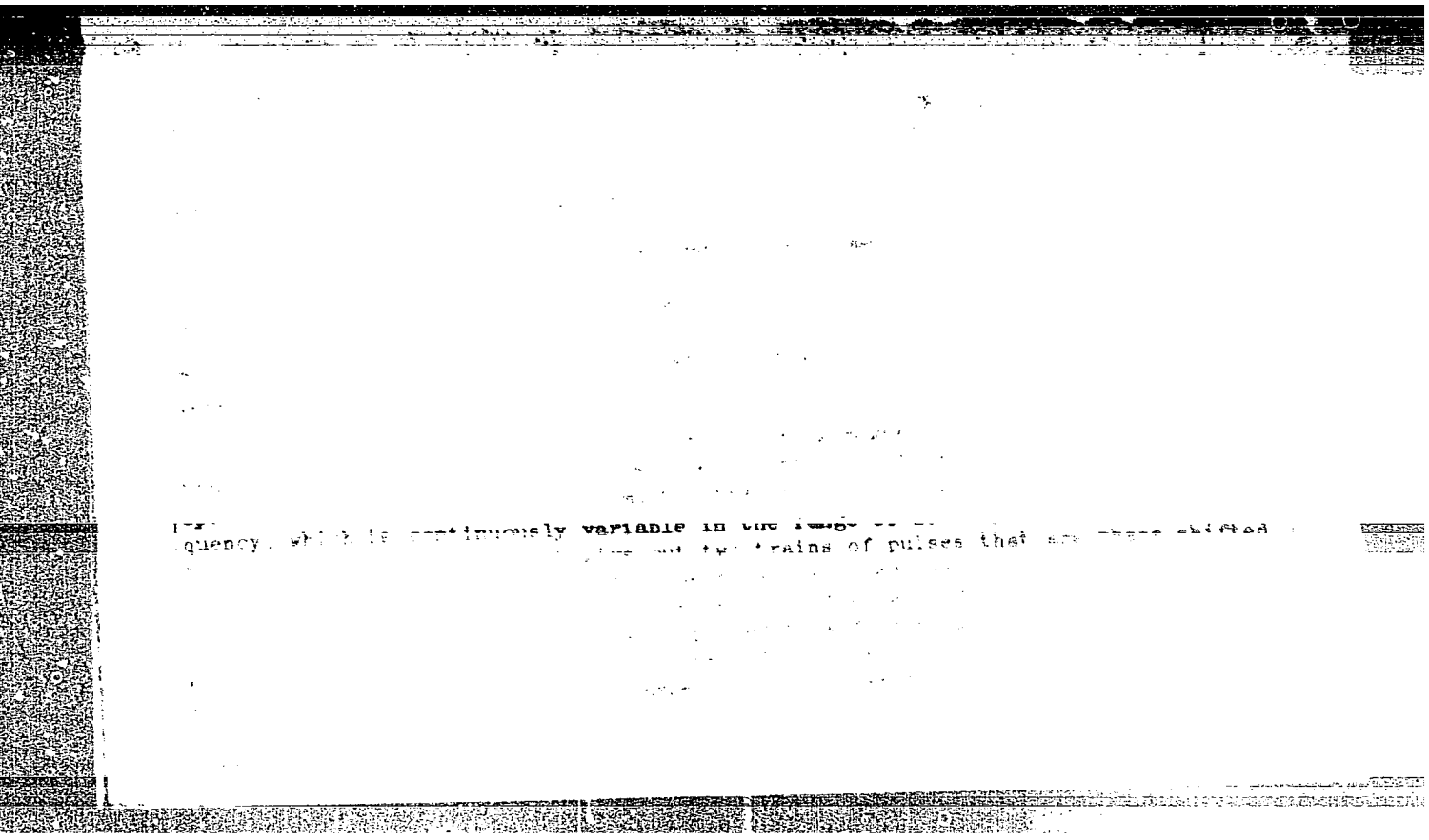
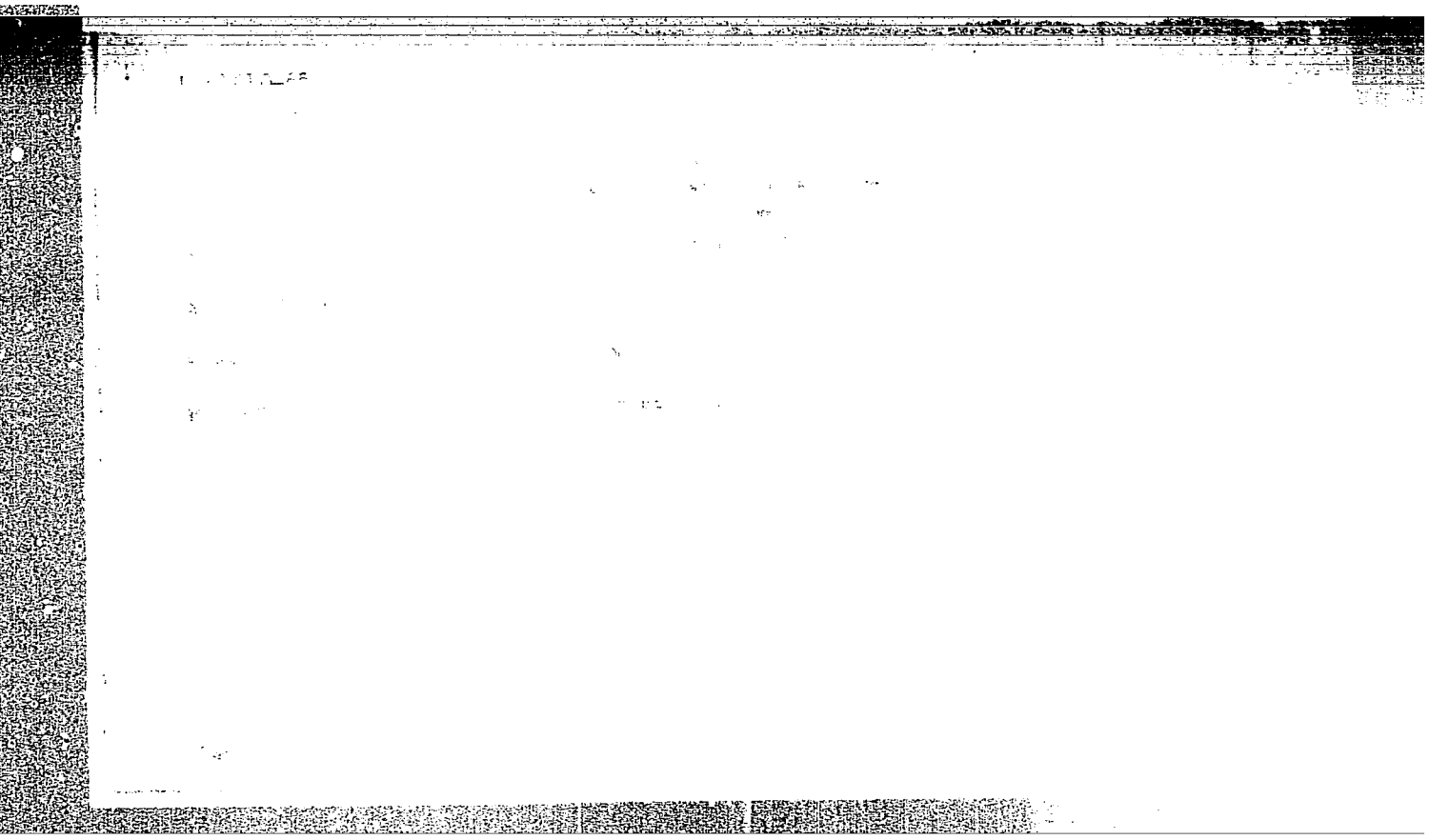
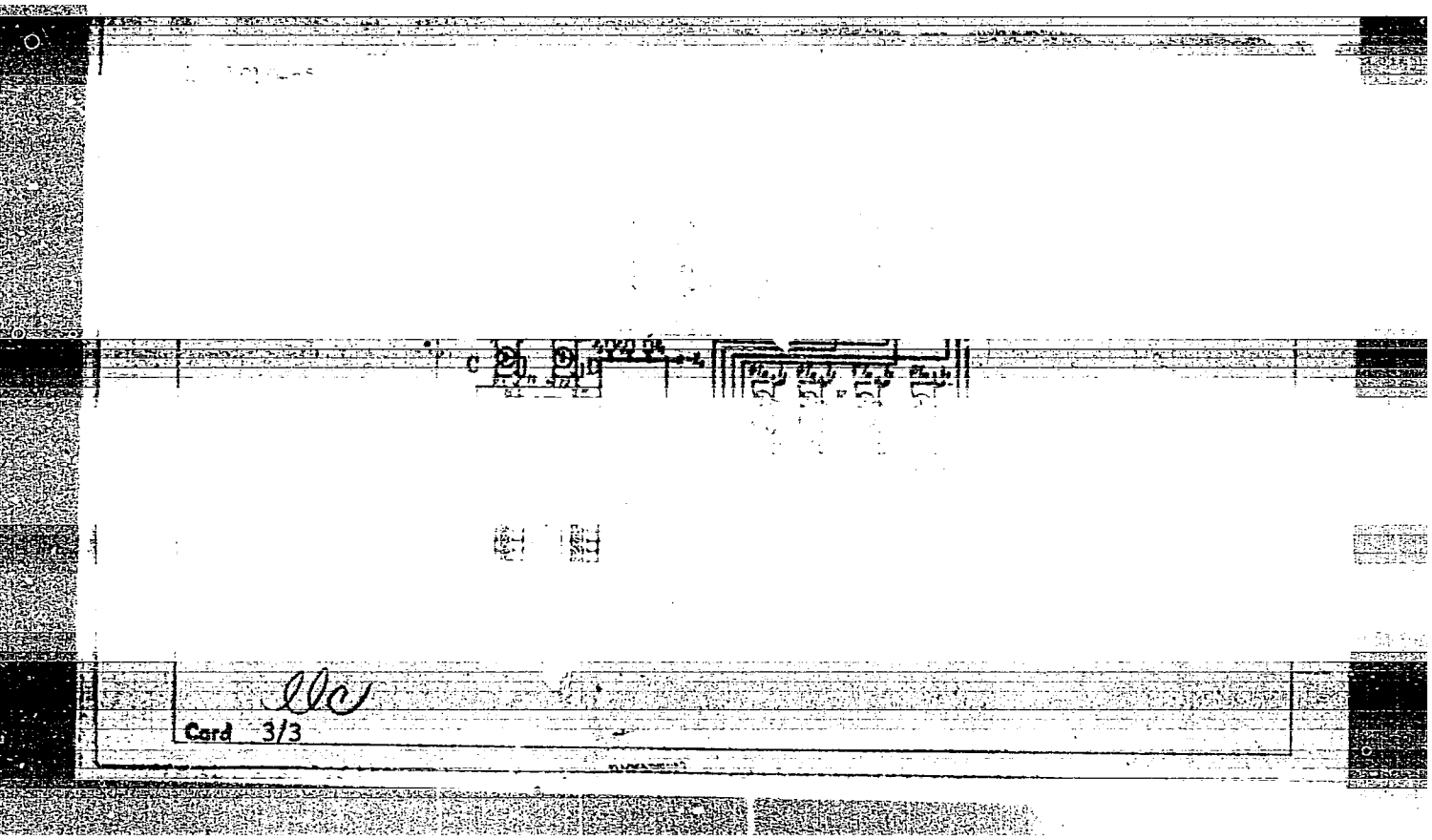


quency, which is continuously variable in the range of [illegible] between the two trains of pulses that are phase shifted



APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205410008-1"



APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205410008-1"

L 41644-66 EWT(1) GG

ACC NR: AP6013743 (N) SOURCE CODE: UR/0118/65/000/012/0026/0027

AUTHOR: Biryukov, Yu. A. (Engineer)

ORG: none

TITLE: Contactless switch

SOURCE: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 12, 1965, 26-27

TOPIC TAGS: electronic switch, switching circuit, electronic transformer

ABSTRACT: The author describes a contactless switch based on a new type of differential transformer. The switch has up to 10 w output and a relay output switching characteristic. The switch consists of a differential transformer with a controlled and variable magnetic path, a signal rectifier, a Schmidt trigger and a single stage power amplifier which derives the external load. The unit is completely self-contained in a small plastic box with power supply and voltage regulator. The differential transformer is shown in figure 1. The *S*-configuration of the core eliminates the difficulties encountered when differential transformers with *E*-type cores are incorporated in limit switches. The use of this differential transformer in preference to bridge or other configurations of contactless inductive transducers is indicated primarily by the improvement in positioning accuracy. The armature closes only one gap in the magnetic path of the transformer core while the other remains open. This results in a

UDC: 621.316.549

Card 1/2

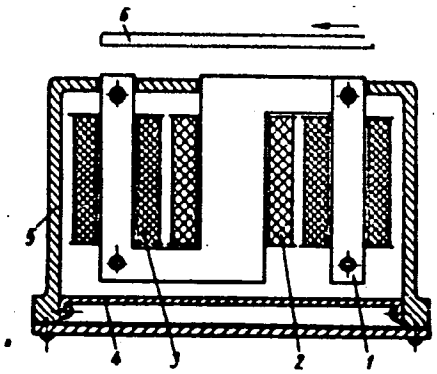


Fig. 1. 1--magnetic circuit (core); 2--primary (supply) winding; 3--secondary winding; 4--magnetic shunt; 5--plastic enclosure; 6--armature.

large differential signal voltage. The inductive stray signals are effectively cancelled due to the opposing connection of the output windings designed to suppress common mode signals. The switching occurs for a 1.5 to 2 mm change in the position of the armature's leading edge. The switch may be used directly as a track and limit switch in various transport systems, for product counting and metering on conveyor lines, in automatic machinery, etc. A wiring diagram of the switch is given. Orig. art. has: 2 figures, 1 table.

SUB CODE: 09/ SUBM DATE: none

Card 2/2 hs

BIRYUKOV, Yuriy Ivanovich; SOBOLEV, Viktor Ivanovich; DYAGILEV, V.D., red.; YUSFINA, N.L., tekhn. red.

[Economics of Socialist agricultural enterprises; visual-aid album for rural elementary schools and study groups in economics] Ekonomika sotsialisticheskikh sel'skokhoziaistvennykh predpriiatii; al'bom nagliadnykh posobii dlia sel'skikh nachal'nykh ekonomicheskikh shkol i kruzhkov. IAroslavl', Izd-vo "Sovetskaia Rossiia," 1960. 26 plates. (MIRA 14:6)

(Agriculture--Economic aspects--Audio-visual aids)

BIRYUKOV, Yu.L., assistent

Assessing the parameters of automatic identification systems. Izv. vys. uchob. zav.; geod. i aerof. no.3:101-109 '63. (MIRA 17:1)

1. Moskovskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii.

CHUKAN, B. K., kand. tekhn. nauk; TAMBIYEV, A. A., gornyy inzh.; KUZIN, B. N., gornyy inzh.; BIRYUKOV, Yu. M., gornyy inzh.

Experimental use of rod bolting with sprayed concrete in mines of the Rostov Economic Region. Gor. zhur. no.10:24-27 O '62. (MIRA 15:10)

1. Nauchno-issledovatel'skiy institut po stroitel'stvu, Rostov-na-Donu.

(Rostov Province—Mine roof bolting)
(Concrete construction)

CHUKAN, B.K., kand. tekhn. nauk; ALIMOV, Sh.S., inzh.;
BIRYUKOV, Yu.M., inzh.

Using a concrete sprayer for strengthening concrete and reinforced concrete structural elements. Prom. stroi. 41 no.11:44-45 N '63. (MIRA 17:2)

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Biryukov, Yu. P.

Hard alloy. Yu. P. Biryukov, L. S. Brokhin and I. A. Putilinskii. Russ 29,253, June 24, 1931. A hard alloy consists of Ni 20-50, W 10-20, Cr 20-35, Fe 5-25 and C 1-5%.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA Biryukov, Yu. P.

9

The influence of smena and sormite hard facing upon the structure and properties of the base metal. Yu. P. Biryukov. *Repts. Central Inst. Metals Leningrad* No. 18, 114-30(1935).—To steels contg. 0.3-0.8% C smena (W 30.6, Cr 31.4, Ni 33.8, C 4.2, Mn + Si 1.6, Fe 8.7%) and sormite (Cr 30, Si 4.5, Mn 1.1, C 3.2, Ni 6.3%, the rest Fe) were applied. Application by the Bernardkas method gave high porosity, uneven surface and slag inclusions. The oxyacetylene method gave a dense and clean surface. However, it caused overheating. This can be avoided by using the Slavyanov method with 4-5 mm. rods covered with a special graphite mixt. To obtain good mech. properties, the material should be quenched in oil and then in water.

B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SINYUTIN, B.P.; SHIROCHENKO, V.E.; BIRYUKOV, Yu.P., professor, redaktor; VOLCHOK, K.M., tekhnicheskiy redaktor.

[Ways of economizing nonferrous metals in ship repairs] Puti ekonomii tsvetnykh metallov pri sudoremonte. Pod. red. IU.P. Biriukova. Leningrad, Gos. izd-vo vodnogo transporta, 1954. 215 p. (MLRA 7:12)

(Nonferrous metals)(Ships--Maintenance and repair)

PARKHOMENKO, Stepan Antonovich; kandidat tekhnicheskikh nauk; BIRYUKOV, Yu.P., redaktor; VOLCHOK, K.M., tekhnicheskiy redaktor.

[New alloys for ship machinery bearings] Novye podshipnikovye splavy dlia sudovykh mekhanizmov. Leningrad, Izd-vo "Rechnoi transport," Leningradskoe otd-nie, 1956. 86 p. (MLRA 9:6)
(Alloys) (Bearings (Machinery)) (Naval engines)

BIRYUKOV, Yu.P.

Practices in maintaining a temporary ice crossing. Transp. stroi. 15 no.4:50-51 Ap '65. (MIRA 18:6)

KOVAL', N.M., nauchnyy sotr., kand. sel'khoz. nauk; GERMAN, Ya.B., starshiy nauchnyy sotr.; BIRYUKOV, Yu.V., starshiy nauchnyy sotr.; MART'YANOVA, O.A., starshiy nauchnyy sotr.; SHASHKOV, I.G., nauchnyy rabotnik; KORSHAK, I.T.; BROZHEYT, M.F.; KUKHARCHUK, G.N.; YEFREMOV, N.V., red.; CHEREVATSKIY, S.A., tekhn. red.

[Technological charts for grape cultivation] Tekhnologicheskie karty po vozdelyvaniiu vinograda. Kiev, Gos.izd-vo sel'khoz. lit-ry USSR, 1961. 141 p. (MIRA 15:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut vinogradarstva i vinodeliya im. Tairova (for Koval', German, Biryukov, Mart'yanova). 2. Zakarpatskaya opytnaya stantsiya (for Shashkov). 3. Ministerstvo sel'skogo khozyaystva USSR (for Korshak, Brozheyt, Kucharchuk).
(Ukraine—Viticulture)

BIRYUKOV, Yu.V., starshiy nauchnyy sotrudnik; PERKIS, Sh.V., starshiy inzh.-konstruktor

LRN-2 winch for stretching trellis wires. Mekh. sil'. hosp. 12 no. 12:7-8 My '61. (MIRA 14:5)

1. Ukrainskiy nauchno-issledovatel'skiy institut vinogradarstva i vinodeliya im. Tairova (for Biryukov). 2. Spetsial'noye konstruktorskoye byuro zavoda im. Oktyabr'skoy revolyutsii (for Perkis). (Winches)

BIRYUKOVA, A.

Seeing what the future holds. NTO 7 no.3:35-36 Mr '65. (MIRA 18:5)

1. Glavnyy inzh. kombinata "Trekhgornaya manufaktura", predsedatel' soveta Nauchno-tekhnicheskogo obshchestva.

ACCESSION NR.

Biryukova, A. D.

TITLE: Copolymerization of simple vinyl aryl ethers with vinylidene chl

vinylidene chloride copolymer

ABSTRACT: The effects of the temperature and duration of the reaction

L 10824-65
ACCESSION NR: AP4045424

dinitrile proved to be a more effective initiator than benzoyl[illegible]
ization [illegible]

ASSOCIATION: [illegible]

BIRYUKOVA, A.G.

Changes in the morphological and functional state of the shield bug Eurygaster integriceps Put. in Krasnodar Territory during the period 1954-1957. Vred. cherep. 4:142-156 '60.
(MIRA 14:11)
(Krasnodar Territory--Eurygasters)

9,2165 (1001, 1331 only)

88642
S/110/61/000/001/008/023
E194/E455

AUTHORS: Biryukova, A.I., Engineer, Orlovich, T.M., Engineer and Solomonik, S.S.

TITLE: Characteristics of Winding Wires With Oxide Insulation

PERIODICAL: Vestnik elektropromyshlennosti, 1961, No.1, pp.25-31

TEXT: In recent years there has been a considerable increase in the demand for winding wires that can operate at a temperature of 400 to 500°C. None of the available types of organic insulation can work at this temperature even for a short time. Hence, wires insulated with aluminium oxide film 10 to 20 microns thick produced by anodizing are of particular interest. This method of insulation was suggested long ago but only recently has been developed satisfactorily. Engineers V.Akulichev and P.Gavrilin have built a laboratory equipment for continuous oxidation of aluminium and tri-metallic wires. This article gives the results of investigations of the electrical, insulating and mechanical properties of aluminium and tri-metallic wires with oxide insulation. The structure of oxide insulation is first discussed. If the electrolyte is one that does not dissolve, the oxide, as is the case with boric acid, a thin, non-porous, so-called barrier

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Characteristics of Winding Wires With Oxide Insulation

layer is formed, its thickness depending on the forming voltage. This barrier layer has good dielectric properties and is used in capacitors but it is not suitable for wire insulation because it is too brittle. However, the oxidizing electrolyte may be one that dissolves the oxide. Various acids, including boric acid, have this action. The process of film formation is then more complicated. Pores are formed in the barrier layer through which current passes and locally increases the temperature, so increasing the rate of solution. The pores penetrate into the metal and a cylindrical cell of oxide is formed around them. The aluminium remaining between the cylindrical cells is gradually converted into oxide. The structure of the oxide film obtained depends on the type of electrolyte and the value of the forming voltage; formulae have been given for calculating the size of the pores. The film formed by anodizing at voltages greater than 100 V is γAl_2O_3. Under normal conditions the oxide film is of amorphous structure and only at 1200°C is it converted into corundum, αAl_2O_3. On hydration (formation of a film in water at a

Characteristics of Winding Wires With Oxide Insulation

temperature of 80 to 100°C) part of the oxide is converted into the mono-hydrate γAl_2O_3, which is of large volume and fills up the pores, giving the film all the advantages of a low-porosity coating. Tests were made on wires with impregnated and unimpregnated oxide insulation of the following types: aluminium wires of 0.3 to 1 mm diameter, trimetallic wires of 0.3 to 0.6 mm diameter. On both types of wire the oxide coating was of the porous-cellular structure and was produced by continuous anodizing in baths of sulphuric or oxalic acid using alternating current. Various methods of measuring the thickness of oxide films are described and a method is recommended which gives errors not greater than 20 to 25%. The thickness of the oxide films on the wires investigated by this method ranged from 12 to 20 microns. The layer of oxide, being porous, acts as a matrix of air insulation round the aluminium wire. Breakdown of the oxide film should, therefore, be considered as discharge along the internal surface of the pores. If the relative humidity is low, the surface breakdown voltage coincides with the breakdown voltage of

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Characteristics of Winding Wires With Oxide Insulation

the air. However, even normal room humidity considerably reduces the surface discharge voltage and when wires with oxide insulation are placed in surroundings of 95 to 98% relative humidity, the breakdown voltage is reduced by 30% in 48 hours. The method of determining the breakdown voltage is described. Instantaneous breakdown voltages were of the order of 600 V, falling after 9 hours to about 400 V. The phenomenon of restoration of electric strength after breakdown is discussed. It occurs because the oxide film itself is not damaged unless a heavy breakdown current is allowed to flow for some time. Whereas the electric strength of enamelled wire falls off rapidly in the temperature range of 120 to 250°C, the electric strength of wire with oxide insulation falls by only 30% at a temperature of 500°C. In practice, the breakdown voltage is independent of temperature and the resistance of the oxide to corona is not reduced at temperatures up to 500°C. The electric strength of the wires tested was every bit as good as that of corresponding wires of foreign manufacture. Insulation resistance was difficult to measure and the value obtained at room temperature depends very

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Characteristics of Winding Wires With Oxide Insulation

much on the humidity of the air. The insulation resistance of unhydrated specimens is 2 or 3 times less than that of hydrated specimens under normal ambient conditions, though the two kinds of wire behave identically when tested at high temperatures where no moisture is present. At temperatures of the order of 300°C the insulation resistance of oxide insulated wire, whether with silicone varnish or not, is of the order of 10^3 megohms/metre. A method of checking the continuity of the oxide layer is described; it was frequently used during production. Bending tests are also described. Bending wires around rods which stretch the film by 10 to 25% reduces the breakdown strength to 20% of its initial value. Stretching by 10 to 25% after holding at a temperature of 300 to 500°C reduces the breakdown strength to 30%. Repeated bending tests showed that the elasticity and mechanical strength of oxidized conductors are not so good as those of enamelled types, but are not bad enough to prevent their use as winding wires. When using oxide-insulated conductors the insulation may be stretched up to 25% depending on the electrical

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Characteristics of Winding Wires With Oxide Insulation

requirements. Tests of resistance to wear are described; wires with oxide insulation were as good in this respect as enamelled wires. The main disadvantage of winding wires with oxide insulation is the porosity and brittleness of the oxide layer. When used in the manufacture of motors, the wires are protected against mechanical damage, and their resistance to moisture is improved, by applying a protective coating. Silicone varnish is used for this purpose. At room temperature the insulation resistance of the varnished wires is much better than that of the unvarnished oxide insulation, but as higher temperatures are reached the two come to have similar properties. If, after holding for some hours at 400°C, the temperature is reduced to the normal ambient value, the insulation resistance gradually recovers its initial value. Anodized wires varnished with silicone also have high breakdown strength and good resistance to moisture. Accordingly, electric strength tests on these wires can be made in water. After holding for 50 hours at 400°C, the value of the breakdown strength as tested in water was the same as before ageing.

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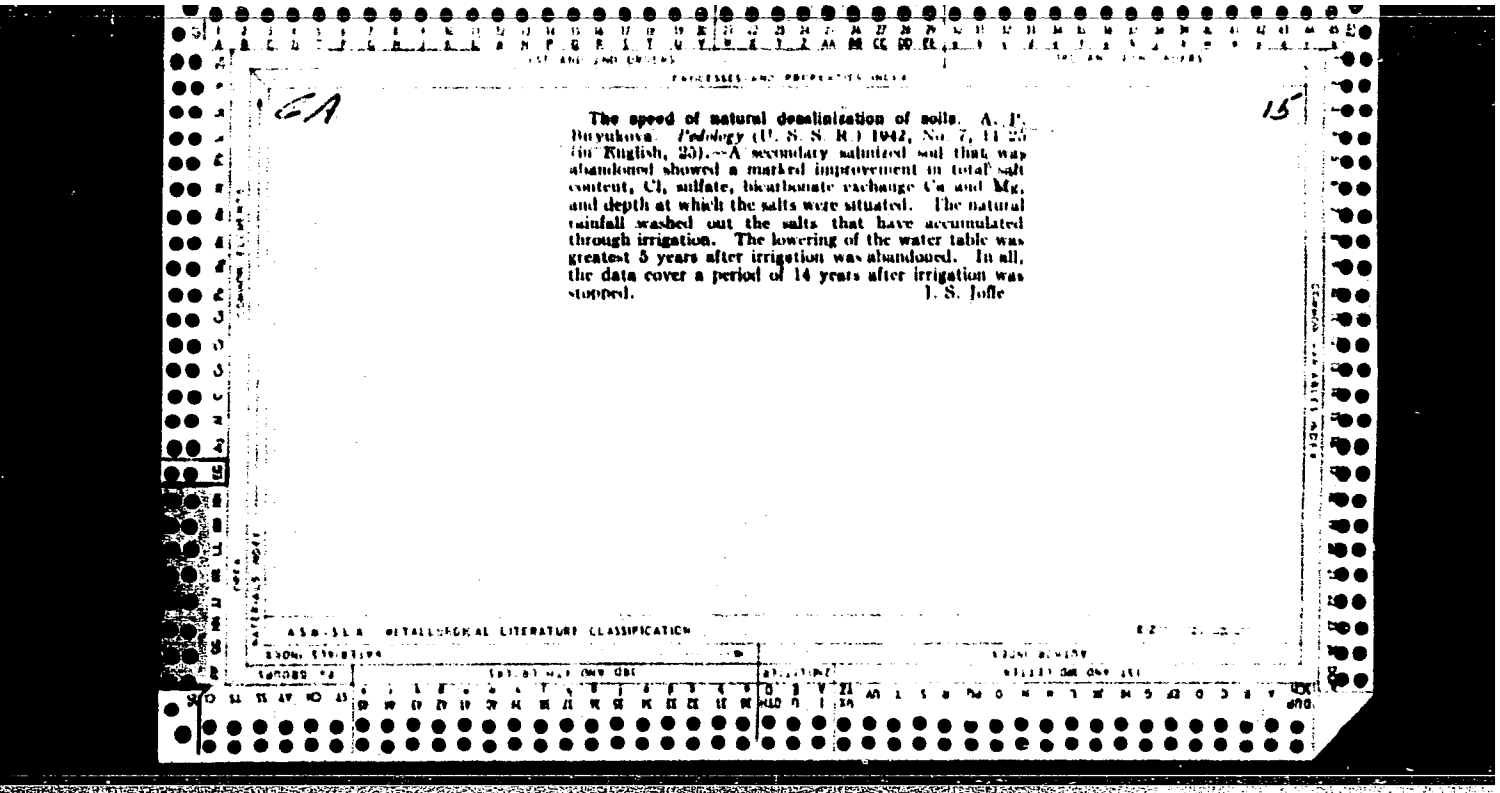


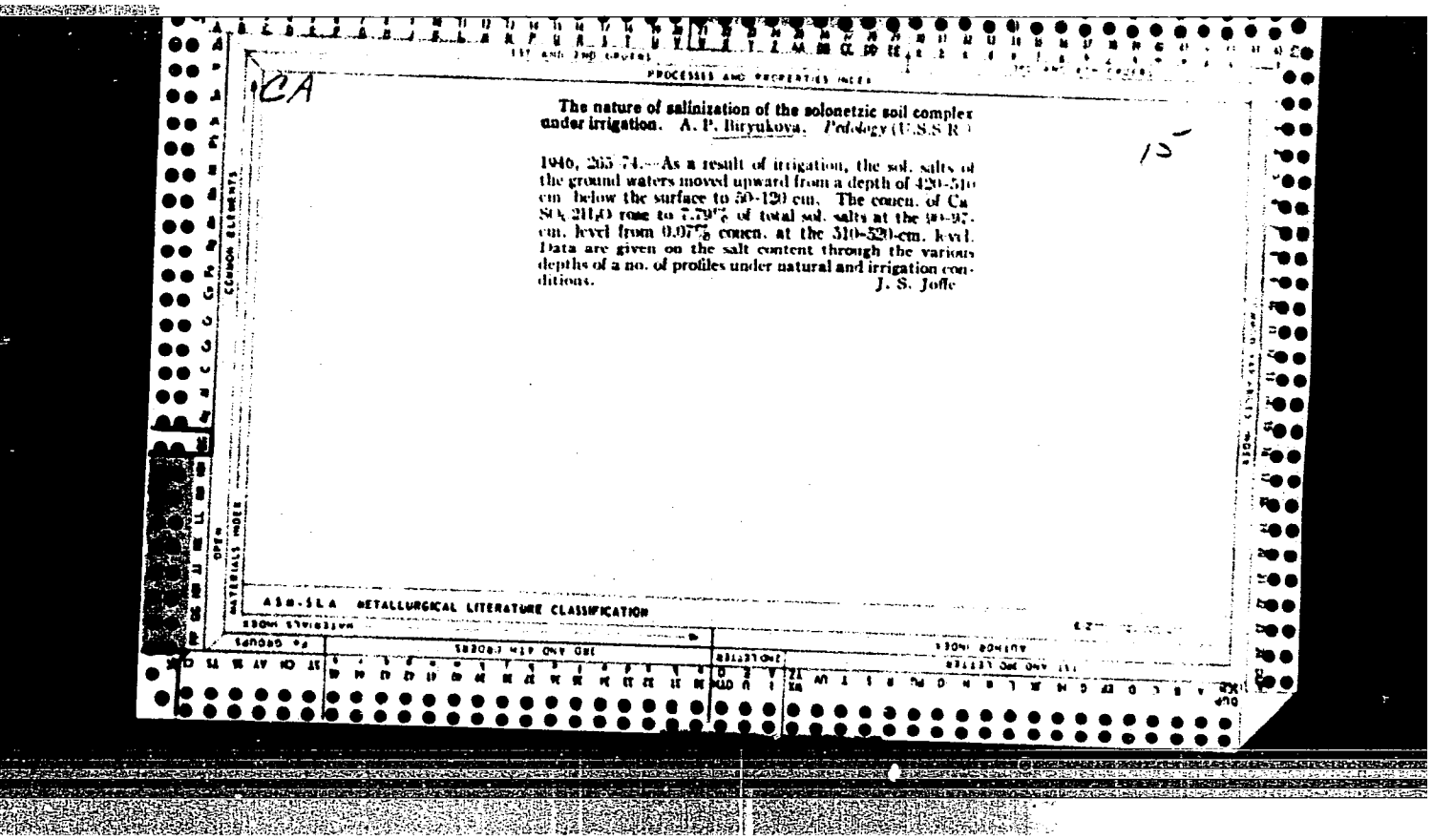
CA

15

The speed of natural desalinization of soils. A. F. Buryukova. *Pedology* (U. S. S. R.) 1942, No. 7, 11-25 (in English, 25).—A secondary salinized soil that was abandoned showed a marked improvement in total salt content, Cl, sulfate, bicarbonate exchange Ca and Mg, and depth at which the salts were situated. The natural rainfall washed out the salts that have accumulated through irrigation. The lowering of the water table was greatest 5 years after irrigation was abandoned. In all, the data cover a period of 14 years after irrigation was stopped.

I. S. Joffe

A S.U.S.S.R. METALLURGICAL LITERATURE CLASSIFICATION

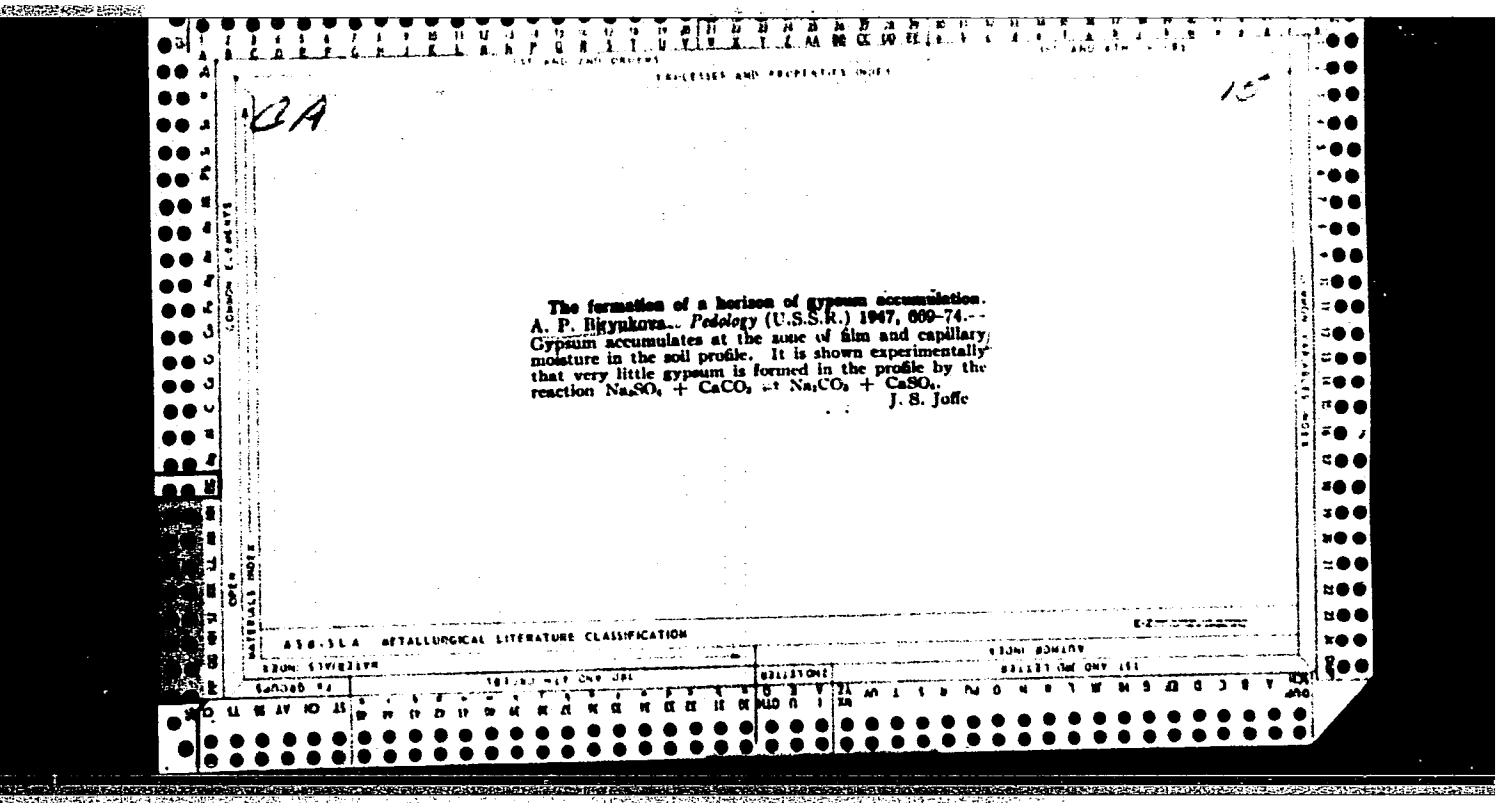


CA

The nature of salinization of the solonetzic soil complex under irrigation. A. P. Buryukova. *Pedology* (U.S.S.R.) 1946, 265-74.—As a result of irrigation, the sol. salts of the ground waters moved upward from a depth of 420-510 cm. below the surface to 50-120 cm. The concn. of $CaSO_4 \cdot 2H_2O$ rose to 7.79% of total sol. salts at the 80-97-cm. level from 0.07% concn. at the 510-520-cm. level. Data are given on the salt content through the various depths of a no. of profiles under natural and irrigation conditions.

J. S. Joffe

15



The formation of a horizon of gypsum accumulation. A. P. Ikyukova. *Pedology* (U.S.S.R.) 1947, 669–74.—Gypsum accumulates at the zone of film and capillary moisture in the soil profile. It is shown experimentally that very little gypsum is formed in the profile by the reaction $Na_2SO_4 + CaCO_3 \rightleftarrows Na_2CO_3 + CaSO_4$.

J. S. Joffe

BIRYUKOVA, A.P.

Saratov Province - Irrigation

Results of fourteen years of irrigation by local water suppll in the Trans-Volga' region

Pochvovedenie no. 4, 1952

Changes in soil constituents under forest plantings under conditions of the Pre-Caspian depression. A. P. Biryukova (Inst. Agr. Mechanization, Saratov). *Pochvovedenie* 1955, No. 6, 60–5.—The light salinized soil of the region contg. 0.2–2.0% H_2O-sol. salts at the 40 cm. depth down to 4 m. may still support some bush-type vegetation, such as oleaster, tamarix, *Caragana arborescenes*, *Calligonum*, and others. After 23 years growth these bushes have increased the org. matter of the soil, the permeability, and consequently the desalinization.

J. S. Joffe

BIRYUKOVA, A.P.

BIRYUKOVA, A.P.

Effect of irrigation on soils of the southern edge of the lower Syrt plain [with summary in English]. Pochvovedenie no.8:32-38 Ag '57. (MIRA 10:11)

1. Institut mekhanizatsii sel'skogo khozyaystva imeni M.I.Kalinina g. Saratov.
(Komsomol'skoye District (Saratov Province)--Soils)
(Irrigation)

Biryukova, A.P.

USSR/Soil Science - Physical and Chemical Properties of Soils. J-3

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10523D

Author : Biryukova, A.P.

Inst : Soil Science Institute of the Academy of Sciences USSR

Title : The Influence of Irrigation on the Water and Salt Regime of the Soils of the Southern Left Bank of the Volga.

Orig Pub : Avtoref. diss. dokt. s.-kh. nauk, Pochv. in-t Akad Nauk SSSR, Moskva, 1957.

Abstract : No abstract.

Card 1/1

BIRYUKOVA, A. P. Doc Agr Sci -- (diss) "The ~~Influence~~ Effect of Irrigation up on the ~~Mar~~ Water and Salt ~~Processes~~ modes of ~~in the~~ Soils of the Southern Transvolga Region." Mos, 1957. 16 pp 21 cm. (Academy of ~~XXIX~~ Sciences USSR, Soils Inst im V. V. Dokuchayev), 150 copies (KL, 27-57, 108)

BIRYUKOVA, A.P.

Role of forest plantations in the desalination of soils under irrigation [with summary in English]. Pochvovedenie no.8:29-33 Ag '58. (MIRA 11:9)

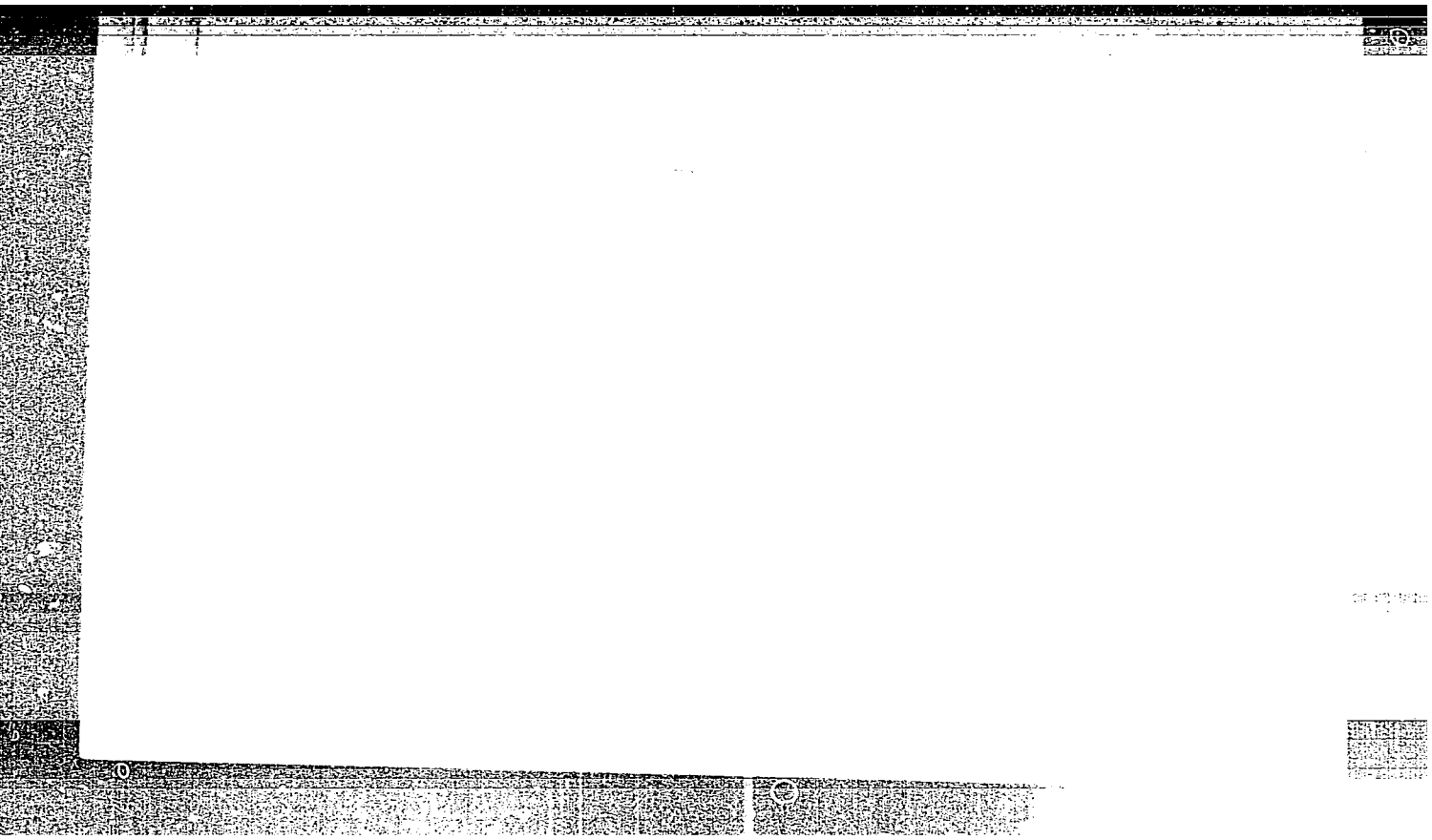
1.Institut mekhanizatsii sel'skogo khozyaystva im. M.I. Kalinina.
(Forest influences) (Solonetz soils)

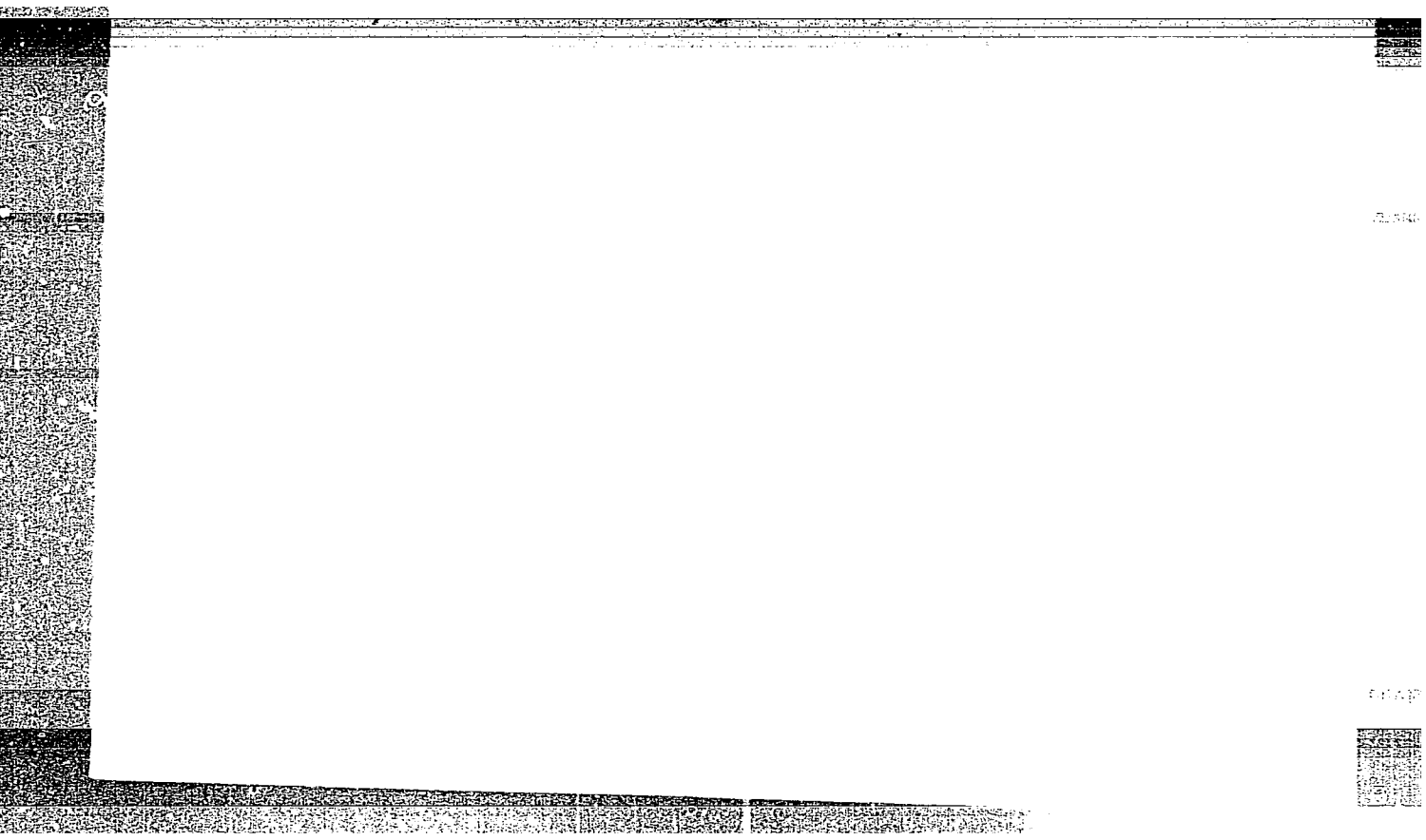
BIRYUKOVA, A.P.; YEGOROV, V.V., prof., doktor biol. nauk, otv. red.; MOROZOV, A.T., prof., retsenzent; PAVLOV, A.N., red. izd-va; TIKHOMIROVA, S.G., tekhn. red.; GUSEVA, A.P., tekhn. red.

[Effect of irrigation on the water and salt balance of soils in the southern part of the trans-Volga region]Vliianie orosheniia na vodnyi i solevoi reshim pochv IUzhnogo Zavolzh'ia. Moskva, Izd-vo Akad. nauk SSSR, 1962. 266 p. (MIRA 16:1)
(Volga Valley--Saline and alkali soils)
(Volga Valley--Irrigation)

BIRYUKOVA, E.P.; KHOZOVA, L.M.

Dyeing of elastic hosiery. Nauch.-issl. trudy VNIITP no. 5: 85-90 '64 (MIRA 19:1)





BIRYUKOVA, I.N.

Determination of arsenic admixtures in pharmacopeial preparations. (Report No.1). Apt. delo 10 no.5:35-42 S-O '61. (MIRA 14:12)

1. Farmatsevticheskiy fakul'tet I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova.
(ARSENIC) (DRUGS--ADULTERATION AND ANALYSIS)

BIRYUKOVA, I.N.

Determination of arsenic admixtures in pharmaceutical preparations. Report No.2. Apt. delo 11 ..o.6:69-73 N-D'62 (MIRA 17:7)

1. Farmatsevticheskiy fakul'tet I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova.

BIRYUKOVA, I.N.; BYSTROV, S.P.

Properties of the product of the interaction of arsenic hydride with mercury chloride.(II). Apt. delo 14 no. 4:53-55 Jl-Ag '65 (MIRA 19:1)

1. I Moskovskiy ordena Lenina meditsinskiy institut imeni I.M. Sechenova. Submitted January 7, 1965.

BIRYUKOVA, I. V.

261T53

USSR/Medicine - Ulcers, Therapeutic Sleep Jul 53

"Remote Results of the Treatment With Prolonged Sleep of Patients Who Have Stomach and Duodenal Ulcers," Prof V.S. Nesterov and I.V. Biryukova, Hospital Clinic of Voronezh Med Inst

Sov Med, Vol 17, No 7, pp 13-16

Treatment with prolonged sleep is one of the components of a complex treatment for patients suffering from duodenal and stomach ulcers. Treatment which lasts 2 mo, consists of 3 to 4

261T53

cycles of 7 days each. Immediate results of this type of treatment are satisfactory; long-range effects, however, are not superior in comparison with those achieved by other methods of treatment.

BIRYUKOVA, I. V.

Erythrocyte sedimentation reaction and the protein formula in Addison-Biermer disease. Probl. gemat. i perel. krovi no.12: 53-54 '61. (MIRA 15:6)

1. Iz gospital'noy terapevticheskoy kliniki (zav. - prof. V. S. Nesterov) Voronezhskogo meditsinskogo instituta (dir. - prof. N. I. Odnoralov)

(BLOOD PROTEINS) (ANEMIA) (BLOOD--SEDIMENTATION)

BIRYUKOVA, K.A.

Morphological changes in the exocrinecells of the pancreas under the influence of secretin. Uch.zap. MGPI 84:171-182 '55. (MLRA 9:11)
(PANCREAS--SECRETIONS) (SECRETIN)

BIRYUKOVA, K.V.

VISHNEVSKAYA, S.M.; UDOVICHENKO, G.S.; BIRYUKOVA, K.V.; GERGIL'SKIY, V.L.; MUKVOZ, L.G.; RUBNITSKAYA, N.E.; KORNIYENKO, Ye.I.; GUREVICH, Ye.N.; PISARENKO, Ye.I.; GELLER, I.Yu.; LOI, T.D.; SHEVCHUK, M.K.; KHVALIBOVA, Ye.K.

Epidemiology and prevention of helminth infections in the region of construction of the Kakhovka hydroelectric project and the South Ukrainian Canal. Med. paraz. i paraz. bol. no.3:244-248 Jl-S '54. (MLRA 8:2)

1. Iz gel'mintologicheskogo otdela Ukrainskogo nauchno-issledovatel'skogo instituta malyarii i meditsinskoy parazitologii imeni prof. Rubashkina (dir. instituta I.A.Demchenko, zav. otdelom prof. Ye.S. Shul'man), iz epidemiologicheskogo otdela Kiyevskogo instituta epidemiologii i mikrobiologii (dir. instituta S.N.Terekhov, zav. otdelom otsent Yu.Ye.Birkovskiy), iz kafedry biologii i parazitologii Dnepropetrovskogo meditsinskogo instituta (zav. kafedroy dotsent V.L. Gerbil'skiy), iz Zaporozhskoy oblastnoy protivomalyariynoy stantsii (zav. stantsiyey I.P.Agafonov), iz Dnepropetrovskoy oblastnoy protivomalyariynoy stantsii (zav. stantsiyey M.K.Shevchuk, iz Nikolayevskoy oblastnoy protivomalyariynoy stantsii (zav. stantsiyey S.I.Ganyuni).
(HELMINTH INFECTIONS, prevention and control,
Russia, on construction of waterways)

SEREBRENNIKOVA, V.I.; BIRYUKOVA, K.V.

"Collected papers from the Azerbaijan Institute of Epidemiology and Microbiology." Reviewed by V.I.Serebrennikova, K.V.Biriukova. Zhur.mikrobiol.epid. i immun. 30 no.3:130-132 Mr '59. (MIRA 12:5)

(COMMUNICABLE DISEASES)

SEREBRENNIKOVA, V.I.; BIRYUKOVA, K.V.

"Collected papers of the Erivan Institute of Epidemiology and Hygiene." Reviewed by V.I. Serebrennikova, K.V. Biriukova. Zhur.mikrobiol.,epid. i immun. 30 no.11:137-138 N '59. (MIRA 13:3)
(ARMENIA--EPIDEMIOLOGY)

SEREBRENNIKOVA, V.I.; BIRYUKOVA, K.V.

Review of the 1958 "Collected Papers" published by the Moldavian branch of the All-Union Society of Microbiologists, Epidemiologists and Specialists in Infectious Diseases. Zhur.mikrobiol.epid.i immun. 31 no.11:162-164 N '60. (MIRA 14:6)
(COMMUNICABLE DISEASES)

BIRYUKOVA, L. A.

"Regularity of the Diurnal Course of the Components of the Radiation and Heat Balance in Various Climatic Regions of the USSR." Cand Geog Sci, Main Geophysical Observatory imeni A. I. Voyeykov, Main Administration of the Hydrometeorological Service, Council of Ministers USSR, Leningrad, 1955. (KL, No 14, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

BIRYUKOVA, L.A.

Some characteristics of the diurnal variation of total radiation and radiation balance in different climatic regions of the U.S.S.R. Trudy GGO no.66:10-16 '56. (MLRA 10:3)
(Solar radiation)

BIRYUKOVA, L.A.

Method for the climatological calculation of the diurnal variation of total radiation and radiation absorption. Trudy GGO no.66:33-36 '56.

(Solar radiation) (MLRA 10:3)

BIRYUKOVA, L.A

p 3 PHASE I BOOK EXPLOITATION SOV/4560

Tsentral'naya aerologicheskaya observatoriya

Trudy, vyp. 25 (Transactions of the Central Aerological Observatory, no. 25) Leningrad, Gidrometeoizdat, 1959. 83 p. 700 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR.

Ed. (Title page): Ye. G. Shvidkovskiy; Ed.: Yu. V. Vlasova; Tech. Ed.: N. V. Volkov.

PURPOSE: This issue of the Transactions is intended for specialists in the physics of the atmosphere and aerology.

COVERAGE: This collection of 4 articles deals with problems connected with research of the upper atmosphere. The scientific use of artificial Earth satellites and rockets for the investigation of the upper layers of atmosphere is described. The energy distribution in the spectrum of solar rays in an

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absolutely pure and dry air is calculated for the troposphere and for the lower part of stratosphere, taking into account absorption by ozone. Experimental data on the change of the temperature coefficient of resistance for tungsten wire under various conditions of preliminary heating, as well as data on the tensiometric coefficient of tungsten, used in rocket experiments are presented. The two articles by L. A. Biryukova were written under the guidance of I. A. Khvostikov. References follow each article.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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JA/dwm/ec
12-7-60

24772
S/050/61/000/008/001/002
D264/D304

3.5110

AUTHORS: Biryukova, L.A., Kastrov, V.G. (deceased)

TITLE: On the daily variation of temperature in the stratosphere

PERIODICAL: Meteorologiya i gidrologiya, No. 8, 1961, 3-10

TEXT: In this paper, the authors present the results of theoretical investigation of the above problem, considering only radiation factors. Heating is assumed to occur through the absorptions of solar radiation, and cooling through long-wave exchange whith, since the temperature fluctuations are not large, is also assumed to take place uniformly. Then, for unit volume of air

$$c_p \rho \, dT = [q(t) - a]\, dt, \qquad (1)$$

where C_p = specific heat of air at constant pressure, ρ = density of air, T = temperature, t = time from sunrise, q(t) = inflow of heat per unit time by absorption of solar radiation, and a = outflow of heat by long-wave exchange. Integrating, allowing for day-to-day temperature variations, and assuming that the

On the daily variation...

intensity of solar radiation remains constant from sunrise to sunset so that q(t) may be replaced by q, the amplitude of daily temperature variations, A, is found to be $A = \frac{q t_1}{c_p \rho}\left(1 - \frac{t_1}{\tau}\right)$. (7)
where t_1 is the time of sunset,
and τ is the time from sunrise on one day to sunrise on the following day. The authors consider first the effect of ozone as being the most important contribution to the daily fluctuation of stratospheric air temperatures. Calculations on the possible effects of variation of ozone concentration with height show that the general pattern of the change of daily temperature amplitude with height is unchanged, but the magnitudes of the amplitudes depend considerably on the ozone concentrations in the particular layer and layers above it. These amplitudes which are calculated allowing only for absorption of direct solar radiation, must be modified to allow for the effect of reflected radiation. At heights of 20-40 km, this effect increases the amplitude by about 40-50% for overcast skies or clear sky with snow cover, and by about 15-20% for clear sky and no snow. Absorption of terrestrial

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On the daily variation...

radiation by ozone is shown to have a negligible effect. The authors next consider the effects of absorption by water vapor. An empirical formula, derived from laboratory measurements (Ref. 8: J.N. Hovard, D.E. Burch, and W. Dudly, Infrared Transmission of Synthetic Atmosphere 111. Journ. Opt. Soc. Am. 46, No. 4, 1956) for low water vapor content, is used, and an upper limit of the amplitude due to this effect is obtained as a result of the approximations made. Estimation of the effect of meteoric dust also involves the use of approximations. Iron-containing particles are considered as being the only conducting ones, and since iron meteorites are about ten times less by weight than stony meteorites, the inflow of conducting particles is taken as 10^{-15} gm/cm^2/sec. All particles are assumed to have the same radius, 0.1 μ , and the density that of iron. Results show that the amplitude due to this effect must also increase with height. Table 2 shows the results of calculations of the various effects of various heights, giving most probable estimates of the temperatures amplitudes. A comparison of these with data obtained from radio-soundings at the Tsentral'naya aerologicheskoy observatorii (Central Aerological Observatory) giving

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On the daily variation...

the change of temperature during the night hours indicates that the actual temperature amplitude in the lower stratosphere is considerably more than that due to radiation heating effects alone. Approximate calculations show that the temperature amplitude due to vertical air motion is about 1-2°. There are 3 tables and 13 references: 4 Soviet-bloc and 9 non-Soviet-bloc. The references to the 4 most recent English language references read as possible: H.G. Booker, Turbulence in the ionosphere with application to meteor trails, Journ. Geophys. Res. 61, No. 1, 1956; Chiu Wan Cheng. The diurnal temperature variation of the lower stratosphere over the United States. Journ. Meteorol. 16, No. 4, 159; J.N. Hovard, D.E. Burch and W. Dudly, Infrared transmission of synthetic atmosphere III. Journ. Opt. Soc. Am. 46., No. 4, 1956; Murgatroyd and Goody. Sources and sinks of radiative energy from 30 to 90 km. Quart. Journ. R. Meteor. Soc. 85, No. 361, 1958.

Card 4/5

(For reproduction of Table 2 see next card)

S/169/63/000/003/066/042
D263/D307

AUTHORS: Alekseyev, P.P., Besyadovskiy, Ye.A., Biryukova, L.A., Golyshev, G.I., Ivanovskiy, A.I., Izakov, M.N., Kokin, G.A., Kurilova, Yu.V., Livshits, N.S., Petrov, A.A., Rozhdestvenskiy, B.G., Solov'yev, N.V., Speranskiy, K.Ye., Khvostikov, I.A., Shvidkovskiy, Ye.G. and Shcherba, I.A.

TITLE: Study of the upper layers of the atmosphere with the aid of meteorological rockets

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 3, 1963, 28, abstract 3A166 (Tr. Vses. nauchn. Meteorol. soveshchaniya. T.I.L., Gidrometeoizdat, 1962, 91-103)

TEXT: In the present review-type article the authors give the results of studies carried out at Tsentralnaya aerologicheskaya observatoriya (Central Aerological Observatory) on atmospheric sounding with meteorological rockets. Measuring methods are described and the main points are given for obtaining such atmospheric character-

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Study of the upper layers ...

istics as pressure, temperature, and wind. Certain results are given: data of seasonal temperature variations at heights up to 50 km in the middle latitudes of the USSR and in polar regions, cases of sudden warming up, characterization of temperature distribution curves, a table characterizing the temperature inversion below the stratopause under the conditions of polar night, and data regarding the circulation in the upper atmospheric layers. Information is given on the constructed meridional sections of temperature fields and on the zonal component of the gradient wind. (25 references).
[Abstracter's note: Complete translation]

Card 2/2

KASTROV, V.G. [deceased]; BIRYUKOVA, L.A.

Diurnal temperature variations in the lower and middle stratosphere. Trudy TSAO no.45:3-21 '62. (MIRA 16:10)

BIRYUKOVA, L.A.

Distribution of energy in the solar spectrum and the absorption of radiation by ozone at heights of 15-50 km. Trudy TSAO no.45:44-48 '62. (MIRA 16:10)

BIRYUKOVA, L. F.

BURGMAN, G.P.; BIRYUKOVA, L.F.; IVANOV-DYATLOV, F.G.

Special features of leucocyte and vascular reactions following brain surgery. Vopr. neirokhir. 17 no.5 27-34. Sept-Oct 1953. (CIML 25:5)

1. Of the Institute of Neurosurgery imeni Academician N.N. Burdenko of the Academy of Medical Sciences USSR.

BIRYUKOVA, L.F.

USSR/General Problems of Pathology - Tumors. T-5

Abs Jour : Ref Zhur - Biol., No 3, 1958, 12782

Author : Burgman, G.P., Biryukova, L.F.

Inst : Not given

Title : Blood Changes in Neoplasms of the Cerebral Hemispheres During Pre- and Postoperative Periods.

Orig Pub : Vopr. neyrokhirurgii, 1956, No 6, 14-20

Abstract : Of 22 patients with arachnoidendotheliomas, only 7 with tumors of various sizes and multiple tumors displayed a relative or absolute lymphocytopenia and an increased ESR (18 mm). Other hemotologic indices were within the normal range. Twenty-four hours after surgical removal of the tumor there was a slight leukocytosis in only two patients. During an uncomplicated postoperative period the increase in WBC did not exceed 25% of the

Card 1/3 Iz Nauchno-issledovatel'skogo ordena Trudovogo Krasnogo Znameni instituta neyrokhirugii imeni akad. N. N. Burdenko Akademii meditsinskikh nauk SSSR.

USSR/General Problems of Pathology - Tumors.

Abs Jour : Ref Zhur - Biol., No 3, 1958, 12782

control level. The number of bands and polymorphonuclear neutrophils increased within 24 hours postoperatively and reached a maximum at 2-3 days, usually returning to normal by the 7-9th days. Postoperatively, absolute lymphocyte counts decreased and monocyte counts increased returning to normal by the 5-9th days. There was a fall in red count and Hb. and a rise in reticulocytes. By the 5-7th postoperative days, the ESR reached 30-60 mm. and returned to a preoperative level after 3-4 weeks. No significant changes were noted preoperatively in the patients (23) with intracerebral tumors (spongioblastomas multiforme, astrocytomas and other malignant neoplasms) with the exception of an increased ESR (up to 48 mm.). Postoperatively the white count and differential were essentially similar to those already mentioned. These hematologic changes, changes, slight in comparison with those produced by operations on body cavities, are attributed by the authors to

Card 2/3

BURGMAN, G.P., BIRYUKOVA, L.F., LOBKOVA, T.N.

Paper electrophoresis of the cerebrospinal fluid and blood serum proteins in cerebral tumors [with summary in English]. Vop.neirokhir. 22 no.3:31-36 My-Je '58 (MIRA 11:8)

1. Nauchno-issledovatel'skiy ordena Trudovogo Krasnogo Znameni institut neyrokhirurgii imeni akad. N.N. Burdenko AMN SSSR.
(BRAIN NEOPLASMS, metabolism,
blood & CSF proteins, paper electrophoresis (Rus))
(PROTEINS, IN CSF,
in brain neoplasms, paper electrophoresis (Rus))
(BLOOD PROTEINS, in var. dis.
same (Rus))

BURGMAN, G.P.; BIRYUKOVA, L.F.; VOZNAYA, A.TS.

Pathology of the ventricular fluid during prolonged drainage.
Probl. sovr. neirokhir. 2:118-123'57. (MIRA 16:6)
(CEREBROSPINAL FLUID) (DRAINAGE, SURGICAL)

BIRYUKOVA, L.G.

Determination of group classification for hair. Sud.-med.ekspert. 3 no.4:19-24 O-D '60. (MIRA 13:11)

1. Nauchno-issledovatel'skiy institut sudebnoy meditsiny (dir. - prof. V.I.Prozorovskiy) Ministerstva zdravookhraneniya SSSR.
(HAIR)
(MEDICAL JURISPRUDENCE)

ACHERKAN, N. N.; BIRYUKOVA, L. G.

"Opredelenis agglyutinogenov izoserologicheskoy sistem ABO v volosakh."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.

BIRYUKOVA, L.I., uchitel'nitsa

Use of motion pictures in biology lessons. Biol. v shkole no.3:24-27 My-Je '62. (MIRA 15:7)

1. Shkola-internat No.1 g. Chimkenta Yuzhno-Kazakhstanskoy oblasti.
(Biology--Study and teaching) (Motion pictures in education)

SLOVETSKIY, V.I.; OKHLOBYSTINA, L.V.; FAYNZIL'BERG, A.A.; IVANOV, A.I.; BIRYUKOVA, L.I.; NOVIKOV, S.S.

Spectrophotometric determination of the ionization constant of fluorodinitromethane. Izv. AN SSSR. Ser. khim. no.11:2063-2065 '65. (MIRA 18:11)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

ACC NR: AP6002102 SOURCE CODE: UR/0062/65/000/011/2063/2065

AUTHORS: Slovetskiy, V. I.; Okhlobystina, L. V.; Faynzil'berg, A. A.; Ivanov, A. I.; Biryukova, L. I.; Novikov, S. S.

ORG: Institute of Organic Chemistry im. N. D. Zelinski, Academy of Sciences SSSR (Institut organicheskoy khimii Akademii nauk SSSR)

TITLE: Spectrophotometric determination of the ionization constant of fluorodinitromethane

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1965, 2063-2065

TOPIC TAGS: ionization, fluorine compound, nitromethane / SF-4 spectrophotometer

ABSTRACT: Ionization constant of fluorodinitromethane (I) in water and absolute ethanol was determined spectrophotometrically according to the method described by V. I. Slovetskiy, S. A. Shevelev, A. A. Faynzil'berg, and S. S. Novikov (Zh. Vses. khim. ob-va im. D. I. Mendeleyeva, 6, 599, 707, 1961). The measurements were taken on a SF-4 spectrophotometer fitted with a thermostatic attachment. Concentration of I was kept within 2.2×10^{-5} to 5×10^{-5} mole/ℓ. The measurements were taken in the region 365-395 mμ. Spectra of the species present in solution are shown in Fig. 1. Acidity of I was found to be 10^{-4} less than that of the parent dinitromethane. Entropy, enthalpy, and free energy were calculated.

Card 1/2 UDC: 543.422+541.132+547.232

ACC NR: AP6002102

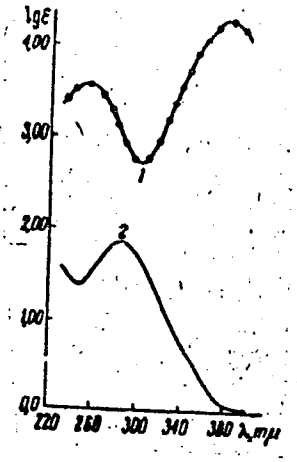

Fig. 1. UV spectra of fluorodinitromethane in aqueous solution: 1 - anion; 2 - nondissociated molecule.

Orig. art. has: 2 tables and 2 figures.

SUB CODE: 07/ SUBM DATE: 24Mar65/ ORIG REF: 004

3V/5

Card 2/2

YAVCHUNOVSKAYA, M.A., kand. med. nauk; RONKIN, M.A.; BIRYUKOVA, L.M.

Compensation phenomena in the central nervous system in myocardial infarctions complicated by collapse. Vrach. delo no.2: 35-39 F'64 (MIRA 17:4)

1. Kafedry nervnykh bolezney (zav. - prof. V.V.Mikheyev) i fakul'tetskoy terapii (zav. - deystvitel'nyy chlen AMN SSSR, prof. V.N. Vinogradov) Pervogo moskovskogo meditsinskogo instituta.

ACCESSION NR: AP4026847 S/0065/64/000/004/0003/0006

AUTHOR: Telegin, V. G.; Sidorov, V. A.; Zharkova, D. R.; Biryukova, L. M.; Tokareva, A. A.

TITLE: Preparation of individual vinyltoluenes

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 4, 1964, 3-6

TOPIC TAGS: Vinyltoluene, preparation, synthesis, vinyltoluene isomer, separation, ethyltoluene, toluene ethylation, dehydrogenation, isomer separation, fractionation, dealkylation, cracking, disproportionation

ABSTRACT: The study was made to determined if it is possible to prepare individual vinyltoluenes or at least mixtures of the vinyltoluenes enriched in one of the isomers. Ethyltoluenes were made by continuous vapor phase ethylation of toluene with phosphoric acid catalyst. Since it is difficult to separate the dehydrogenation products of ethyltoluene, the ethyltoluenes were separated prior to dehydrogenation. The ortho isomer was fractionated and the remaining mixture of meta and para isomers was sulfonated and the ethyltoluene sulfo acids were hydrolysed. The separated isomers were then dehydrogenated in the presence of water (water: hydrocarbon ratio of 22:1) at 580C at a flow rate of 0.75 hrs-1 on a catalyst

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ACCESSION NR: AP4026847

comprising 87% Fe_2O_3, 8% Cr_2O_3 and 5% K_2O. Based on ethyltoluene the yield was 94-96%; exhaust gases comprised 76-78% H_2, 19-21% CO_2 and 2-4.6% hydrocarbons. Products were fractionated at 8 mm. Hg. The purest vinyltoluene isomer prepared was the ortho, containing 5-7% para-isomer. The other two isomers were contaminated with larger amounts of mixed isomers. In comparison to dehydrogenation of ethylbenzene, dehydrogenation of ethyltoluene is accompained by undesirable dealkylation, cracking and disproportionation reactions, and the catalyst activity is rapidly lowered so it must be regenerated after each cycle. Further work is needed on the purification of the individual ethyltoluenes and on their dehydrogenation to obtain individual vinyltoluenes containing a minimum of contaminating isomers. Orig. art. has: 3 tables.

ASSOCIATION: VNIINeftekhim (All Union Scientific Research Institute of Petrochemical Processes)

SUBMITTED: 00 DATE ACQ: 28Apr64 ENCL: 00

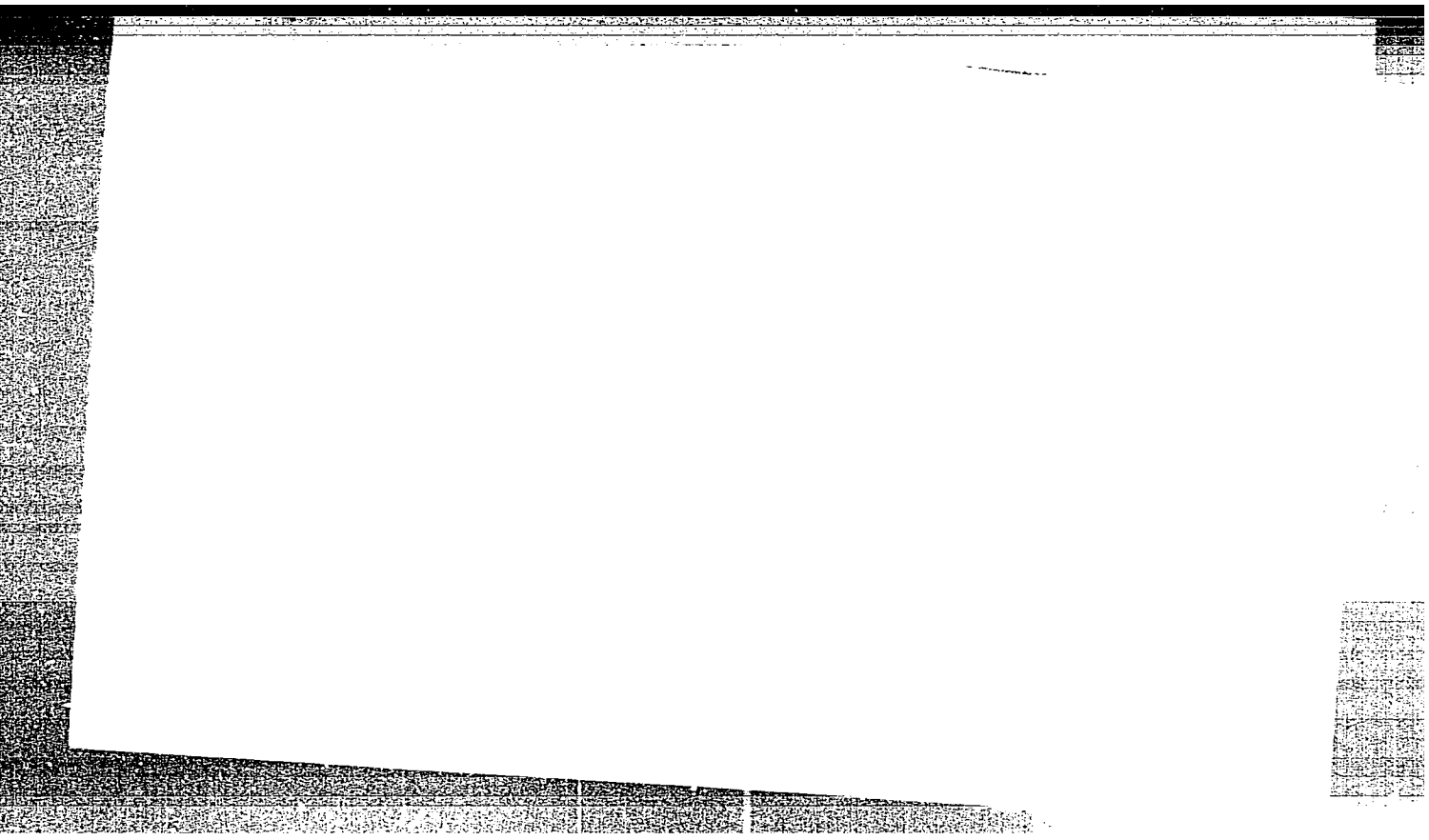
SUB CODE: CH No. REF. SOV: 005 OTHER: 007

Card 2/2

BIRYUKOVA, L.S. (Stavropol'-Kavkazskiy)

Dynamics of hyaluronidase distribution in a tumor-affected organism under the action of antitumor serum. Vrach. delo no.1:153-154 Ja '62. (MIRA 15:2)

1. Kafedra patologicheskoy fiziologii (zav. - prof. V.A.Chepurin) Stavropol'skogo meditsinskogo instituta.
(BLOOD SERUM) (HYALURONIDASE) (TUMORS)



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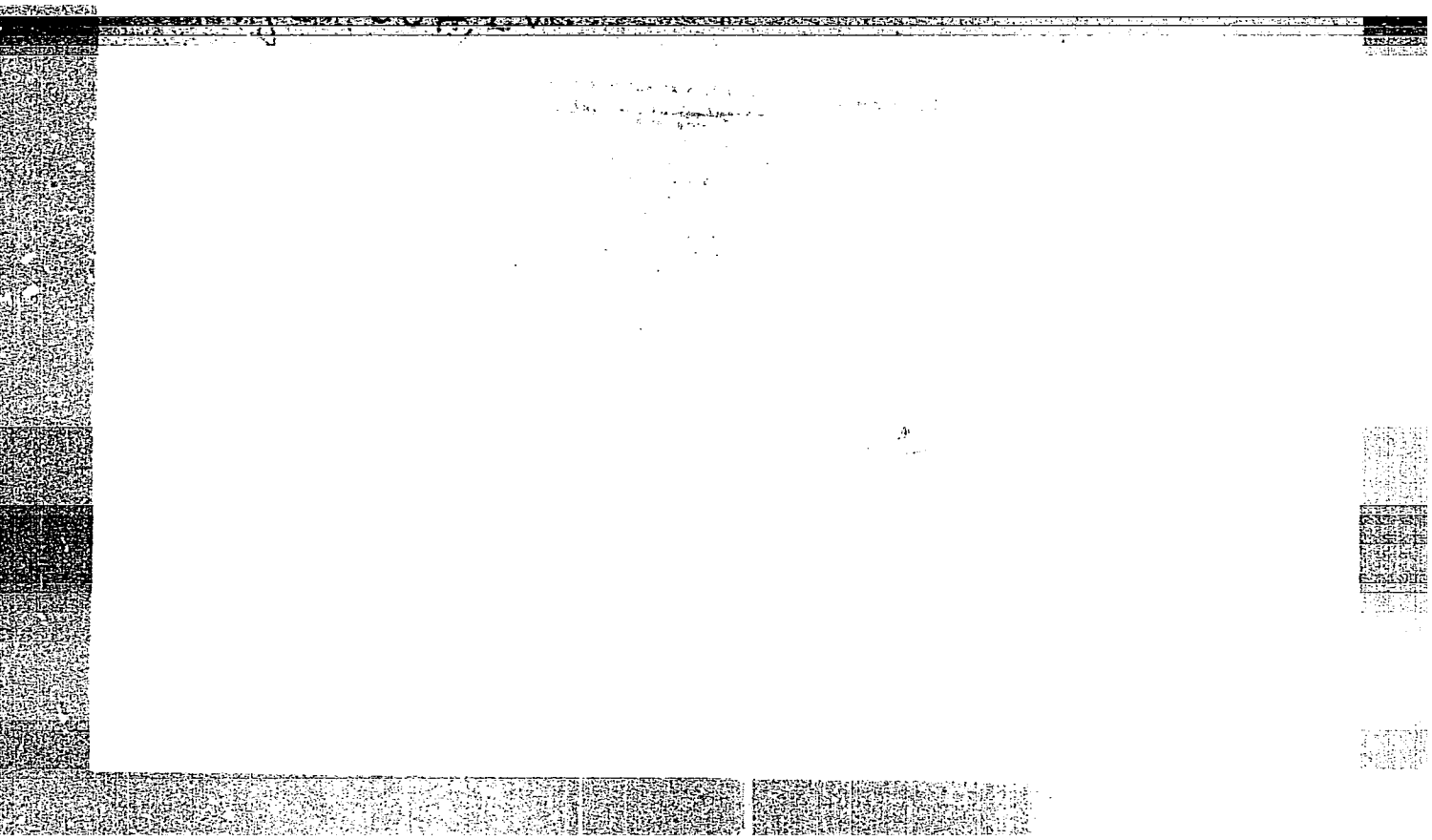

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BIRYUKOVA, L.V.

SUBJECT: USSR/Welding 135-3-5/17

AUTHOR: Biryukova, L.V., Engineer.

TITLE: Fluxes for Gas-Welding Magnesium and Its Alloys. (Flyusy dlya gazovoy svarki magniya i ego splavov).

PERIODICAL: "Svarochnoye Proizvodstvo", 1957, # 3, pp 10-11. (USSR)

ABSTRACT: The article deals with the experimental selection of the most suitable fluxes recently composed: chlorides, fluorides, mixtures of both, or with addition of borates, carbonates, sulfates, and organic materials. Mixtures of NaF, KF, LiF, BaF_2, MgF_2, AlF_3, MnF_2, ZnF_2, CdF_2, and Na_3AlF_6 (cryolite) were tested in order to find fluxes with melting points not higher than that of magnesium. Magnesium "MA1", "MA2" and "MA8" in sheets of 4-8 mm thickness was taken as welding material. The most suitable fluxes were tested on sheets of 0.5-2 mm thickness. The best results were obtained with fluoride fluxes consisting of the following salts: CaF_2, MgF_2, LiF, BaF_2, and cryolite.

It is concluded that fluxes composed of chlorides of Na, K,

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135-3-5/17

TITLE: Fluxes for Gas-Welding Magnesium and Its Alloys. (Flyusy dlya gazovoy svarki magniya i ego splavov).

Ba, Li, with about 8 % NaF are also suitable. The flux consisting of 40 % KCl, 20 % Ca Cl_2, 32 % NaCl, and 8 % NaF is recommended as inexpensive and possessing the required qualities for gas-welding.

Fluxes containing chlorides are limited in use, because they reduce the corrosion resistance of welds if they contaminate them. The "BAMM" institute in Leningrad developed fluorite fluxes "МФ-20", "МФ-15", and "МФ-10" (composition not stated) and offers to publish the formulas upon request.

Mechanical properties of specimens welded with application of flux "МФ-20" have properties close to those of the cast metal. Manual hammering increases the strength of weld metal considerably which then approaches the strength of deformed base metal. For instance, the strength of an alloy "MA1"-weld raises after hammering to 18-19 kg/mm^2, of an alloy "MA2"-weld to 22-23.5 kg per mm^2.

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TITLE: Fluxes for Gas-Welding Magnesium and Its Alloys. (Flyusy dlya gazovoy svarki magniya i ego splavov). 135-3-5/17

Experimental welding was conducted under the guidance of engineer V.F. Dmitriyev.

ASSOCIATION: "ВАМИ" (probably - Vsesouyznyi Alyuminiyevo-Magniyevyi Institute - All-Union Aluminum-Magnesium Institute).

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.

Card 3/3

BIRYUKOVA, L. V.

AUTHORS: Dmitriyev, V.F., Engineer, and Biryukova, L.V., Engineer 135-10-9/19

TITLE: Arc Welding of Magnesium Alloys with a Metallic Electrode (Dugovaya svarka magniyevykh splavov metallicheskim electrodom)

PERIODICAL: Svarochnoye Proizvodstvo, 1957, No 10, pp 29-31 (USSR)

ABSTRACT: Detailed directions are given for all operations concerning arc welding of magnesium alloys by metallic electrodes: cleaning of surfaces, angles of beveling (when the thickness of a sheet exceeds 6 mm), underlaying steel or asbestos, preheating, electrode coating and its preparation and application, selection of components for electrode coating, drying and storing, diameters of electrodes, welding current, speed of welding, position of electrode, cooling, cleaning of finished work. The recommended technology gives sound welded joints. It was found that hammering after welding increases the strength of the joints. Experimental welding of boxes, cans and similar items as well as welding defect spots on sheet metal gave satisfactory results. There are 3 figures and 3 charts.

ASSOCIATION: VAMI.

AVAILABLE: Library of Congress

Card 1/1

Vsesoyuznyy aluminiyevo-magni...

SOV/136-58-11-8/21

AUTHORS: ~~Biryukova, L.V.~~
Neroslavskaya, L.L.

TITLE: Influence of the Chloride Salts of Titanium on the Quality of Titanium Sponge (Vliyaniye khloristykh soley titana na kachestvo gubchatogo titana)

PERIODICAL: Tsvetnyye Metally, 1958, Nr 11, pp 43-46 (USSR)

ABSTRACT: Titanium sponge generally contains some di- and trivalent titanium chlorides which can have a considerable effect on its properties. The authors deal with the behaviour of titanium chlorides during storage and hydrometallurgical treatment of the crude sponge and the influence of the chlorides on the metal properties. They used chlorine compounds obtained from titanium sponge and titanium tetrachloride by reaction at 900°C and a pressure below 200 mm. Hg. Hydrolysis of the chlorides occurred on storing a melt of the dichloride with sodium chloride in air, shown by gain in weight (fig.1). Even small concentrations (0.1-1.1%Ti as chlorides) led to the formation of a non-fusible

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Influence of the Chloride Salts of Titanium on the Quality of Titanium Sponge

sponge if the mass was crushed and stored with access of air. Solutions in water and acids of the dichloride or its melts with other chlorides are oxidised and the trichloride forms the tetrachloride, titanium dioxide also being formed. The rate of dioxide formation was found to depend on the acid and its concentration used (table 2 - fig.3) and on the temperature (table 3). To prevent contamination of the crude sponge with oxygen the authors recommend that it should be treated immediately or stored in hermetically sealed containers; contact with moist air during crushing and transport should be minimised; the optimal hydrochloric-acid strength for leaching crude sponge is about 1% and neither water nor very weak acid solutions nor nitric acid should be used; coloration of the solution is not a reliable index of the concentration of titanium chlorides since the colour changes on keeping the solution in air; sponge should not be kept long in a

SOV/136-58-11-8/21

Influence of the Chloride Salts of Titanium on the Quality of Titanium Sponge

titanium-chloride-containing solution; leaching of crude sponge without inhibitors should be effected without much temperature increase. There are 3 figures and 3 tables.

Card 3/3

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S/078/60/005/05/01/037
B004/B016

5.1190
5.2100

AUTHORS: Biryukova, L. V., Saksonov, Yu. G.

TITLE: Investigation of the Products of Interaction Between Metallic Titanium and Titanium Tetrachloride

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 5, pp. 993-998

TEXT: This paper was induced by the industrial development of titanium production, its purpose was the study of the subchlorides formed in the thermal or electrolytic preparation of titanium metal. The authors describe the experimental device (Fig. 1) in which porous titanium was allowed to react with $TiCl_4$ at 300 - 1000° under rigorous exclusion of air, and the analysis for Ti and Cl in the reaction products carried out under the same conditions. Also the hydrogen quantity liberated on reaction of the titanium chlorides with water was measured in order to verify the results obtained. The data of analysis are summarized in table 1 and indicate the following: At 300° almost no reaction is observable between Ti and $TiCl_4$. At 400° $TiCl_3$

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Investigation of the Products of Interaction Between Metallic Titanium and Titanium Tetrachloride

S/070/60/005/05/01, 037
B004/B016

is formed, at 500° $TiCl_2$ + $TiCl_3$, at 700° and above again $TiCl_2$ + $TiCl_3$. In this connection the trichloride sublimes, and the dichloride remains in the reaction zone. An X-ray structural analysis was made in argon atmosphere. The X-ray pictures of the reaction products show four structures: a) metallic, unreacted titanium; b,c) two modifications of $TiCl_2$ (denoted $TiCl_2$-1 and $TiCl_2$-2), and d) the α-modification of $TiCl_3$. It was found experimentally that first always TiCl-1 is formed which at temperatures above 600° is converted to give TiCl-2, the structure of which remains stable on subsequent cooling. Table 2 gives the radiographic data of the titanium chlorides and compares them with the data of Refs. 1-3,5,6. There are 1 figure, 2 tables, and 6 references, 1 of which is Soviet.

SUBMITTED: February 5, 1959

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S/080/60/033/012/020/024
D209/D305

AUTHORS: Biryukova, L.V., Neroslavskaya, L.L., and Mekhova, E.V.

TITLE: Specific surface of titanium sponge

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960, 2791 - 2793

TEXT: The authors measured the specific surfaces of samples of titanium sponge obtained through the reduction of $TiCl_4$ with Mg and Na, the electrolysis of $TiCl_4$ and the electrolytic refining of titanium tailings in order to ascertain the relationship between the size of its specific surface and the amount of impurities absorbed in the process of its synthesis. The sponge is first sieved into its constituent size-fractions. The dimensions of the specific surface of the finest fractions (< 0.11 mm) are then determined by the method of V.V. Deryagin et al (Ref. 1: Opredeleniye udel'noy poverkhnosti poroshkoobraznykh tel po soprotivleniyu fil'-

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Specific surface of titanium ...

tratsii razrezhennogo vozdukha (Determination of the Specific Surface of Powdered Bodies by the Resistance of Rarefied Air to Filtration), Moscow, 1957); before measurement the fractions are squeezed into a metallic husk in a hydraulic press with a load of 50 - 150 kg/cm^2. In the case of the coarser fractions, however, a weighed portion is reacted with 10 % HCl and filtered after 24 hours, when the titanium content is estimated colorimetrically. The specific surface of the whole specimen is calculated from the rate of metal solution, the size of the specific surface of one of the fine fractions measured by the Deryagin apparatus and the quantities of dissolved titanium. The experimental values thus obtained vary within wide limits: 0.1 - 0.2 m^2/g for coarsely-crystalline sponge and 5 - 6 m^2/g for fine material, with a mean of 0.4 - 0.6 m^2/g. There appears to be little difference in the dimensions of the specific surface of sponges prepared by the Mg - Na reduction process and by electrolytic refining, but the specific surface of sponge precipitated through the electrolysis of $TiCl_4$ is much larger. Analyses of separate fractions for hydrogen, oxygen and other

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substances indicate a linear relationship between the specific surface and the content of impurities. In conclusion, the authors note the inevitability of the formation of a heterogeneous titanium sponge, but they emphasize the need for trying to increase the yield of coarsely-crystalline sponge in view of its smaller specific surface. There are 2 figures, 1 table and 1 Soviet-bloc reference.

SUBMITTED: February 29, 1960

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S/598/61/000/006/010/034
D245/D303

AUTHORS: Biryukova, L.V., Neroslavskaya, L.L., and Aleksandrovskiy, S.V.

TITLE: Hydrometallurgy of titanium

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splavy. no. 6, 1961. Metallotermiya i elektrokhimiya titana, 68 - 79

TEXT: In a survey of hydrometallurgical techniques for obtaining Ti metal from the products of reduction of $TiCl_4$ with Mg or Na and of electrolytic processes, it is pointed out that the quality of Ti metal obtained is largely dependent on the specific surface of the initial Ti sponge formed owing to the unavoidable oxidation of the metal in air. In treating the reaction masses from Mg or Na reduction processes, it is shown that the dissolution of the Mg or Na chlorides in the Ti sponge depends in its speed on the degree of pulverization of the reaction mass, mixing conditions and the ratio of solid to liquid phase during leaching. Mg metal dissolution in

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acid leaching is dependent on metal surface, acid concentration and temperature and is endothermic. Dissolution of unreacted Na metal requires great care. Ti di-, tri-, and tetra-chlorides are hygroscopic and during water leaching, hydrolyse. Ti sponge itself is a crystal agglomerate of varying crystal dimensions. The density of the sponge depends on the size and structure of the crystals and their distribution in the reaction mass. The bulk of the crystals are dendritic in nature. The specific surface of a sponge is determined by B.V. Deryagin's method (Ref. 2: Izd-vo, AN SSSR, 1957) Oxidation of sponge in air or water was measured by an optical polarisation method by V.V. Andreyeva (Ref. 4: Tr. In-ta fiz. khimii, 1957, VI, 2, 79) who found that there was marked oxidation of Ti at low temperatures. During hydrometallurgical treatment, contamination of the sponge with H_2 is unavoidable but can be minimised by introducing surface active inhibitors during leaching, or by using oxidising agents in leaching which will oxidise any H_2 formed. During leaching the metal freed from salts becomes rapidly coated with a protective layer which prevents substantial Ti losses due to corrosion. With a reaction mass obtained by Na reduction, Ti

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loss is about 0.[redacted] %. The quality of the sponge formed depends on a large number of factors, but metal quality attained is generally high. Reaction masses obtained electrolytically or by Na reduction are either immediately treated or hermetically sealed in a container until treated. Prior to leaching, the mass is pulverized to a particle size range of 3 - 10 mm. Leaching is carried out in two stages, firstly with 1 % HCl, secondly with 0.5 % HCl. The solid/liquid phase ratio is 1:4. The leached sponge is washed with water and dried in a hot air flow (70 - 110°C) in a time of 2 1/2 hours. There are 3 figures, 2 tables and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: W.A. Alexander and L.M. Pidgeon, Canadian Journal of Research, 1950, v. 28, no. 2, 60.

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S/136/61/000/011/003/007
E021/E135

AUTHORS: Biryukova, L.V., and Aleksandrovskiy, S.V.

TITLE: Absorption of hydrogen by sponge titanium during the hydrometallurgical treatment of the products of thermal and electrolytic production of the metal

PERIODICAL: Tsvetnyye metally, no.11, 1961, 48-52

TEXT: Experiments were carried out to investigate the effect of individual factors on the degree of saturation of sponge titanium with hydrogen. In the experiments a mixture was used which was obtained from a thermal reduction reaction of the following composition: 25-30% metallic titanium, 70-75% sodium chloride and the bivalent salt of titanium (0.1-0.2%); metallic sodium was absent. The average value of the surface area of the sponge titanium in the mixture was 0.6 m^2/g. A 20g sample of the mixture was leached in a 1% hydrochloric acid solution at 20 °C for 6 hours. The volume of solution was 100 ml. The obtained titanium sponge was washed with water, dried at 100 °C and analysed. The influence of the condition of the hydrogen was

studied. Atomic hydrogen was produced by evolution from metallic magnesium in the reaction mixture. Molecular hydrogen was obtained from a balloon. The molecular hydrogen was not absorbed by the titanium but the hydrogen evolved during dissolution of magnesium was actively absorbed. It was found that mixing the reaction mixture with air during the leaching process lowered the absorption of hydrogen. Therefore, the removal of hydrogen from the surface at the moment of evolution will reduce absorption. The use of a vacuum, ultrasonics, oxydising agents and inhibitors did not prevent the absorption of hydrogen. The amount of hydrogen in titanium increased from about 0.1 to 0.3% with an increase in acid concentration from 0.5 to 10%. With increase in reaction time from 1 to 24 hours there is a slight increase in hydrogen content. An increase in temperature also resulted in an increase in hydrogen content. The specific surface area of the sponge titanium had a marked effect on absorption. An increase from 0.4 to 1.0 m^2/g resulted in an increase of hydrogen content from about 0.2 to 0.5%. Experiments were also carried out to find the depth of penetration of hydrogen at 20 - 100 °C; there was no

deep penetration at these temperatures. Electron diffraction studies have shown that the film found on the titanium after 6 months treatment with 10% HCl at room temperature consists of titanium hydride. From the results of the investigation it is recommended that reduction or electrolysis should produce coarse-grained titanium if possible with no metal-reducing agents in the reaction products. In the leaching process weak acid should be used keeping the time of reaction to a minimum, not allowing heating, and using vigorous stirring.
There are 4 figures, 4 tables and 6 references: 3 Soviet-bloc and 3 English. The English language references read as follows:
Ref.1: R.I. Jaffee, I.E. Campbell. J. of Metals, 1949, 1.
Ref.2: G.A. Lenning, C.M. Graighead, R.I. Jaffee.
J. of Metals, 1954, 6(3).
Ref.4: R.L. Folkman, M. Schussler. Metal Progress, 1956, v.70, No.6.

BIRYUKOVA, L.V.; NEROSLAVSKAYA, L.L.; ALEKSANDROVSKIY, S.V.

Hydrometallurgy of titanium. Titan i ego splavy no.6:68-79 '61.
(MIRA 14:11)
(Titanium--Metallurgy) (Hydrometallurgy)

BIRYUKOVA, L.V.; ALEKSANDROVSKIY, S.V.

Hydrogen absorption by titanium sponge during the hydrometallurgical treatment of thermochemically and electrolytically prepared metal. TSvet. met. 34 no.11:48-52 N '61. (MIRA 14:11)
(Titanium--Hydrogen content)