° in a continuous-fed app. Addn. of phenols to mixts. of aromatic hydrocarbons and heterocyclic compds. had no effect on the rate of hydrogenation. The degree of conversion of hydrocarbons at 320° decreased from 66% to 23% and that of phenol from 80% to 26% in the presence of 7 wt.-% pyridine. Under these conditions the conversion of pyridine was 80–85%. When the temp. was raised to 400°, the conversion of pyridine was 99%, hydrocarbons 66%, phenol 86%. Conversion of benzene at 300° fell, resp., to 72% and 86% in the presence of 1.6% and 6% pyridine. At 300° and 340° the conversion of benzene contg. 4% hydroquinone, resp., decreased by 93% and 70%.

A. P. Kotloby



KARZHEV, V.I.; KASATKIN, D.F.; SHAVOLINA, N.V.; KUZINA, T.A.

Extraction of aromatic hydrocarbons by propylene carbonate.
Khim.i tekh.topl.i masel 6 no.4:6-9 Ap '61. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva.
(Hydrocarbons) (Extraction(Chemistry))

S/081/63/000/004/005/051
B102/B186

AUTHORS: Shavolina, N. V., Orochko, D. I., Sil'chenko, Ye. I.

TITLE: Some problems of macroscopic kinetics of hydrogenation of aromatic hydrocarbons in flowing operation

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1963, 78-79, abstract 4B515 (Tr. Vses. n.-i. in-t po pererabotke nefti i gaza i polucheniyu iskusstv. zhidk. topliva, no. 8, 1959, 4-19)

TEXT: In the case of small reaction rates toluene hydrogenation may be formally described by the equation of pseudomonomolecular inhibiting reactions. With high rates the hydrodynamic conditions of the experiment have an effect on the depth of transformation of the crude. A reduction in grain size of the industrial W-Ni catalyst (Cat) on the carrier causes an increase in the macroscopic rate of C_6H_6 hydrogenation, which indicates the inhibiting effect of the diffusion of reagents in the Cat pores. Inhibition is particularly intense in the first stages of hydrogenation, when the surface reaction rate is high. The mean effectiveness of the internal surface of industrial Cat (tablets 10 mm in diam, 10 mm in height)

Some problems of macroscopic ...

amounts to ~50-60% when hydrogenating a crude containing ~70% C_6H_6. The effectiveness of the internal surface of the Cat may be increased by reducing the Cat grain size and by reducing the C_6H_6 concentration in the crude; it is decreased when the amount of circulating H_2 is increased.

[Abstracter's note: Complete translation.]

Card 2/2

SHAVOLOV, Sergey Yevgen'yevich; BRODOTSKIY, A.I., red.; ZLOTNIKOVA, Ye.A., red.izd-va; SHIBKOVA, R.Ye., tekhn. red.

[Engineering methods for the design of the elements of paper-making machines and various devices] Inzhenernye metody rascheta elementov bumagodelatel'nykh mashin i razlichnykh ustroistv. Pererabotannoe i dopolnennoe izdanie knigi "Sopротivlenie materialov." Moskva, Goslesbumizdat, 1963. 540 p. (MIRA 16:8)

(Papermaking machinery--Design and construction)
(Strength of materials)

SHAVOLOV, S.Ye., kand.tekhn.nauk

Displacement of the cross sections of a rectilinear rod consisting of elements with continuously changing cross sections. Trudy LTITSBP no.8:136-192 '61. (MIRA 16:9)
(Elastic rods and wires)

SHAVOLOV, S.Ya., SAMOCHKOVA, A.N.

Using the method of focal moments for determining the displacement of the cross sections of beams with variable rigidity. Trudy LTITSBP no.14:32-39 '64. (MIRA 18:5)

SHAVOLOV, S.Ye.

Coefficients of the mean tangential stress of annular sections and their application in determining the deflection of the shafts of papermaking machines. Trudy LTITSBP no.14:49-58 '64. (MIRA 18:5)

SHAVORIKHINA, Ye.A., inzh.

Monoethanolamides as additives for toilet soap (from "Parfumerie and Kosmetik," 40, 1959). Masl.-zhir.prom. 26 no.8:43-44 Ag '60. (MIRA 13:8)

(Soap) (Amides)

SHAVORIKHINA, Ye.A., inzh.

Waterless cleansing paste for hands (from "Soap, Perfumery and Cosmetics," no.10, 1959). Masl.-zhir.prom. 26 no.8:44 Ag '60. (MIRA 13:8)

(United States--Cleaning compounds)

SHAVORIKHINA, Ye.A., inzh.

Preparations for the protection of the skin. Masl.-zhir.prom. 26 no.10:47 O '60. (MIRA 13:10)
(Cosmetics) (Skin--Care and hygiene)

SHAVORIKHINA, Ye.A., inzh.

Synthetic toilet soap (from "Soap, Perfumery, Cosmetics," no.32, 1959). Masl.-zhir.prom. 27 no.1:45 Ja '61. (MIRA 14:1)
(Soap)

SHAVOR[illegible]HINA, Ye.A., inzh.

Combinations of anion and cation surface active substances (from "American perfumer and aromatics," April, 1960). Masl.-zhir. prom. 27 no.9:46-47 S '61. (MIRA 14:11)
(Cosmetics) (Surface active agents)

SHAVORIKHINA, Ye.A., inzh.

New dentifrices. Masl.-zhir. prom. 29 no.10:42-43 O '63. (MIRA 16:12)

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

BC

a-1

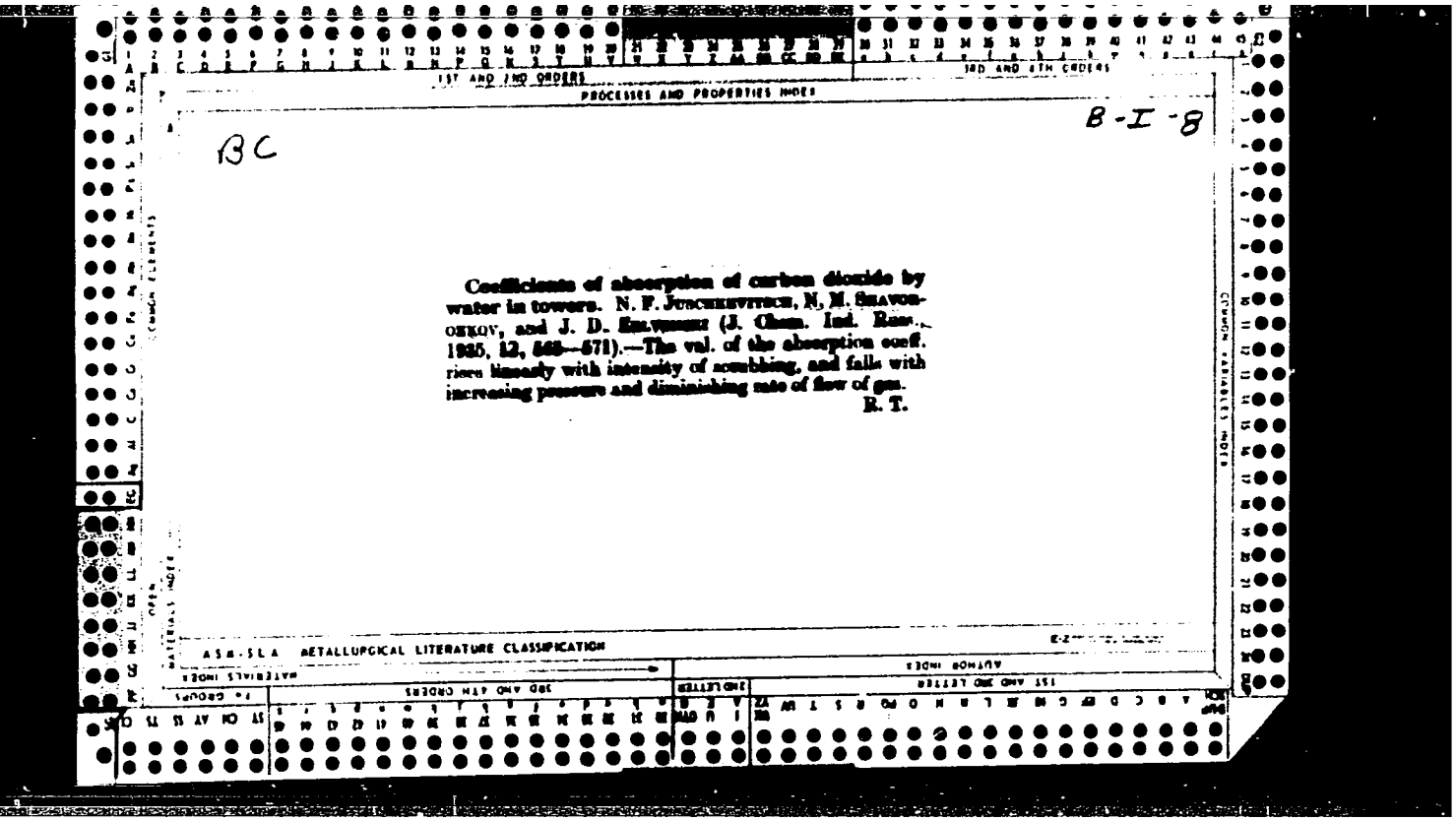
COMMON ELEMENTS

Absorption of carbon monoxide by cupr-ammonium salts. N. M. Shavoronkov and P. M. Rischtschikov (J. Chem. Ind. Russ., 1933, 10, No. 8, 41—49).—Max. absorption of CO by aq.-ammoniacal Cu^{I} formate or lactate is obtained at > 20° and at high pressures. 90% of the absorbed CO is evolved on heating at 80°; at higher temp. loss of NH_3 and separation of free Cu take place. The absorptive capacity increases with the Cu and NH_3 contents.

R. T.

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



B-I-8

BC

Coefficients of absorption of carbon dioxide by water in towers. N. F. JURCHEVTSCH, N. M. SHAVOR-ONKOV, and J. D. [illegible] (J. Chem. Ind. Russ., 1935, 12, 668—671).—The val. of the absorption coeff. rises linearly with intensity of scrubbing, and falls with increasing pressure and diminishing rate of flow of gas.

R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

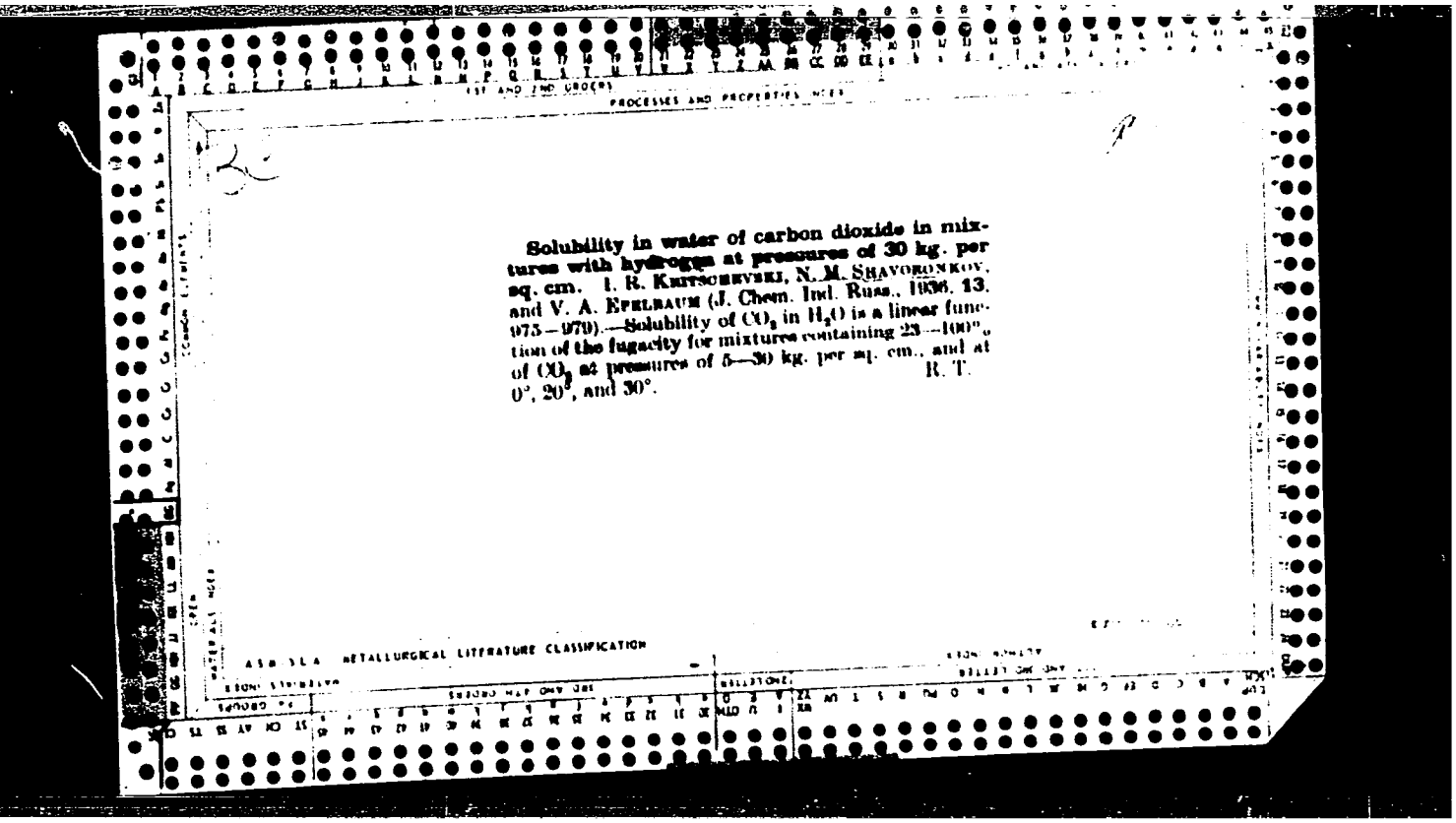
PROCESSES AND PROPERTIES INDEX

BC

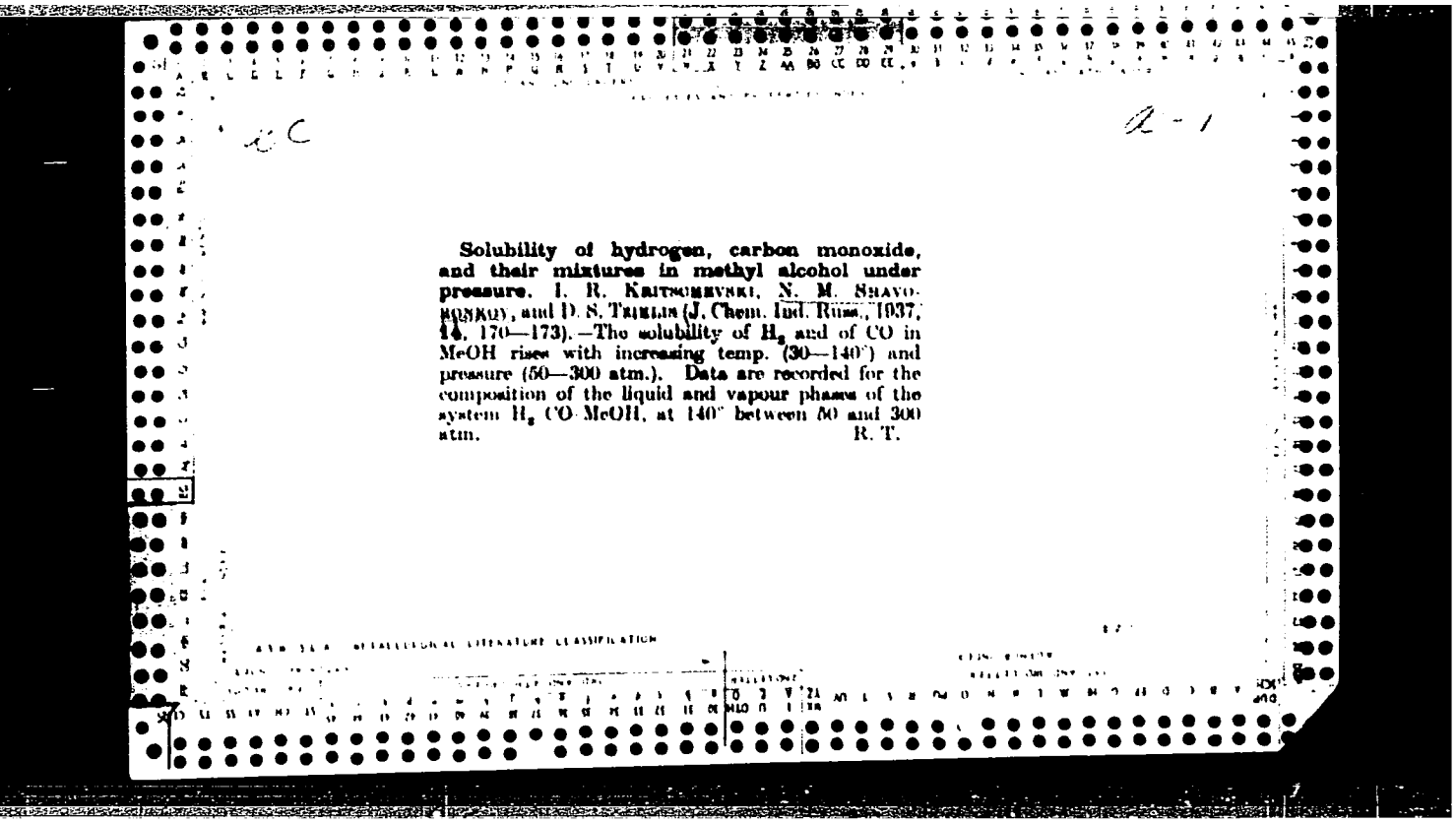
B-I-8

Absorption of carbon dioxide by water in experimental and industrial scrubbers. I. V. Juschkevitsch, N. M. Shavoronkov, and L. D. Zelvenski (J. Chem. Ind. Russ., 1936, 13, 563—569).—The absorption coeff., K, varies under different conditions in the following way: $K = AL/(1 + BL)$, where L is the no. of cu. m. of H_2O per sq. m. of free cross-section of the scrubber per hr., and A and B are consts.; at const. L, but variable pressure (P), $K = A/(1 + B'P)$. At room temp., and with a rate of flow (v) of N_2-H_2-CO_2 mixture of 0·175 cu. m. per sq. m. per sec., $K = 1{\cdot}36L/(1 + 0{\cdot}00108LP)$. K rises with increasing v and rising temp., but varies little with change in [CO_2]. The results are in accordance with the diffusion theory of absorption of gases. R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Solubility in water of carbon dioxide in mixtures with hydrogen at pressures of 30 kg. per sq. cm. I. R. KRITSCHEVSKI, N. M. SHAVORONKOV, and V. A. EFELBAUM (J. Chem. Ind. Russ., 1936, 13, 975—979).—Solubility of CO_2 in H_2O is a linear function of the fugacity for mixtures containing 23—100% of CO_2 at pressures of 5—30 kg. per sq. cm., and at 0°, 20°, and 30°. R. T.



Solubility of hydrogen, carbon monoxide, and their mixtures in methyl alcohol under pressure. I. R. KRITSCHEVSKI, N. M. SHAVO-RONKO, and D. S. TSIKLIS (J. Chem. Ind. Russ., 1937, **14**, 170—173).—The solubility of H_2 and of CO in MeOH rises with increasing temp. (30—140°) and pressure (50—300 atm.). Data are recorded for the composition of the liquid and vapour phases of the system H_2–CO–MeOH, at 140° between 50 and 300 atm. R. T.

SHAVORONKOV, N. M.

5
1-Rm
1-Rm

5424

DETERMINATION OF THE SEPARATION COEFFICIENTS OF THE ISOTOPES OF BORON IN THE EQUILIBRIUM EVAPORATION OF BCl_3. N. N. Seyrugova, O. V. Uvarov, and N. M. Shavoronkov. Soviet J. Atomic Energy 4, 567-72 (1956).

3

The separation coefficients of the isotopes of boron are determined for equilibrium evaporation of boron chloride in the temperature interval 12.7 to 85°C. The methods are described, and the equation relating the dependence of the coefficient on the vaporization temperature is derived. (auth)

Phys Rm
MT

SHAVORONKOV, N. M., CHERNYKH, G. N., STREL'TSOV, L. V. and BABKOV, S. I.

"Die Kinetik der Isotopenanreicherung in vielstufigen Kolonnen."

Report presented at the 2nd Intl. Conf. on Stable Isotopes.
East German Academy of Sciences, Inst. of Applied Physical Material
Leipzig, GDR, 30 Oct - 4 Nov 1961.

SHAVORONKOV, N. M., MALYUSOV, V. A., MALAFEYEV, N. A., OLOV, V. YU. & UKHIN, N. N.

"Uterschung uber der Trenneg der Isotope des Lithiums durch Molekulardestillation."

Report presented at the 2nd Conf. on Stable Isotopes.
East German Academy of Sciences, Inst. for Applied Physical Material.
Leipzig, GDR, 30 Oct - 4 Nov 1961

SHAVORONKOV, N. M.; STRELTSOV, L.V.; CHERNYKH, G.N.; BABKOV, S. I.;

Uber die zeitliche Annaherung an den stationaren Zustand bei der Trennung stablier Isotope in Kolonnen. (Berechnungen auf einer elktronischen Rechenmaschine)

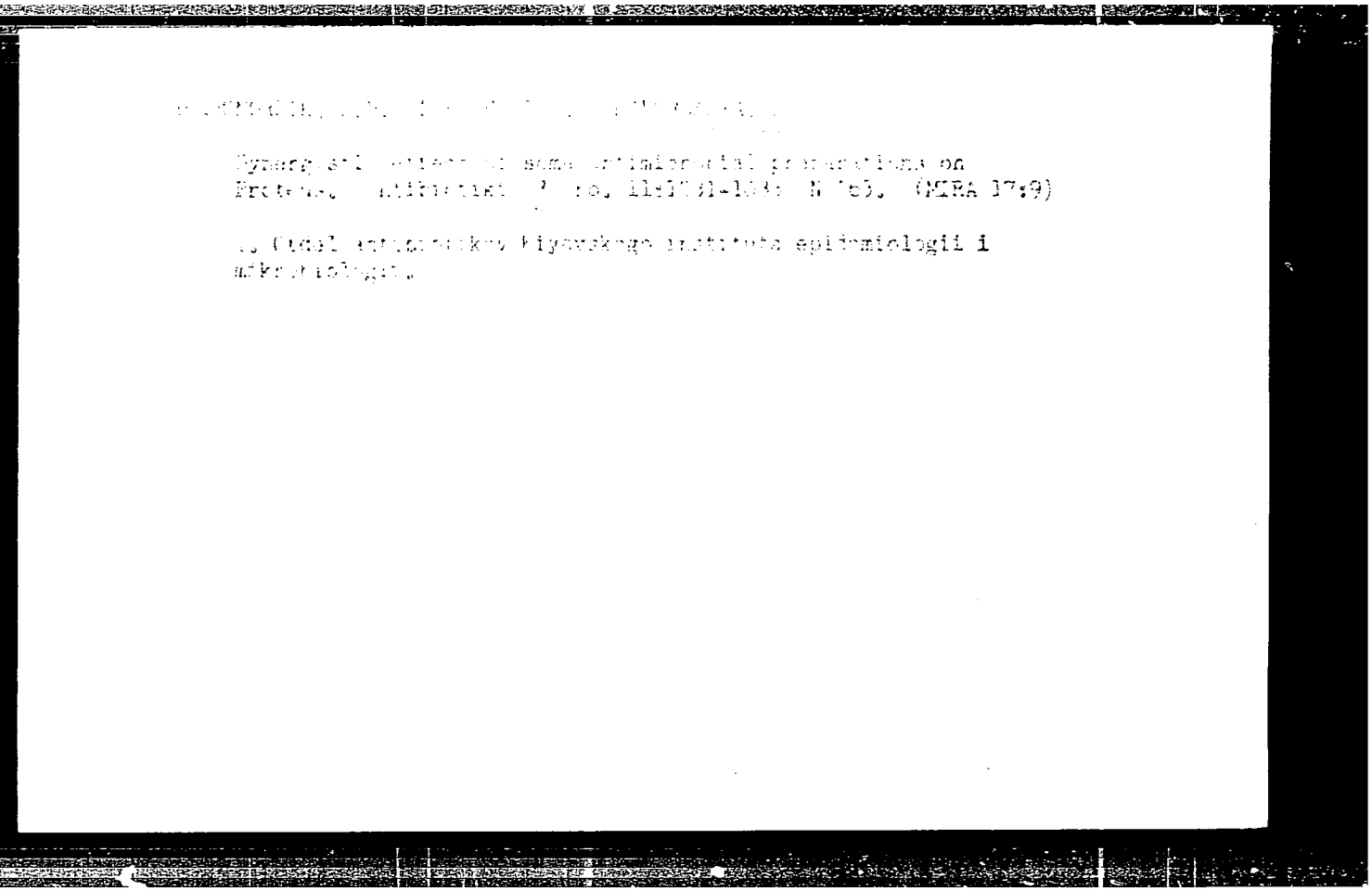
Third Working Conference on Stable Isotopes 28 Oct to 2 November 1963, Leipzig.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R001548720014-9"

CHERNOMORDIK, A.B.; FILOSOFOVA, T.G.; SHAVORSKAYA, L.D.

Sensitivity of diphtheria bacteria to the macrolide antibiotics: erythromycin, oleandomycin and sekazin. Antibiotiki 9 no.2:170-172 F '64. (MIRA 17:12)

1. Otdel antibiotikov Kiyevskogo instituta epidemiologii i mikrobiologii.



IVANOVA, B.I.; SHAVORSKAYA, T.A.

Results of the testing of some spice plants in the Botanical Garden of the Academy of Sciences of the Moldavian S.S.R. Izv. AN Mold. SSR no.12:49-65 '62. (MIRA 18:4)

MESHCHERYAKOV, Fedor Yeliseyevich. Prinimal uchastiye SHAVR, V.M. GOGOLIN, A.A., kand.tekhn.nauk, retsenzent; OCHERETYANYY, M.A., inzh., retsenzent; KREST'YANINOVA, Ye.M., red.; MEDRISH, D.M., tekhn.red.

[Principles of refrigeration engineering] Osnovy kholodil'noi tekhniki. Moskva, Gos.izd-vo torg.lit-ry, 1960. 375 p. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti (for Gogolin).
(Refrigeration and refrigerating machinery)

LYSENKO, B.M., kand.tekhn.nauk; MARTSINKOVSKIY, V.A.; inzh., SERIKOV, S.S., inzh., SHAVRA, B.M., inzh.

Experimental device for studying the vibration resistance of feed pump rotors. Energomashinostroenie 6 no.5:33-35 My '60. (MIRA 13:9)

(Pumping machinery--Vibration)

YAKOBSON, V., kandidat tekhnicheskikh nauk; SHAVRA, V., inzhener.

Automatization of commercial type ammonia refrigerating plants.
Khol.tekh.33 no.2:11-17 Ap-Je '56. (MLRA 9:9)
(Refrigeration and refrigerating machinery)(Automatic control)

YAKOBSON, V.; SHAVRA, V.; BOGATYREVA, S.

Operation of small automatic ammonia refrigerating plants. Khol. tekh. 34 no.4:12-17 O-D '57. (MIRA 11:1)
(Refrigeration and refrigerating machinery)

SHAVRA, V.; YAKOBSON, V.

Testing an automatic Freon unit with direct cooling of several storage rooms [with summary in English]. Khol.tekh. 35 no.6: 15-21 N-D '58. (MIRA 12:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti.
(Refrigeration and refrigerating machinery)

SOV/66-59-4-9/28

14(1)

AUTHOR: Shavra, V., Engineer

TITLE: Water Regulating Valves for Refrigeration Machines

PERIODICAL: Kholodil'naya tekhnika, 1959, Nr 4, pp 37-41 (USSR)

ABSTRACT: The absence of automatic water regulating valves in refrigeration units of 3-30,000 st kcal/hr is a source of important water losses. With the exception of the IF-49 unit, produced by the Moscow Plant "Iskra", none of the installations currently supplied include water regulating valves as standard equipment. In the VNIKhI Laboratory comparative tests have recently been conducted with two water regulators, the IVR-1.5 produced by "Iskra" Plant, under the supervision of N. Kudryavtsev, and one of the latest models, the AV-1/2", made by the firm "Danfoss". The article describes the conditions under which the tests were carried out and the results, which have led to the following conclusions: the IVR-1.5 is a highly sensitive device but has the drawback of the regulating spring being located under the water and therefore unprotected against corrosion. At

Card 1/2

the present time the "Iskra" Plant is engaged in re-designing the IVR-1.5 in compliance with the recommendations of VNIKhI.
There are: 3 diagrams, 2 graphs and 7 references, 6 of which are Soviet and 1 Danish.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti (All-Union Scientific Research Institute of Refrigeration Industry)

PHASE I BOOK E[illegible] SOV/5318

Shavra, Viktor Mikhaylovich

Avtomatizirovannyye malyye freonovyye kholodil'nyye ustanovki s neskol'kimi okhlazhdayemymi ob"yektami; nauchnoye soobshcheniye (Automatized Small Freon Cooling Units With Cooled Objects; a Scientific Report) Moscow, Gostorgizdat, 1960. 45 p. 4,000 copies printed.

Sponsoring Agency: Glavniiproyekt pri Gosplane SSSR. Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti imeni A. I. Mikoyana.

Scientific Ed.: V. B. Yakobson; Ed.: Ye. F. Maslova; Tech. Ed.: L. M. Dvorkin.

PURPOSE: This booklet is intended for technical and engineering personnel engaged in the operation and design of small freon refrigeration units.

Card 1/3

SHAVRA, V., inzh.

Refrigeration industry of Japan. Khol.tekh. 37 no.4:62-66 Jl-Ag '60. (MIRA 13:11)
(Japan--Refrigeration and refrigerating machinery)

SHAVRA, V.M., inzh.

Effect of the superheating of the vapor flowing from the evaporator on the performance of small refrigerating machinery. Khol.tekh. 39 no.6:20-27 N-D '62. (MIRA 15:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti.
(Refrigerators—Testing)

SHAVRA, V.M., inzh.

Study and design of a freon regenerative heat exchanger. Khol. tekh. 40 no.2:18-24 Mr-Ap '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti.
(Refrigeration and refrigerating machinery)
(Heat—Transmission)

SHAVRA, V.M., inzh.

Efficiency of the regenerative cycle in small Freon refrigerating machines. Khol. tekh. 40 no.5:14-18 S-O '63. (MIRA 16:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti.

KAPLAN, Leonid Gdal'yevich; SHAVRA, V.M., retsenzent; KURYLEV, Ye.S., spets. red.; NIKOLAYEVA, N.G., red.

[Repair of the automatic control equipment of refrigeration plants] Remont priborov avtomatiki kholodil'nykh ustanovok. Izd-vo "Pishchevaia promyshlennost'," 1964. 46 p. (MIRA 17:7)

KONONOV, Yu.G.; SHAVRA, V.M., kand.tekhn.nauk

Two-position and proportioning pressure regulators for Freon refrigerating machinery. Khol.tekh. 42 no.2:26-30 Mr-Ap '65. (MIRA 18:5)

1. Orlovskoye SKBPribor (for Kononov). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti (for Shavra).

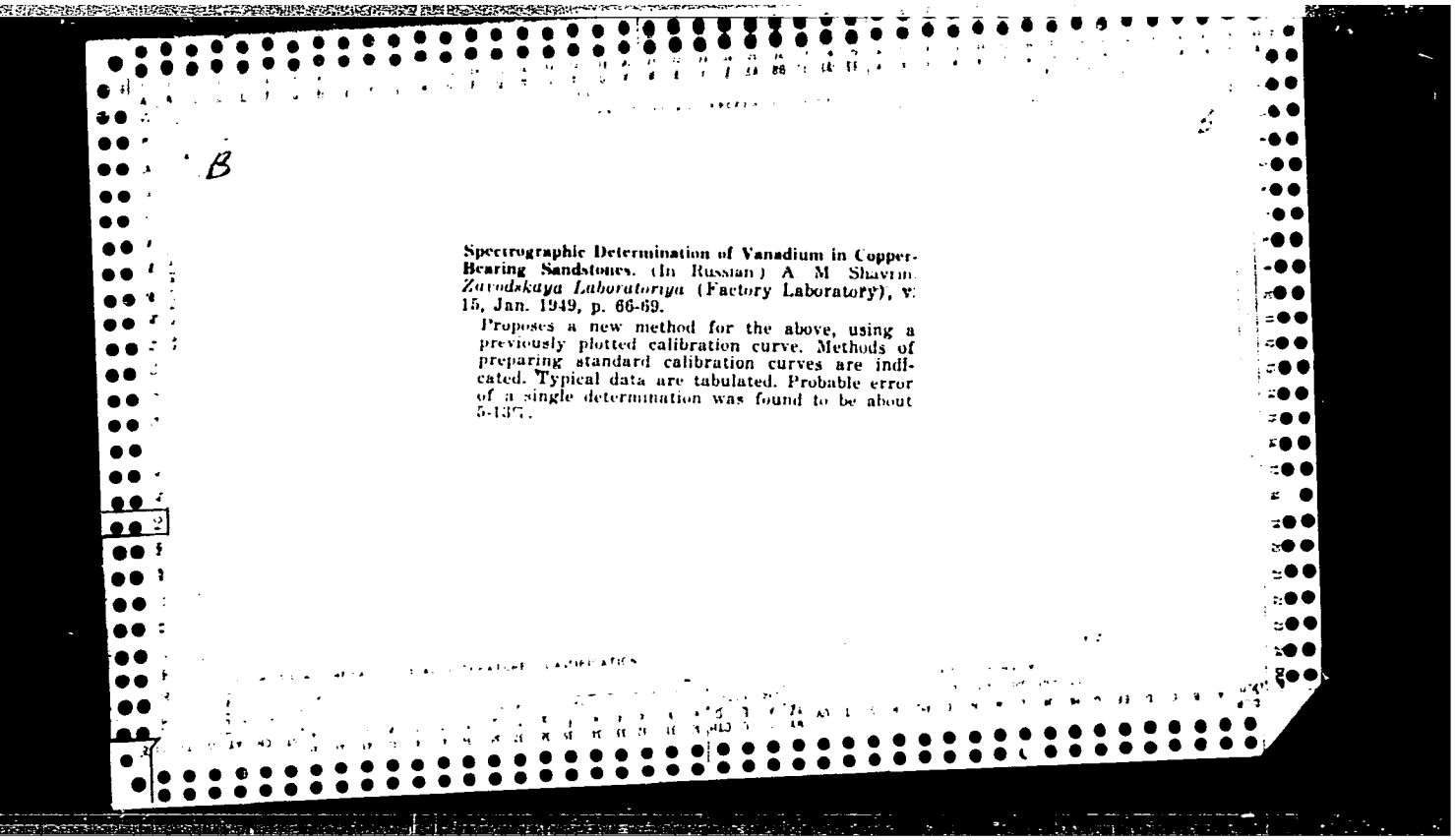
SHAVRA, V.M., inzh.

Testing thermostatic expansion valve under factory conditions. Khol. tekh. 38 no.4:54-57 Jl-Ag '61. (MIRA 15:1)
(Valves--Testing)

SHAVRIN, A.M.; KISELEV, I.V.

Simultanous machining of workpieces. Proizv.-tekh.inform. no.4:40-49 '51. (MLRA 10:3)

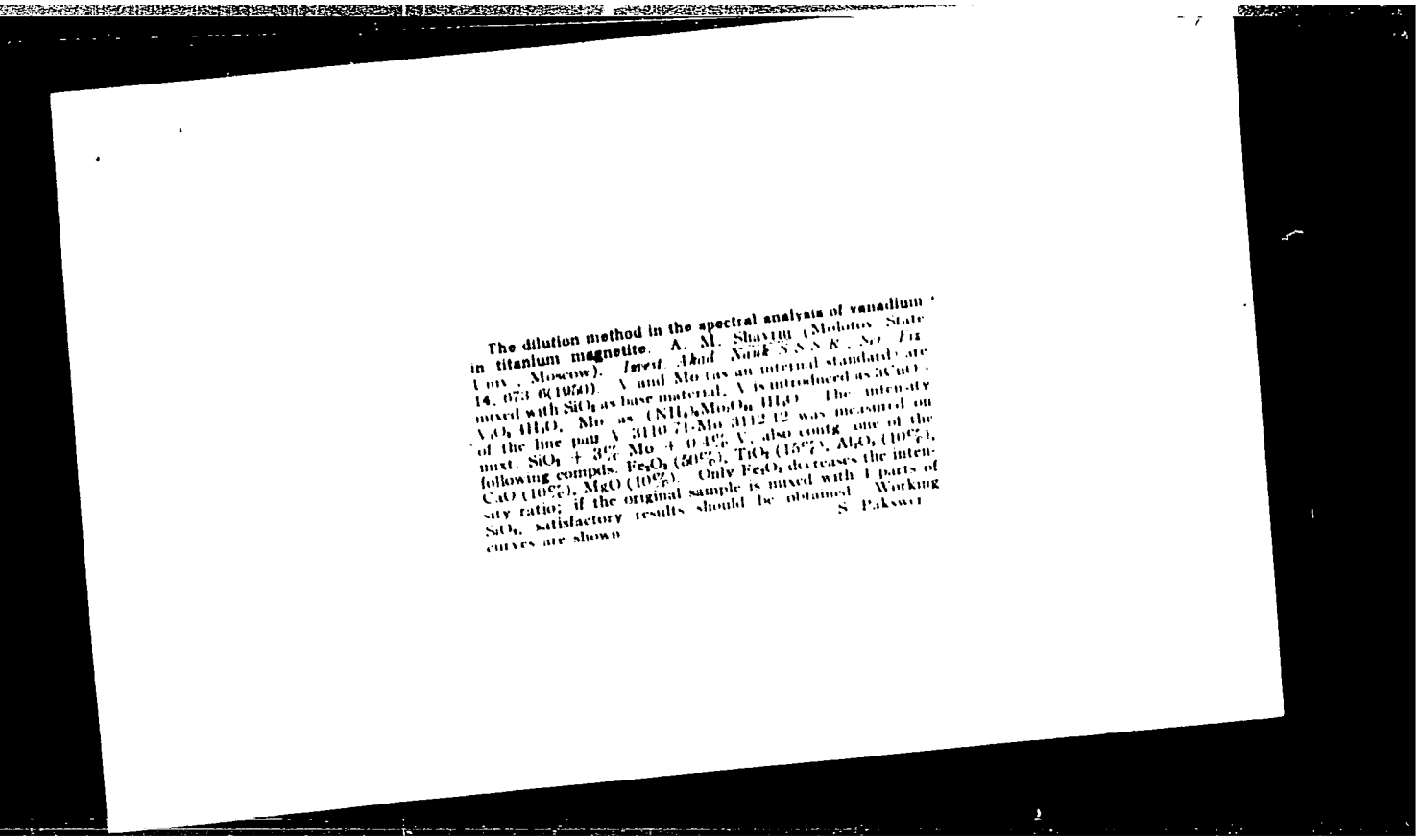
(Machine-shop practice)



B

Spectrographic Determination of Vanadium in Copper-Bearing Sandstones. (In Russian) A M Shavrin. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 15, Jan. 1949, p. 66-69.

Proposes a new method for the above, using a previously plotted calibration curve. Methods of preparing standard calibration curves are indicated. Typical data are tabulated. Probable error of a single determination was found to be about 5-13%.



The dilution method in the spectral analysis of vanadium in titanium magnetite. A. M. Shavin (Molotov State Univ., Moscow). *Invest. Akad. Nauk S.S.S.R., Ser. Fiz.* 14, 673-6(1950). V and Mo (as an internal standard) are mixed with SiO_2 as base material. V is introduced as $3CuO \cdot V_2O_5 \cdot 11H_2O$, Mo as $(NH_4)_6Mo_7O_{24} \cdot 11H_2O$. The intensity of the line pair V 3110.71-Mo 3112.12 was measured on mixt. SiO_2 + 3% Mo + 0.4% V, also contg. one of the following compds.: Fe_2O_3 (20%), TiO_2 (15%), Al_2O_3 (10%), CaO (10%), MgO (10%). Only Fe_2O_3 decreases the intensity ratio; if the original sample is mixed with 4 parts of SiO_2, satisfactory results should be obtained. Working curves are shown. S. Pakswer

USSR/Minerals - Spectral analysis

Card 1/1 Pub. 43 - 48/97

Authors : Makhnev, Yu. A.; Simanov, V. A.; and Shavrin, A. M.

Title : Application of the method of dilution during spectral analysis of powders

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, 272-273, Mar-Apr 1954

Abstract : It was shown by one of the authors that the application of the method of diluting the analyzed sample of rocks or slags with silicon oxide makes it possible to eliminate the effect of different analyzed objects on the spectral analysis results. The results obtained with the dilution method in determining the content of Ni and Mn in various rocks and ores are briefly described. The probable error in determination was ± 6.5%. Two USSR references (1949 and 1950).

Institution : The A. M. Gorkiy State University, Molotov

Submitted : .....

Shavrin, A. M.

3265. Spectrographic analysis of powders by the use of one standard. A. M. Shavrin. *Izv. Akad. Nauk SSSR, Ser. Fiz.*, 1956, 19 (1), 122; *Ref. Zhur., Khim.*, 1956, Abstr. No. 4125.—The standard powders, with vanadium content from 0·025 to 0·2 per cent., are placed in the gap between the copper electrodes of an a.c. arc. The width of the slit is 0·03 mm, the exposure time is 30 sec.; the photographic plates are diapositive, and the current strength is 5 amp. The pair of lines used is V 3110·71 A and Mo 3112·12 A. The calibration curve is constructed on the co-ordinates log (I_V/I_{Mo}) and log C, with the background taken into account, and has a slope of 45°. The absence of re-absorption within the limits of the concn. named is established. The method of one standard based on the above was checked by the determination of V in copper sandstones. The error is not more than ±10 per cent.

C. D. KOPKIN

24(7) PHASE I BOOK EXPLOITATION SOV/1700

Lvov. Universitet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii, 1956. t. II: Atomnaya spektroskopiya (Materials of the 10th All-Union Conference on Spectroscopy, 1956. Vol 2: Atomic Spectroscopy) [Lvov] Izd-vo L'vovskogo univ., 1958. 568 p. (Series: Its: Fizicheskiy sbornik, vyp. 4(9)) 3,000 copies printed.

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii.

Editorial Board: G.S. Landsberg, Academician, (Resp. Ed.); B.S. Neporent, Doctor of Physical and Mathematical Sciences; I.L. Fabelinskiy, Doctor of Physical and Mathematical Sciences; V.A. Fabrikant, Doctor of Physical and Mathematical Sciences; V.G. Koritskiy, Candidate of Technical Sciences; S.M. Rayskiy, Candidate of Physical and Technical Sciences; L.K. Klimovskaya, Candidate of Physical and Mathematical Sciences; V.S. Miliyanchuk (Deceased), Doctor of Physical and Mathematical Sciences; A.Ye. Glauberman, Doctor of Physical and Mathematical Sciences; Ed.: S.L. Gazer; Tech. Ed.: T.V. Saranyuk.

PURPOSE: This book is intended for scientists and researchers in the field of spectroscopy, as well as for technical personnel using spectrum analysis in various industries.

COVERAGE: This volume contains 177 scientific and technical studies of atomic spectrography presented at the 10th All-Union Conference on Spectroscopy in 1956. The studies were carried out by members of scientific and technical institutes and include extensive bibliographies of Soviet and other sources. The studies cover many phases of spectroscopy: spectra of rare earths, electromagnetic radiation, physicochemical methods for controlling uranium production, physics and technology of gas discharge, optics and spectroscopy, abnormal dispersion in metal vapors, spectroscopy and the combustion theory, spectrum analysis of ores and minerals, photographic methods for quantitative spectrum analysis of metals and alloys, spectral determination of the hydrogen content of metals by means of isotopes, tables, and atlases of spectral lines, spark spectrographic analysis, statistical study of variation in the parameters of calibration curves, determination of traces of metals, spectrum analysis in metallurgy, thermochemistry in metallurgy, and principles and practice of spectrochemical analysis.

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... Conference (Cont.) SOV/1700

Card 27/31

GLUSHKOVA, L.A.; ZOTIN, M.A.; SHAVRIN, A.M.

Experimental study on the relation of the relative intensity of vanadium, chromium, and nickel spectrum lines to concentration in standard samples. Fiz. sbor. no.4:483-487 '58. (MIRA 12:5)

1. Permskiy gosudarstvennyy universitet.
(Vanadium--Spectra) (Chromium--Spectra) (Nickel--Spectra)

SOV/48-23-9-11/57

24(7)

AUTHORS: Shavrin, A. K., Zotin, K. A.

TITLE: On the Problem of the Influence of the Composition of Pulverulent Substances on the Relative Intensity of Spectral Lines

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 9, pp 1077-1079 (USSR)

ABSTRACT: A report is delivered concerning investigations of the relative line intensities in systems on the basis of SiO_2 and carbonates of alkaline earth elements. The samples were evaporated from copper electrodes. The ratio of the intensities of a Cd-line to three Zn-lines is measured. In the samples the SiO_2-content is varied from 0 to 98.5% and that of carbonates from 98.5 to 0%. The mixture contains 1.5% ZnO. An alternating current arc is used according to the scheme of N. S. Sventitskiy, with copper electrodes in which the material to be investigated was located in the hole. Figure 1 is a graphical representation of the values $\lg(I_{Cd}/I_{Zn})$ depending upon the composition of the systems SiO_2-$MgCO_3$, SiO_2-$CaCO_3$, SiO_2-$SrCO_3$, and SiO_2-$BaCO_3$, where I_{Cd} and I_{Zn} denote the line intensities. The complex dependence of these relative intensities as seen from the diagram is the result of the variation of the absolute line in-

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On the Problem of the Influence of the Composition of Pulverulent Substances on the Relative Intensity of Spectral Lines

tensities of cadmium and zinc. This is brought into connection with the chemical interaction of the components, in which case the melting of the alkaline earth carbonates and the production of a metal ring on the electrode plays an important part. The results obtained prove the existence of a chemical interaction between the SiO_2 and the $CaCO_3$ on the electrode, whereas the absence of a marked minimum in the SiO_2-$MgCO_3$ system points in the direction of an incomplete transformation of the mixture components into silicates. The behavior of the relative intensities on the $CaCO_3$-$SrCO_3$ system is explained by the lack of the chemically active component SiO_2. S. M. Bobrova took part in the experimental part of this work. There are 2 figures.

ASSOCIATION: Permskiy gos. universitet im. A. M. Gor'kogo (Perm' State University imeni A. M. Gor'kiy)

PHASE I BOOK EXPLOITATION SOV/4959

Ural'skoye soveshchaniye po spektro

Materialy 2 Ural'skogo soveshchaniya po spektroskopii, Sverdlovsk, 1958 g. (Materials of the Second Urals Conference on Spectroscopy, Held in Sverdlovsk, 1958) Sverdlovsk, Metallurgizdat, 1959. 206 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agency: Ural'skiy filial Akademii nauk SSSR. Komissiya po spektroskopii and Ural'skiy dom tekhniki VSNTO.

Eds.: [illegible]; Tech. Ed.: [illegible].

PURPOSE: This collection of articles is intended for spectral analysis laboratory workers at ferrous and nonferrous metallurgical plants, and for laboratory personnel of the metal-working industry, geological and prospecting organizations, and similar scientific research laboratories.

COVERAGE: The collection contains papers read at the Second Urals Conference on the spectral analysis of ferrous and nonferrous metals and alloys, slags, ores, agglomerates, refractories and other materials used in industry. The material of the conference includes articles on the analysis of steels (including the determination of gases), ferroalloys, nonferrous and light metals and alloys, pure noble metals, etc. The present volume is intended to disseminate the latest experience in working with spectral laboratories, and to report on the results of scientific research. The author thanks R. I. Gutkina and Yu. M. Buravlev. Almost all of the articles are accompanied by references.

S/058/62/000/006/048/136
A061/A101

AUTHORS: Zotin, M. A., Shavrin, A. M.

TITLE: A study of the mutual effect of silicon dioxide and carbonates of alkaline-earth elements on the relative intensity of nickel-titanium and nickel-vanadium spectral line pairs

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 14, abstract 6G111 ("Uch. zap. Permsk. un-t", 1961, v. 19, no. 1, 123 - 124)

TEXT: The results of a study of the relative intensity of Ni-Ti and Ni-V spectral line pairs under partial evaporation of the mixtures are presented. The relative intensity of the pairs has been studied: Niλ = 2992.595 - Tiλ = = 2956.131, Niλ = 2992.595 - Vλ = 3066.375 Å. The uniformity of the effect, in the presence of SiO_2, of elements belonging to one group of the periodic system on the relative spectral line intensity has been confirmed.

[Abstracter's note: Complete translation]

Card 1/1

105

PHASE I BOOK EXPLOITATION SOV/6181

Ural'skoye soveshchaniye po spektroskopii. 3d, Sverdlovsk, 1960. Materialy (Materials of the Third Ural Conference on Spectroscopy) Sverdlovsk, Metallurgizdat, 1962. 197 p. Errata slip inserted. 3000 copies printed.

Sponsoring Agencies: Institut fiziki metallov Akademii nauk SSSR. Komissiya po spektroskopii; and Ural'skiy dom tekhniki VSNTO.

Eds. (Title page): G. P. Skornyakov, A. B. Shayevich, and S. G. Bogomolov; Ed.: Gennadiy Pavlovich Skornyakov; Ed. of Publishing House: M. L. Kryzhova; Tech. Ed.: N. T. Mal'kova.

PURPOSE: The book, a collection of articles, is intended for staff members of spectral analysis laboratories in industry and scientific research organizations, as well as for students of related disciplines and for technologists utilizing analytical results.

COVERAGE: The collection presents theoretical and practical problems of the application of atomic and molecular spectral analysis in controlling the chemical composition of various materials in ferrous and nonferrous metallurgy, geology, chemical industry, and medicine. The authors express their thanks to G. V. Chentsova for help in preparing the materials for the press. References follow the individual articles.

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Materials of the Third Ural Conference (Cont.) SOV/6181

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Materials of the Third Ural Conference (Cont.) SOV/6181

COVERAGE: The collection presents theoretical and practical problems of the application of atomic and molecular spectral analysis in controlling the chemical composition of various materials in ferrous and nonferrous metallurgy, geology, chemical industry, and medicine. The authors express their thanks to G. V. Chentsova for help in preparing the materials for the press. References follow the individual articles.

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S/194/61/000/005/010/078
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AUTHORS: Gorin, A.V., Grosman, V.A., Drapchinskiy, L.V., Rayevskiy, B.N., Romanov, L.P., Storozhenko, E.P., Fedorov, Yu.P., Shavrin, G.N. and Shamov, V.P.

TITLE: A mobile radiometric emergency laboratory using semiconductor devices

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 5, 1961, 31-32, abstract 5 A235 (Dokl. nauchn. konferentsii in-ta radiats. gigiyeny po itogam raboty za 1959, g., L., 1960, 18-19)

TEXT: A description is given of a complete mobile laboratory, mounted on the automobile УАЗ -450 А (UAZ-450 A) and which is to be used for detecting radioactive isotope contamination of certain areas or of separate objects. The laboratory equipment consists of the following: 1) automatic recorder of the level of γ-background from 10 to 10^5 microcurie/hr (ИРГ-ПГС-5)(IRG-PGS-5)); 2) 2

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S/194/61/000/005/010/078
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A mobile radiometric emergency...

calculating machines (ИРГ-ПП-100)(IRG-PP-100)); 3) supplies 200-2000 V; 4) head screening (thickness 40 mm) for counters СТС-5 (STS-5) in cassettes or for the end-counter; 5) rate counter ИРГ-ИП-1 (IRG-IP-1) with counting rate up to 10^6 pulses/min; 6) beta-gamma portable scintillating radiometer with ФЭУ-25 (FEU-25) ИРГ-ПР-2 (IRG-PR-2). Power for the whole installation is supplied by the automobile battery. Power comsumption ~ 15 watt. The laboratory personnel consists of three operators and driver. [Abstracter's note: Complete translation]

Card 2/2

SHAVRIN, M. V.

Experience of rapid working of metals by cutting. Moskva, Gos. transp. zhel.-dor. izd-vo, 1952. 132 p. (54-18333)

TJ1230.S526

1. Cutting machines. 2. Metal cutting.

33952
S/665/61/000/003/016/018
E194/E420

26.1512

AUTHORS: Daletskiy, G.S., Shavrin, N.V.

TITLE: The construction and electrical characteristics of batteries of silicon photo-converters

SOURCE: Akademiya nauk SSSR. Energeticheskiy institut. Teploenergetika, no.3, 1961. Poluprovodnikovyye preobrazovateli solnechnoy energii, 137-151

TEXT: Batteries of silicon photo-converters are made up in many different forms according to application. Single crystal silicon is produced as round rods; it is expensive and so it is cheapest to make the individual cells circular, however, when it is important to save space in the generator the cells are made rectangular, even though this involves some loss of silicon. The diameter of a circular photo-converter ranges from 22 to 45 mm, depending upon the original size of the single crystal. In sunlight of 100 mW/cm^2 with an element temperature of 30°C, the electrical characteristics are as follows: efficiency at maximum output 7 to 9%; maximum output 7 to 9 mW/cm^2; voltage at maximum output 0.38 to 0.40 V; current at maximum

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The construction and electrical ...

output 20 to 24 mA/cm^2. Rectangular elements are made up in the sizes shown in Table 1. These photo converters are made up into sections of eight in series which gives sufficient voltage to charge an accumulator and the sections are connected in parallel to form batteries. Various methods of mounting the sections and batteries are described. The batteries are mounted on tripods and gimbals according to application. For example, a portable battery for supplying portable radio equipment has an overall size of 250 x 250 x 20 mm, weight of 900 g, output voltage of 9 V, output current of 450 mA in a radiation of 100 mW/cm^2 at an element temperature of 30°C. As it is necessary to orient the batteries towards the sun every half hour or so, the authors have designed and tested batteries which automatically follow the sun. The use of reflectors to increase the output of batteries is discussed and the theory of a reflector in the form of a truncated cone is briefly explained. It is shown that the optimum angle between the incident rays and the reflector surface is 30°. Tests were made of the increase in output of a battery of 40 photo-converters as function of the area of metal reflector

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The construction and electrical ...

and the battery output is found to increase almost in direct proportion to the area of the reflector. Thus, in one case using four reflectors each equal in surface to the area of the solar battery the output of the battery was increased by a factor of 1.9 by using the reflectors. When reflectors are used the short circuit current of the battery is increased much more than the power output. With quite simple reflectors it is possible to increase the specific output of a battery by a factor of up to 2.2 and to obtain a power of 1.0 to 1.6 W from an area of 1 dm^2 with an illumination of 100 mW/cm^2. An experimental battery has been made up with four reflectors, the useful area of the photo-converters is about 4.5 dm^2, the output power is 6.3 W with incident radiation of 100 W/cm^2 and an element temperature of 30 C corresponding to a specific output of 1.44 W/dm^2. There are 16 figures and 4 tables.

Card 3/4

SHAVRIN, N.V.

S/[illegible]/62/000/001/006/009
[illegible]/B104

26/512

AUTHORS: Bal'tskiy, G. S., Kairin, P. I., [illegible], A. P., [illegible], O. P., Shavrin, N. V., Yergiyev, M. D.

TITLE: Effect of solar energy concentration upon the operational properties of (silicon) solar photopiles

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 1, 1962, 43-52

TEXT: A joint investigation with the VNIIT was conducted by the authors in Tashkent from April to June, 1961 on the output power of silicon photoconverters of luminous flux. The aim is to collect data for the construction of a solar power station. The Sun's light was concentrated through an ordinary parabolic cylindrical mirror onto the 239-cm² water-cooled silicon photopile constructed at the above Institute. The angle of incidence of the Sun's rays was of no practical significance for the present purpose. The maximum yield function of the piles rose, although somewhat more slowly, even at photocurrents of 6600-7700 watts/m², at surface temperatures from 10°C to 70°C and air temperatures from 6 to 15°C (i.e.,

Card 1/2

Effect of solar energy ...

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physico-technical Institute of the AS Uzbekskaya SSR) Ye-soyuznyy n.-i. institut istochnikov toka (All-Union Scientific Research Institute of Current Sources)

SUBMITTED: August 4, 1961

Card 3/3

41096

S/058/62/000/008/129/134
A160/A101

26.2420

AUTHORS: Daletskiy, G. S., Shavrin, N. V.

TITLE: The design and the electric characteristics of batteries made of silicon photoconverters

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 43, abstract 8-3-86p (In collection: "Teploenergetika". No. 3, Moscow, AN SSSR, 1961, 137 - 151)

TEXT: A description is given of various types of silicon photoconverters differing by their dimensions, their shape, the geometries of the current collectors, and by the fittings. The diameter of round-shaped photoconverters varies from 22 to 45 mm, their efficiency - from 7 - 9%, their maximum specific power - 7 - 9 milliwatt/cm^2 at a maximum tension of 0.38 - 0.4 volt. The current per 1 cm^2 is 20 - 24 milliampere. Presented are the main electric characteristics of normalized ФКД -2 (FKD-2), FKD-3, FKD-4 and FKD-5 photoconverters with following dimensions: 1, 1.5, 2 and 3 cm^2. The output voltage of these converters is 0.4 volt at an illuminance of 100 milliwatt/cm^2, the efficiency -

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The design and the electric...

8%, the output current 18 - 50 milliampere, and the output power - 7.2 - 20 milliwatt. To obtain a strong current, the photoconverters are arranged in parallel in sections and groups. A description is given of the various designs of batteries: for boost charging the storage battery of electric watches, for feeding electronic devices, a stationary battery for charging the storage battery of telemetering devices with a power of 7 watt, a semi-portable battery of folding-type design with an area of 1 m^2 and a power of 40 watt, a portable battery for feeding portable radio stations, a battery with an automatic turning device operating synchronously with the motion of the Sun. When using reflecting mirrors for concentrating the light on photoconverters, the specific power of the battery increases and its costs decrease. The working principle of the reflectors is considered and their best parameters are determined. The load characteristics of photoconverters without a reflector and with reflectors of various sizes and various inclines of the generatrix were taken during solar lighting. The experimental measurings showed that the power of the solar battery with a reflector is 1.6 - 2.2 higher than without a reflector, and that it is possible to obtain a power of 1.0 - 1.6 watt per 1 dm^2 at an illuminance of 100 milliwatt/cm^2. In this case, the emf decreases due to an additional heating of the

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The design and the electric...

photoconverters, and the short-circuit current quickly increases. Recently, a battery with an area of 4.5 dm^2 was developed. Its output power is 6.5 watt at an illuminance of 100 $watt/cm^2$. This corresponds to a specific power of 1.44 $watt/dm^2$.

V. Shch.

[Abstracter's note: Complete translation]

X

41774
S/194/62/000/008/044/100
D295/D308

AUTHORS: Daletskiy, G.S., and Shavrin, N.V.

TITLE: Design and electrical characteristics of silicon photo-converter batteries

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 8, 1962, abstract 8-5-86 p (In collection: Teploenergetika, no. 3, M., AN SSSR, 1961, 137 - 151)

TEXT: The authors described various types of silicon photo-converters, differing in their dimensions, form, current-pickup geometries and armoring. The diameters of circular photo-converters vary from 22 to 45 mm, their efficiency is 7 - 9 %, the maximum specific power is 7 - 9 mW/cm^2, the voltage is 0.38 - 0.4 V, and the current is 20 - 24 mA per 1 cm^2. The main electrical characteristics are shown for [illegible]-2 (FKD-2), [illegible]-3 (FKD-3), [illegible]-4 (FKD-4) and [illegible]-5 (FKD-5) type normalized photo-converters of dimensions 1, 1.5, 2 and 3 cm^2; the output voltage is 0.4 V for an illuminance of 100 mW/cm^2, the efficiency is 8 %, the output current 18 - 50 mA and the output power 7.2 - 20 mW. In order to obtain a large current, the photo-

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S/194/62/000/008/044/100
D295/D308

Design and electrical ...

dm^2 has been recently developed with 6.5 W output power for an illuminance of 100 W/cm^2, which corresponds to a specific power of 1.44 W/dm^2. [Abstracter's note: Complete translation.]

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DALETSKIY, G.S.; KNIGIN, P.I.; LANDSMAN, A.P.; FLYUSHCH, O.P.; SHAVRIN, N.V.; YAGUDAYEV, M.D.

Studying the effect of concentrated solar energy on the service characteristics of solar (silicon) photobatteries. Izv.AN Uz. SSR.Ser.fiz.-mat.nauk 6 no.1:49-52 '62. (MIRA 15:4)

1. Fiziko-tekhnicheskiy institut AN UzSSR i Vsesoyuznyy nauchno-issledovatel'skiy institut istochnikov toka.
(Solar batteries)

L 52747-65 FSS-2/EWT(1)/EPA(s)-2/EPF(c)/EEC(k)-2/EWG(m)/EPA(w)-2/T/EPA(bb)-2/EWA(h)
Pz-6/Pr-4/Pt-7/Peb
ACCESSION NR: AP5012024 IJP(c) JHB/TT/WW/GG/AT UR/0377/65/000/001/0016/0021

AUTHOR: Landsman, A. P.; Yagudayev, M. D. (Deceased); Shavrin, N. V.; Yuabov, Yu. M.

TITLE: Power station for the conversion of solar energy into electricity

SOURCE: Geliotekhnika, no. 1, 1965, 16-21

TOPIC TAGS: photovoltaic energy conversion, solar cell, electric power station, silicon

ABSTRACT: The article describes an experimental photovoltaic solar energy converter which was constructed in 1962 in Uzbekistan. The 150-w photobattery has a working surface of 0.4 m^2 and consists of 3384 silicon photoelements (15 x 10 mm each) arranged in six sections and cooled by water flowing at a rate of 400 liters per hour. The distinctive feature of the converter is its centrally located light collector, onto which solar rays are reflected by 108 flat mirrors arranged at varying angles on either side of the photoelectric panel. The open-circuit voltage of the photobattery is 160 v, the short-circuit current 230 mamp, and the efficiency 6.7%. The converter has been used successfully to run two motors capable of lifting about 4000 liters of water per hour to a height of 6 m. The article contains a brief review of 15 recent papers (1 Western and 14 Soviet) on developments in photovoltaic solar energy conversion for various applications. The following points are empha-

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L 52747-65
ACCESSION NR: AP5012024

sized: 1) at solar light fluxes of up to 5 kw/m^2 the output power increases linearly; 2) at light fluxes up to 11 kw/m^2 no saturation is attained, even though the rate of output increase is reduced; 3) collectors must distribute light evenly over the photosensitive surface; 4) the photobattery must be provided with an efficient heat removal system; and 5) a mechanism for automatically orienting the installation toward the sun is necessary. It is concluded that, because of the high cost of silicon (which is still considered the most effective material), photovoltaic converters cannot at present compete economically with other means of energy production. Orig. art. has: 8 figures. [ZL]

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physicotechnical Institute, AN UzSSR)

SUBMITTED: 01Nov64 ENCL: 00 SUB CODE: EE

NO REF SOV: 014 OTHER: 001 ATD PRESS: 4013

Card 2/2

ZAZOVSKAYA, I.A.; POSPELOVA, K.V.; SHAVRIN, O.N.

Evaluating the dimensions of mosaic blocks by the width of X-ray lines. Fiz. met. i metalloved. 14 no.2:301-303 Ag '62. (MIRA 15:12)

1. Petrozavodskiy gosudarstvennyy universitet.
(X-ray crystallography)

21(1)
AUTHORS: Klimentovskaya, M. V., Shavrin, P. I. SOV/56-36-5-6/76

TITLE: Investigation of the Excited States of Re^{187}
(Izucheniye vozbuzhdennykh sostoyaniy Re^{187})

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 5, pp 1360-1365 (USSR)

ABSTRACT: The decay of W^{187} and the levels of Re^{187} have already frequently been investigated. The present paper first gives a table containing the results obtained by earlier and by the present paper. For the transitions γ_1 to γ_7 the energies, intensities, internal conversion coefficients, K/L and the multipolarity of individual lines are entered. For their investigations the authors used a device which is based on the scintillation method (Fig 2). Work was carried out with the aid of a cylindrical NaJ(Tl)-crystal. Part of the γ-spectra recorded is shown by figures 3 and 4. Among other things, the internal conversion coefficient of γ_1-transition (134 kev) was determined as amounting to 2.0 ± 0.2. Further, the angular momenta of the excited

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states and the multipolarities of the γ-transitions were determined by measuring the angular correlation of the 552-134 kev, the 480 - 134 kev, and the 72-134 kev γ-cascades. For the angular correlation of the first $W(\theta) = 1 + (0.023 \pm 0.014)\cos^2\theta$ is obtained, which corresponds to the transition sequence $^6/_2\,(E1)\,^7/_2\,(M1+E2)\,^5/_2$ if the ratio of the E2 and M1 amplitudes of the radiation mixture amounts to $\delta^2 = I(E1)/I(M2) = (2.2\pm0.5).10^{-2}$ for the 134 kev transition. For the same cascade one obtains for the transition sequence $^5/_2\,(E2)\,^9/_2\,(E1)\,^7/_2\,(M1+E2)\,^5/_2$ for the 134 kev transition $\delta^2 = (2.5\pm 1.5).10^{-2}$ and for the transition sequence $^9/_2\,(E1)\,^7/_2\,(M1 + E2)\,^5/_2$: $\delta^2 = (1.7\pm0.7).10^{-2}$. If the equation for $W(\theta)$ is written down in the general form $W(\theta) = 1+a_2\cos^2\theta$, different a_2-values naturally hold for different transition sequences. The ratios for these three different sequences are illustrated

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by the diagram of figure 5, which shows the curves $\frac{W(180^\circ)}{W(90^\circ)}$ (δ^2). The authors finally thank A. S. Melioranskiy, V. I. Luchkov and V. P. Kudryashov for assisting in assembling the test apparatus, and they also thank V. F. Tsarakayev, Ya. A. Kleyman and A. M. Safronov for taking part in measurements; they further express their gratitude to Professor I. S. Shapiro for his interest and valuable advice. There are 5 figures, 1 table, and 15 references, 4 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: November 25, 1958

32717
S/560/61/000/009/007/009
D045/D114

17 1400

AUTHORS: Savenko, I. A., Pisarenko, N. F., and Shavrin, P. I.

TITLE: Dosimetric measurements on the second Soviet space vehicle

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. No. 9, Moscow, 1961, 71-77

TEXT: Dosimetric measurements taken on board the second Soviet space vehicle, launched on August 19, 1960, are studied and discussed. The ship was equipped with two scintillation counters and two gas-discharge counters. One of the scintillation counters was attached to the external part of the vehicle and was used for registering soft electrons with an energy of up to 30 keV. The other scintillation counter, used for registering γ-quanta and charged particles, and the ТСС-5 (TSS-5) and СТС-5 (STS-5) gas-discharge counters were installed inside the vehicle beside the capsule containing the experimental animals. The results of measuring radiation intensity over one section of the flight trajectory are shown in fig. 1. An analysis of the readings of the external scintillation counter shows that the radiation contained in the radiation belts is anisotropic, the energy flow under a layer

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Dosimetric measurements on ...

of matter $2 \cdot 10^{-3}$ g. cm^{-2} being approximately equal to 10^{10} ev·cm^{-2} sec^{-1}. The dose of radiation absorbed within the vehicle totalled, on the average, 7 mrad per day. Radiation registered in the area of the geomagnetic equator was shown to consist of scarcely-ionized charged particles and γ-quanta with a mean energy of not more than $6 \cdot 10^{7}$ ev. Since, with increasing latitude, these readings change by approximately the same degree, this deduction also holds true for the polar regions. An analysis of the readings obtained established that the radiation belts were located nearly 320 km from the Earth's surface. A figure is included showing the varying distribution of intensity of absorbed radiation over different areas of the Earth. The highest quantity of absorbed radiation (50 mrad/day) was registered near the coast of Brazil. The presence of protons suggested that this area was part of the inner radiation belt. Discussing the composition of the total absorbed dose, the authors state that 80% of it consisted of primary and secondary charged particles of cosmic origin, 15% consisted of all types of γ-radiation, and 5% of protons of the inner radiation belt. The RBE values for the last two components were no greater than 1 and 10 respectively: if the RBE value for charged cosmic particles is accepted as 7 (exact values

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could not be obtained), the biological equivalent of the absorbed dose registered on the second space vehicle will be equal to 40 mrem/day. If the correction for the tissue non-equivalent of the crystal of sodium iodide is taken into consideration, the absorbed dose will be equal to 50 mrem/day. The following conclusions were drawn: (1) The absorbed dose of 7 mrad/day, equivalent to 50 mrem/day, can be considered safe for long flights along a trajectory similar to that of the second Soviet space vehicle during the period when the Sun is in its quiet state. It is assumed, of course, that an astronaut will be protected by a layer of substance similar to that surrounding the radiometric equipment on board the second space vehicle; (2) Chromospheric flares on the Sun can essentially increase the dose. S. F. Papkov, A. F. Tupikin, G. I. Bol'shakova, L. K. Bocharov and S. N. Vernov are mentioned for their cooperation in the work. There are 2 figures and 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc. The English-language references are: J. A. Simpson, Astrophys. J. Suppl. Series, 4, 378, 1960; R. L. Arnoldy, R. A. Hoffman, J. R. Winkler, J. Geophys. Res., 65, 1361, 1960; J. A. Van Allen, J. Geophys. Res., 64, 217, 1959.

SUBMITTED: April 3, 1961

Card 3/3

1

37718
S/560/61/000/009/008/009
D045/D114

9.6150

21,6000

AUTHORS: [illegible]kov, S. F., Pisarenko, N. F., Savenko, I. A., Tupikin, A. F., and Shavrin, P. I.

TITLE: Radiometric equipment on the second Soviet space vehicle

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. No. 9, Moscow, 1961, 78-85

TEXT: Radiometric equipment installed on the second Soviet space vehicle
for measuring the intensity of ionizing radiation and for determining the
absorbed dose is described. A block diagram of the transmitter system is
given in fig. 3. The scintillation counter (A) registered (1) charged par-
ticles penetrating the walls of the vehicle, (2) γ-quanta of more than 25
keV, and (3) the energy release of the above-mentioned particles. The STS-5
(STS-5) gas discharge counters (Б) registered charged particles. The other
scintillation counter (B) measured the energy flow of comparatively soft
charged particles. The operational theory of the transmitter system and
separate elements of the electronic system, operating on different types of
semi-conductor triodes and diodes, are described and illustrated. Before

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the equipment was installed on the space vehicle, it was tested for resistance to external effects such as vibrations, oscillations and temperature, and calibrated. The calibration system is described in full. The energy threshold of the registering channel of the scintillation counter was determined as follows:

$$E_{threshold} = \frac{V_1}{kV} \cdot \varepsilon_0,$$

where V_1 = the threshold of the first trigger of the flip-flop system (in volts), k = the coefficient of amplification of the amplifier, V = value of the pulse at the input of the amplifier, and ε_0 = energy of γ-quanta Cs^{137} equal to 661 keV. The registering channel of the scintillation counter installed on board the second Soviet space vehicle had the following characteristics: V_1 = 0.75 v, k = 100, V = 0.20 v, and $E_{threshold}$ = 25 keV. In their concluding remarks, the authors state that careful post-flight checks showed

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that all equipment was still in good working order. Professor S. N. Vernov, G. B. Vil'dgrube, A. G. Nikolayev, Yu. I. Logachev, and N. N. Gorynov are thanked for their assistance in the research work. There are 5 figures and 1 Soviet reference.

SUBMITTED: April 3, 1961

Card 3/3

33306
S/560/61/000/010/004/016
D299/D302

3.2420 (2806, 1049, 1482)

17 2406

AUTHORS: Vernov, S. N., Savenko, I. A., Shavrin, P. I., Nesterov, V. Ye., and Pisarenko, N. F.

TITLE: Outer radiation belt of the earth at 320 km altitude

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no. 10. Moscow, 1961, 34-39

TEXT: The investigations carried out by means of the 2nd and 3rd Soviet artificial satellites indicated the existence of an outer radiation belt, sharply delimited by the high-latitude region. The scintillation- and Geiger-counters on board the 2nd Soviet Sputnik permitted a detailed study of the outer radiation belt in the vicinity of the earth and its delimitation as a function of longitude. The autonomous memory-device on board the Sputnik yielded continuous data on radiation intensity at altitudes of 306 - 339 km over the entire terrestrial globe for

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Outer radiation belt of...

latitudes of $\pm 65^{\circ}$. The scintillation counter consisted of a cylindrical NaJ(Tl)-single crystal and of the photomultiplier 49Y-16 (FEU-16). The Geiger counter was of type STC-5 (STS-5), which is a halide-counter. A figure shows the radiation intensity recorded by means of the scintillation counter at various points of the globe. It was proved that the sharp increase in counting rate, which could not be explained by the latitude effect, is due to the radiation belts of the earth; this was done by analyzing the connection between the regions of increased intensity in the Northern and Southern Hemispheres, by studying the connection between these regions and the earth's magnetic field, as well as the composition and energy of the radiation. Thus, the zones of increased radiation in the Northern Hemisphere are related to those in the Southern Hemisphere by the lines of force of the geomagnetic field which determines the position of the radiation belt at an altitude of 320 km. In order to determine the composition and to estimate the energy

of the radiation, the readings of the scintillation- and Geiger-counters were compared. Hence, it was found that the radiation in question is gamma-radiation with energies of the order of 100 - 300 kev. The mean energy of the secondary electrons, arising in the single crystal by interaction with the gamma-radiation, is of the order of 10^5 ev. The clear connection between the zones of increased intensity in the Northern and Southern Hemispheres and the nature of the radiation and its energy are proof that the recorded increase in intensity is due to electrons of the outer radiation belt. In general, no direct relation was observed between the intensity and the strength of the magnetic field. This is apparently due to the short lifetime of electrons of the outer radiation belt at the altitudes under consideration compared to the drift-time around the earth. An estimate of the lifetime of electrons with E = 300 kev yielded the value of 10^6 - 10^8 sec.; hence, the hypothesis of local acceleration of electrons within the geomagnetic field is

more likely than the neutron hypothesis of electron origin. [Abstracter's note: The designation "Van Allen Belt" is not used at all in the Russian text.] There are 2 figures, 2 tables and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: E. H. Vestine, W. L. Sibley, Planet Space Sci., 1, 285, 1959; J. B. Cladis, A. J. Dessler, J. Geophys. Res., 66, 343, 1961; J. A. Welch, W. A. Whitaker, J. Geophys. Res., 64, 909, 1959.

SUBMITTED: May 23, 1961

33307
S/560/61/000/010/005/016
D299/D302

3.2420 (1049, 2806, 1482)

17 2400

AUTHORS: Vernov, S. N., Savenko, I. A., Shavrin, P. I., and Pisarenko, N. F.

TITLE: Observation of inner radiation belt at an altitude of 320 km in the region of the south-Atlantic magnetic anomaly

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no. 10. Moscow, 1961, 40-44

TEXT: In contradistinction to the other zones of increased radiation-intensity (which form the outer belt), the magnetic anomaly near the Brazilian coast cannot be related to the outer radiation belt owing to its geographical position and to the presence of a large number of penetrating particles in the radiation. A map shows the regions of increased intensity and, in particular, the points at which the intensity exceeded 3.6

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Observation of inner...

counts · cm^{-2} · $sec.^{-1}$; all these points were concentrated in the southern Atlantic. The readings of the Geiger- and scintillation-counters are listed in a table and shown in a figure. Conclusions: (1) The increase in radiation intensity, observed at an altitude of 320 km above the Brazilian magnetic anomaly, is due to an inner radiation belt. This belt is not observed to the north of the geomagnetic equator. (2) At low geomagnetic latitudes, the proton component of the inner belt prevails (in the region of the anomaly). With higher latitudes, the X-ray intensity increases (arising from electron bremsstrahlung on the space-ship hull), whereas the proton component decreases. (3) At magnetic latitudes higher than 40°S, the outer radiation belt appears. (4) A transition region is found between the outer and inner radiation belts, where the intensity of the bremsstrahlung is weaker--by a factor of two and four respectively--than at the maximum of intensity of the internal and external belts. (5) The cut between the inner and outer radia-

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Observation of inner...

tion belts, very clearly observed in the Northern Hemisphere by means of the 3rd Soviet Sputnik, is practically non-existent in the region of the Brazilian anomaly. These facts may shed light on the origin of the outer radiation belt. There are 2 figures, 1 table and 7 references: 3 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: A. J. Dessler, J. Geophys. Res., 64, 713, 1959; S. Yoshida, G. H. Ludwig, J. A. Van Allen, J. Geophys. Res., 65, 807, 1960; J. A. Van Allen, L. A. Frank, Nature, 183, 430, 1959; J. A. Van Allen, L. A. Frank, Nature, 184, 219, 1959.

SUBMITTED: May 23, 1961

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3304/10 (2406, 2205, 2705, 2805)

17.2400

S/560/61/000/010/006/016
D299/D302

AUTHORS: Savenko, I. A., Shavrin, P. I., Nesterov, V. Ye., and Pisarenko, N. F.

TITLE: Cosmic-ray equator from data obtained by means of the 2nd Soviet Sputnik

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no. 10. Moscow, 1961, 45-47

TEXT: The use of artificial satellites for determining the equator of cosmic radiation has the following advantages over terrestrial investigations: (1) many intersections of the equator at various points during a comparatively short period and (2) direct recording of the primary component of cosmic radiation--hence, the possibility of a detailed study of the equator of cosmic radiation at various moments of time, and, in particular, the possibility of studying the effect of various geo-

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D299/D302

Cosmic-ray equator...

physical phenomena on its position. Thereby, it is no longer necessary to introduce barometric temperature and temporal-variation corrections. The equipment of the 2nd Soviet Sputnik contained a Geiger counter, an autonomous memory-device, and telemetering apparatus. The memory device permitted measuring the latitude dependence of primary cosmic radiation at each intersection of the equator. In processing the data, the empirical formula describing the latitude dependence was constructed only from experimental points for latitudes below 40^0. Twenty-two latitude curves, obtained from various intersections of the geographical equator, were used to determine the position of the minima of cosmic-ray intensity (i.e., the equator of cosmic radiation). The obtained equator of cosmic radiation is incompatible with a dipole model of the geomagnetic field. The obtained equator is in good agreement with that calculated by Quenby and Weber, as well as with that calculated by Kellogg and Schwartz. There are 1 figure and 8 non-Soviet-bloc

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