

USSR/Cultivated Plants. Technical Plants. Oil and Sugar Bearing Plants. M

Abs Jour : Ref Zhur-Biol., No 15, 1958, 68285

ture, and the average fiber content of the stalks was more than 20 percent. In 1955-1956, 400 specimens of the new fibrous plants were tested. It was determined that rami (*Behmeria nivea* (L.) Gaud.) hibernates well under a light cover in temperatures lower than -20° [C]. This fact indicates that if irrigation is used, rami may be grown for fiber under Odesa conditions. -- I. M. Shainov

Card : 2/2

BOROVIK, R.V.

Results of jute introduction and outlook for extending its culture in the southern part of the Ukraine. Trudy Bot.inst.Ser.6 no.7:401-406 '59. (MIRA 13:4)

1. Botanicheskiy sad Odesskogo gosudarstvennogo universiteta. (Ukraine--Jute)

BOROVIK, S.A. (Deceased)

Spectrography

See ILC

BOROVIK, S.Ya.

Introduction of business accounting at the radio center. Vest.
svyazi 21 no.8:26-27 Ag '61. (MIRA 14:9)

1. Nachal'nik Kamchatskogo oblastnogo radiotsentra.
(Kamchatka—Radio stations)

BOROVIK, Viktor Andreyevich; BORODIN, I.A., doktor ekon. nauk,
prof., nauchn. red.; PANIN, N.S., red.; YEROKHINA, L.,
tekh. red.

[Business accounting on collective farms] Khoziaistven-
nyi raschet v kolkhozakh. Moskva, Ekonomika, 1964. 163 p.
(MIRA 17:1)

(Collective farms--Accounting)

ACC NR: AP7001434 (A, N) SOURCE CODE: UR/0413/66/000/021/0157/0157

INVENTOR: Borovik, V. F.

ORG: none

TITLE: State interrogation device for an electronic counter. Class 42, No. 188145

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 157

TOPIC TAGS: transistorized circuit, electronic counter

ABSTRACT: This Author Certificate presents a transistorized state interrogation device for an electronic counter which contains a decatron control circuit. To simplify the device, the cathodes of at least one decatron are connected through control transistors to the counter digits. The base of one of the output transistors is connected to the emitters of the control transistors and the base of the other output transistor is connected through a resistor to the decatron cathodes. To insure control of an unrestricted number of counter digits with the use of several decatrons, the zero cathode of the preceding decatron is connected through a resistor to ground and directly to the control circuit of the following decatron. One of the free cathodes of the preceding decatron is connected through a capacitor to the base of the control transistor whose collector is connected to the second cathode of the following decatron. To eliminate digit bypass of the decatron cathodes more than once in the interval between two counter pulses, a transistor is connected in the circuit of the first cathode of the first decatron, the circuit of the first cathode of the following decatron is disconnected, and a resistor is connected in the circuit of the second cathode. The emitter of the control transistor is connected to a negative voltage

source.
Card

1/1

SUB CODE: 09/ SUBM DATE: 26Nov65

UDC: 681.142.07

BOROVIK, V. L.

Borovik, V. L. "Use of gas inexisting room furnaces," Sbornik materialov
po kommunal.-khoz-vu, No. 5, 1948, p. 29-45

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949

S/044/000/005/003/072
C111/0333

AUTHOR: Borovik, V.N.

TITLE: On some applications of the cissoidal transformation in the theory of curves

PERIODICAL: Referativnyy zhurnal, Matematika, no. 5, 1962, 66, abstract 5A419. ("Izv. Krymsk. ped. in-ta", 1961, 35, 203 - 218)

TEXT: The author denotes as a cissoidal transformation of the plane in itself such a transformation relative to the center O and the curve K'' in which the point M' of a straight line l through O is carried over to a point M of l with $OM + OM' = OM''$, where M'' is the intersection of l and K'' . The polar equation of cissoidal K (the geometric location of the points M) is determined by given curves K' (geometric location of the points M') and K'' . Properties of K are given. The example of the cissoidal for two curves K' and K'' (both of second order) is considered.

[Abstracter's note : Complete translation.]

Card 1/1

39997
S/035/62/000/008/022/090
A001/A101

3.1720

AUTHORS: Veysig, G. S., Borovik, V. N.

TITLE: The results of observation of the total solar eclipse of February 15, 1961, on the 3.2-cm wavelength

PERIODICAL: Referativnyy zhurnal, *Astronomiya i Geodeziya*, no. 8, 1962, 46, abstract 8A323 ("*Solnechnyye dannyye*", 1961, no. 6, 61 - 63)

TEXT: The authors present the results of the observation of the total solar eclipse of February 15, 1961, on the 3.2-cm wavelength. The observations were carried out by an expedition of the Main Astronomical Observatory, AS USSR, at Rostov by means of a mirror radiotelescope (D = 3 m) and using the scanning of antenna directivity diagram. Variations in the total flux of radio emission were recorded during the course of the eclipse. The results obtained are presented graphically. Dimensions of radio emitting regions, related to visible active regions on the Sun (sunspots at the limb and a flocullus in the disk center), were determined from the curve of flux variation, as well as their contribution to the total radio flux from the Sun. A large residual flux is noted at the instant of full phase (4.2% of the total solar flux).

[Abstracter's note: Complete translation]
Card 1/1

B. Ioshpa

L 31175-65 FBD/SWT(1)/EWG(v)/EEC-L/EEC(t) Pe-5/Pq-1/P1-1/Pae-2 CW/RS-1
ACCESSION NR: AR5004833 B/0269/64/000/012/0043/0143

SOURCE: Ref. zh. Astronemiya. Otd. vyp., Abs. 12.51.358

43
B

AUTHORS: Borovik, V. H.

TITLE: On the determination of the positions of bursts of radio emission from the sun by the method of antenna pattern scanning

CITED SOURCE: Solnechnyye dannyye, no. 12, 1963 (1964), 60-70

TOPIC TAGS: sun, radio emission, radiation burst, antenna directivity, radio emission burst localization

TRANSLATION: A new method is proposed for determining the coordinates of bursts. The antenna pattern is rotated about the center of gravity of the radio emission from the sun at a frequency ω . In this case the amplitudes of the harmonic of the output signal at the frequency ω is equal to zero. The antenna tracks the sun with the aid of a clockwork mechanism. When a burst appears, the center of gravity of the radio emission from the sun shifts, and a signal of frequency ω appears at the

Card 1/2

L 34175-65

ACCESSION NR: AR504833

output. The coordinates of the burst are determined from the amplitude and phase of this signal. An advantage of the method is a continuous measurement of the coordinates of the burst during the course of its development, the possibility of localizing short-duration bursts, the simplicity of construction, and the possibility of using small antennas. Results of measurements of the coordinates of four bursts are presented, obtained at a wavelength 3.2 cm with the aid of a three-meter paraboloid. For two bursts it was possible to observe the motion of the region of radio emission on the outside, with velocities 350 and 3,000 km/sec, respectively.
I. Gosachiunsky.

SUB CODE: AA, EC

ENCL: 00

Card 2/2

ACC NR: AR7000897

SOURCE CODE: UR/0058/66/000/009/H043/H043

AUTHOR: Borovik, V. N. ; Peterova, N. G. ; Korzhavin, A. N.

TITLE: Observations of a radio source related to a group of rapidly developing sunspots

SOURCE: Ref. zh. Fizika, Abs. 9Zh315

REF SOURCE: Solnechnyye dannyye, no. 10, 1965, 67-71

TOPIC TAGS: sunspot, solar radio emission, radio source, radio emission, ~~radio source brightness temperature, radio source kinetic temperature~~ SOLAR.
RADIATION INTENSITY

ABSTRACT: It is reported that in March 1965 the sunspot group No. 23 (numbered according to the bulletin "Solnechnyye dannyye" — "Solar Data") which was undergoing disintegration, suddenly increased six-fold in area between March 18 and 19. On March 19, 1965 the flux of radio emission from the source associated with the group and observed simultaneously on two wavelengths, 3.2 and 4.5 cm, through the Great Pulkovo radio telescope (the resolving power of the telescope being 1.1 2.3 respectively), was also seen to increase by almost as

Card 1/2

ACC NR: AR7000897

much. The dimensions of the source, constant throughout the entire period of observation, were 1.5 on the 3.2-cm wave, and 2.3 on the 4.5-cm wave. On March 19, 1965 the brightness temperature of the source, assuming its circular outline to be symmetrical was computed to be 120,000K on the 3.2-cm wavelength and 170,000K on the 4.5-cm wavelength. The kinetic temperature of the source, computed on the basis of these data, was 200,000K. In comparison with March 18, on March 19, 1965 the kinetic temperature of the source increased four-fold, and the amount of emission eight-fold. The effective center of the source's radio emission before and after March 19 was above the photosphere at a distance of $(0.04 \pm 0.01) R_{\odot}$ on the 3.2-cm wavelength and $(0.05 \pm 0.01) R_{\odot}$ on the 4.5-cm wavelength. No close correlation was observed between changes in the area of the optical group of sunspots and the flux of radiation from a radio source corresponding to it, which agrees with results obtained earlier by the authors on the same wavelengths. [Translation of abstract] [SP]

SUB CODE: 03/

Card 2/2

ACC NR: AR6033093 SOURCE CODE: UR/0269/66/000/007/0045/0045

AUTHOR: Borovik, V. N.; Korzhavin, A. N.; Peterova, N. G.

TITLE: Observations of a radiation source associated with a rapidly developing group of sunspots

SOURCE: Ref. zh. Astronomiya, Abs. 7.51.314

REF SOURCE: Solnechnyye dannyye, no. 10, 1965, 67-71

TOPIC TAGS: sunspot, radiation source, photosphere, sunspot group, brightness temperature, kinetic temperature

ABSTRACT: On 18-19 March 1965, the size of the group of sunspots No. 23 [according to the numeration used in the bulletin "Solnechnyye dannyye" (Solar data)], which was in a stage of decay, suddenly increased sixfold. On 19 March, the flux density from a source connected with this group increased by approximately as many times. The source was observed with the large Pulkovo radio telescope in the 3.2- and 4.5-cm wavelengths (telescope resolving power of 4.1 and 1.3 respectively). Source dimensions, which were constant during the entire period of the observation, were 1.5 at the 3.2-cm wavelength and 2.3 at the 4.5-cm

Card 1/2

UDC: 523.164.32

ACC NR: AR6033093

wavelength. On 19 March 1965 the brightness temperature of the source calculated, assuming its circular symmetry was 120,000K at the 3.2-cm wavelength and 170,000K at 4.5-cm wavelength. The kinetic temperature, calculated on the basis of these data, was 200,000K. On 19 March, the optical thickness of the radiating region was 0.9 at the 3.2-cm wavelength and 1.8 at the 4.5-cm wavelength. The emission measure was $\int N^2 ds = 0.5 \cdot 10^{22}$. On 19 March 1965 as compared with 18 March, the kinetic temperature of the source increased fourfold, and the emission measure increased eightfold. Before and after 19 March, the effective center of source radiation was above the photosphere at a distance of $(0.04 \pm 0.01) R_{\odot}$ at the 3.2-cm wavelength, and $(0.05 \pm 0.01) R_{\odot}$ at the 4.5-cm wavelength. No close connection was observed between the variation in the area of the optical sunspot group and the flux radiation from the corresponding radio source; this is in accord with results obtained earlier by the authors for the same wavelengths. The bibliography has 5 titles. N. Petrova [Translation of abstract] [DW]

SUB CODE: 03/

Card 2/2

BOROVIK, Ya. [Borovyk, IA.]

Unsubdued Algeria. Nauka i zhyttia 10 no. 11:56-57 N '60.

(MIRA 14:4)

(Algeria--Politics and government)

BOROVIK, YE. A. --

BOROVIK, YE. A. -- "The Zonal Characteristics of the Bryslav Lakes of the Belorussian SSR and their Significance for Investigations into the Fish Economy." All-Union Sci Res Inst of the Lake and River Fish Economy (VNIIRKh). Leningrad, 1955. (Dissertation for the Degree of Candidate in Biological Sciences)

SO: Knizhnaya Letopis', No 1, 1956, pp 102-122, 124

Borovik Ye.A.
KOLCHENKO, S.V.; BOROVIK, Ye.A.

Growth of the eel under different ecological conditions. Biul. Inst.
biol. AN BSSR no.2:264-268 '57. (MIRA 11:2)
(Drivyaty, Lake--Zels)

Borovik, Ye.A.
KOKHNEKO, S.V.; BOROVIK, Ye.A.

Time scale formation in eels. Biul. Inst. biol. AN BSSR no.2:269-
271 '57. (MIRA 11:2)

(Scales (Fishes)) (Eels)

KOKHLENKO, S.V. [Kakhnenka, S.V.]; BOROVIK, Ye.A. [Baravik, E.A.]; GOROVAYA, S.L.
[Haravina, S.L.]

Ichthyophthiriosis in eels. Vestsi AN BSSR.Ser.bial.nav.
no.2:91-93 '59. (MIRA 12:9)
(WHITE RUSSIA--PROTOZOA, PATHOGENIC)
(EELS--DISEASES AND PESTS)

KOKHIDENKO, S.V.; BOROVIK, Ye.A.:

Results of a 2-yea observation of the growth and development
of young eels in White Russian waters. Biol. Inst. biol. AN BSSR
no.3:269-272 '58. (MIRA 13:7)

(WHITE RUSSIA--EELS)

BOROVIK, Ye.A.; KOKHNENKO, S.V.

Aeromonas punctata infection of eels in fresh waters. Dokl. AN
BSSR 5 no.10:478-480 0 '61. (MIRA 15:3)

1. Otdel zoologii i parazitologii AN BSSR. Predstavleno akademikom
AN BSSR Kh.S.Goreglyadom.
(Eels--Diseases and pests) (Aeromonas punctata)

BOROVIK, Ye.A.; TERENT'YEVA, M.V.

Content of some microelements in the roe of the rainbow
trout (*Salmo irideus* Gibbons). Dokl. AN BSSR 7 no.10:714-
715 0 '63. (MIRA 16:11)

1. Otdel zoologii i parazitologii i sektor gerontologii
AN BSSR. Predstavleno akademikom AN BSSR V.A. Leonovym.

BOROVIK, Ye.A. [Baravik, E.A.]

Respiration of eggs of the rainbow trout (*Salmo irideus* Gibb.
1855). Vestsi AN BSSR Ser. biial. nav. no.38111-115 '63
(MIRA 1787)

BOROVIK, Ye.A., [Baravik, A.A.]; KOKHLENKO, S.V. [Kakhnenka, S.V.]

Stocking with pike perch of some White Russian lakes. Vestsi
AN BSSR Ser. biial. nav. no.3:123-125 '64 (MIRA 18:I)

BOROVIK, Ye.A. [Borovyk, E.A.]

Significance of carotencids in the embryonic development of
rainbow trout. Vestsi AN BSSR. Ser. biial nav. no.1:132-133 '65.
(MIRA 18:5)

BOROVIK, N. O.

21388

BOROVIK, N. O. O Teploprovodnosti uglekisloty I svyazi mezhou teploprovodnostyo I vyazkostyo. Zhurnal eksperim. I teoret. Fiziki, 1949, Vyp. 7, S. 561-64.- Bibliogr: 15 Nazv.

SO: Ietopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949.

BOROVIK, Ye.S. [Borovyk, I.E.S.]; GRISHIN, S.F. [Hryshyn, S.F.];
GRISHINA, Ye.Ya. [Hryshyna, O.IA.]

Adiabatic demagnetization of ferric ammonium alum without
thermal insulation. Ukr. fiz. zhur. 8 no.9:1013-1019 S '63.
(MIRA 17:8)

1. Fiziko-tekhnicheskyy institut AN UkrSSR, Khar'kov.

BOROVIK, Ye.S.; MIKHAYLOV, I.F.; KOSIK, N.A.

Hydraulic friction and heat transfer in coil type counterflow heat exchangers. Inzh.-fiz. zhur. no.7:3-8 JI '64 (MIRA 17:10)

1. Fiziko-tehnicheskiy institut AN UkrSSR, Khar'kov.

L 8393-65 EWT(1)/EWT(m)/EPT(c)/EPT(n)-2/EPT/T/EPA(bb)-2/EWP(a)/EWP(b)/EWP(c)
Fr-h/Ps-k/Pu-h AFNL/ASL(a)/AELG(a)/AS(mp)-2/SSD/BSL/ASD(f) WW/JW/JD
ACCESSION NR: AP4018727 S/0185/64/009/007/0749/0758

AUTHOR: Borovyk, Ye. S. (Borovik, Ye. S.); Mykhaylov, I. F. (Mikhaylov, I. F.); Kosyuk, M. A. (Kosik, N. A.)

TITLE: Investigation of the process of heat transfer and hydraulic resistance in coil-pipe counterflow heat exchangers

SOURCE: Ukrayins'kyi fizychny zhurnal, v. 9, no. 7, 1964, 749-758

TOPIC TAGS: heat transfer, heat exchanger, hydraulic resistance, liquefaction thermodynamics, liquified gas, hydrogen, helium

Abstract: Data are presented on the hydraulic resistance and heat transfer in heat exchangers consisting of pipes of various diameters soldered together at the thermal contact and coiled. The experimental results show that heat exchangers of this type may be used even in relatively large liquefaction machines. Formulas are obtained for the simplified calculation of counterflow heat exchangers of liquefaction machines, and a brief table is given of all data required for calculating the choke coil liquefiers of hydrogen and helium.

Card 1/2

L 8393-65
ACCESSION NR: AP4043727

ASSOCIATION: Fizy*ko-tekhnichny*y insty*tut AN URSR, Kharkiv (Physico-
Technological Institute, AN URSR)

SUBMITTED: 18Nov63

ENCL: 00

SUB CODE: TD

NO REF SOV: 005

OTHER: 002

JPRS

Card

2/2

L 8383-65 EWT(1)/EWT(m)/EPF(c)/EPF(n)-2/EP3/T/EPA(hh)-2/EWA(1) Pr-4/Pe-4/P3-4
ASD(f)/BSD/SSD/AS(mp)-2/AEDC(a)/AFWL/ASD(d) ID/WH/GW
ACCESSION NR: AP4048728 S/0185/64/009/007/0759/0765

AUTHOR: ~~Borovik, Ye. S.~~ (Borovik, Ye. S.); Mykhaylov, I. F.
(Mikhaylov, I. F.); Kosyuk, M. A. (Kosik, N. A.)

TITLE: A comparison of the efficiencies of various heat exchangers for
liquefaction machines

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 9, no. 7, 1964, 759-765

TOPIC TAGS: heat transfer, heat exchanger, liquefaction thermodynamics

Abstract: Efficiencies of various designs of heat exchangers are compared, and the advantages of the heat exchangers designed by the authors -- heat contact soldered tubes of different diameters in which each gas stream goes through one tube -- are demonstrated on the basis of several concrete examples.

Card 1/2

L 8383-65

ACCESSION NR: AP4048728

ASSOCIATION: Fizyko-tekhnichnyy insty*tut AN URSR, Kharkiv (Physico-
Technological Institute, AN URSR)

SUBMITTED: 08Nov58

ENCL: 00

SUB CODE: TD

NO REF SOV: 007

OTHER: 003

JPRS

Card 2/2

KNYAZEV, Yu.R.; MITIN, R.V.; PETRENKO, V.I.; BOROVIK, Ye.S.

Radiation from a high-pressure argon arc. Zhur. tekhn. fiz. 34
no.7:1224-1230 J1 '64 (MIRA 17:8)

ACCESSION NR: AP4041999

S/0057/64/034/007/1237/1241

AUTHOR: Borovik, Ye.S.; Nikolayev, G.T.; Sharevskiy, B.A.

TITLE: Production of ultrahigh vacuum with a pre-heated hydrogen condensation pump

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no7., 1964, 1237-1241

TOPIC TAGS: ultrahigh vacuum, vacuum pump

ABSTRACT: An experimental vacuum system of stainless steel is described with which it was possible to bring a volume of 60 liters from atmospheric pressure to 4×10^{-10} mm Hg in 14 hours. Some of the construction details are given by which a leak rate of less than 10^{-5} cm³/hour was achieved. Pre-evacuation was accomplished with a specially rebuilt oil diffusion pump which could be isolated from the rest of the system with a special vacuum valve and was provided with a liquid nitrogen trap. The condensation pump consisted of a spherical container with a surface area of 220 cm² located in the tube joining the main volume to the diffusion pump. The tube containing the condensation pump was provided with a liquid nitrogen jacket, and its ends were partially closed by louvered screens cooled by liquid nitrogen. Provision was made for heating the system with external electric heating elements.

Copy
1/3

ACCESSION NR: AP4041999

The pressure was measured with two types of ionization gage. The procedure for achieving ultrahigh vacuum in the system was as follows. After pumping down with a mechanical forepump, the diffusion pump was started, it was isolated from the system, and its liquid nitrogen trap was filled. When the diffusion pump reached a pressure of approximately 10^{-7} mm Hg it was opened to the system and the whole system was brought to this pressure. The system was then slowly heated to 400°C during the course of 1.5 to 2 hours. The heated system was pumped for a time that varied from experiment to experiment, at the end of which the pressure was again approximately 10^{-7} mm Hg. The system was then cooled and the liquid nitrogen jacket of the tube containing the condensation pump was filled. This resulted in a decrease of pressure by about a factor 10 during the course of 2 to 4 hours. The diffusion pump was finally isolated from the system, and the condensation pump was filled with liquid hydrogen. The pressure dropped very rapidly and reached its equilibrium value in an hour or two. The pumping speed of the hydrogen condensation pump was measured by the controlled leak method at pressures from 2×10^{-9} to 10^{-7} mm Hg. The pumping speed was found to be 600 liters/sec. Orig.art.has: 5 figures.

Card
2/3

ACCESSION NR: AP4041999

ASSOCIATION: none

SUBMITTED: 25Jun63

SUB CODE: ME

NR REF SOV: 005

ENCL: 00

OTHER: 002

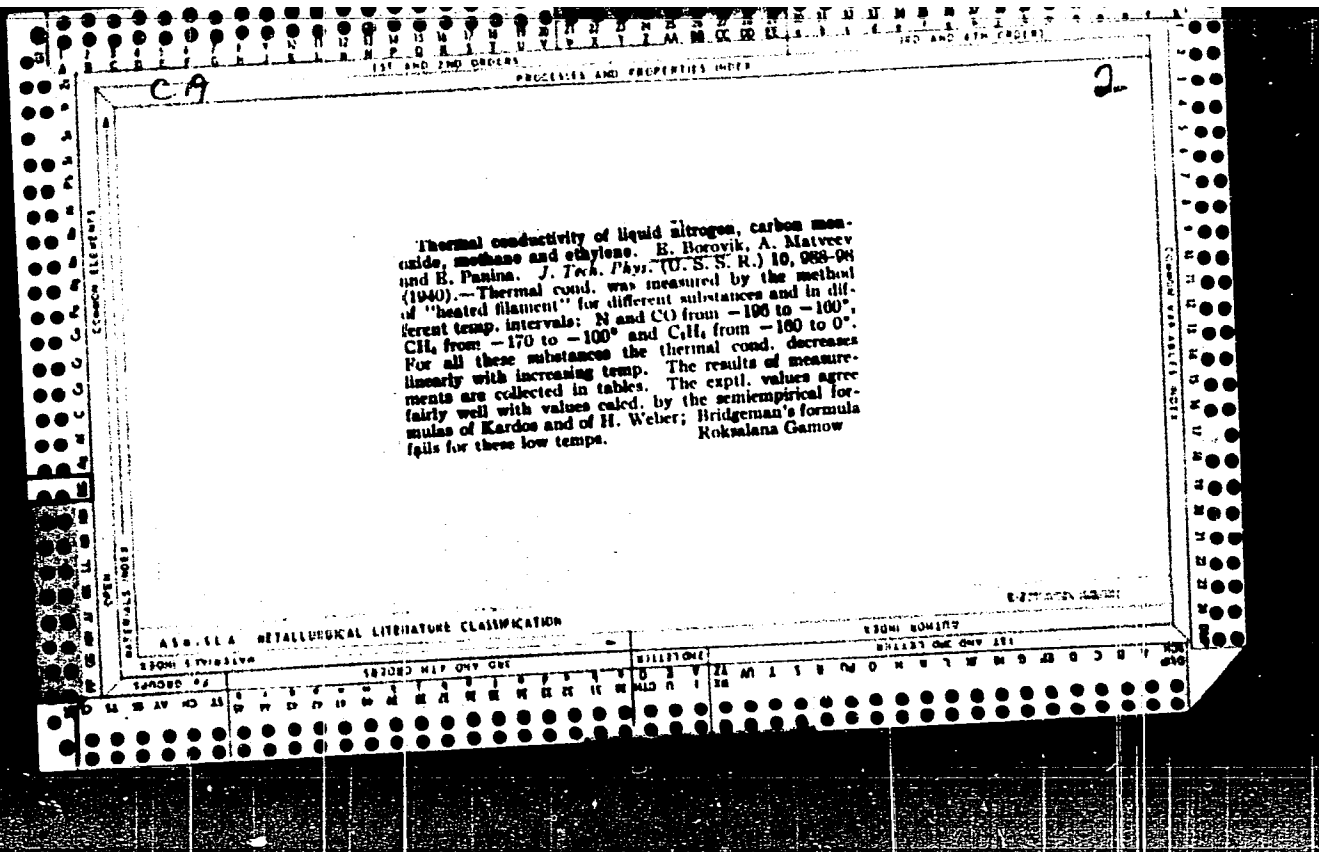
3/3

BOROVIK, Ye.S. [Borovyk, Ye.S.]; MYKHAYLOV, I.F. [Mykhailov, I.F.]; KOSYK, M.A. [Kosyk, M.A.]

Comparison of the efficiencies of various heat exchangers of liquefaction machines. Ukr. fiz. zhur. 9 no.7:759-765 1964.

(MIRA 17:10)

1. Fiziko-tekhnicheskii institut AN UkrSSR, Kiev.



FR 1100

BOROVIK, E.

USSR/Conductivity, Thermal
Nitrogen

Feb 1947

"Thermal Conductivity of Nitrogen," E. Borovik, 7 pp

"Jour Physics USSR" Vol XI, No 2, 328-335

Measurement of the thermal conductivity of nitrogen as a function of temperature and pressure at temperatures ranging from -183° to 102° C and pressures up to a hundred atmospheres. Data presented as isobars and isotherms.

13T82

CA.

Effect of shape on the electrical resistance of single crystals of bismuth in a magnetic field. E. S. Borovik and B. G. Lazarev (Acad. Sci. Ukrain. S.S.R., Kharkov). *Doklady Akad. Nauk S.S.S.R.* **62**, 611-14(1948).—A new method is given for the exptl. detn. of the length of the free path of electrons in Bi by showing the effect of the shape of a sample on the form of the rotation diagram while measuring the resistance in the transverse magnetic field. If the resistance of a sample in the shape of a lamina changes during its rotation about an axis in the direction of the current, the length of the free path of the electrons is equal to its thickness. The effect of the crystallographic anisotropy is excluded by making a monocryst. sample in the shape of a thick rod joined to the lamina. Rotation diagrams for 3 samples differing in orientation and degree of purity show the same effect. As the temp. is lowered, the curves for the rod parts of the samples degenerate to a straight line, owing to the isotropy of the residual resistance. At H temp. there are only traces of crystallographic anisotropy in the curves for the lamina. The min. in the rotation diagram is intensified as the temp. is lowered. The length of the free path is assumed to become equal to the thickness of the lamina at the temp. at which the min. stops changing rapidly. Sample nos., length of free path at the given temp., and length of free path at 0° are: no. 1, 0.1 mm. at 4.2°K., $\sim 10^{-3}$ cm.; no. 2, 0.1 mm. at 20.4°K., $\sim 10^{-3}$ cm.; no. 3, 0.5 mm. at $\sim 8^{\circ}$ K., $\sim 3 \times 10^{-3}$ cm. The

value obtained for sample No. 3, which was refined by β -fold crystn., indicates, possibly, anisotropy of the mean free path in a Bi crystal. The length of the free path could be more precisely detd. by considering the mechanism of the observed effect, but its order of magnitude is correct.

Ellen H. Dunlap

CA

Heat conductivity of carbon dioxide and the relation between heat conductivity and viscosity. E. S. Korovin (Phys. Tech. Inst., Acad. Sci. Ukr. S.S.R., Kiev). *Zhur. Khim. Fiz.* 19, 581-8 (1949).—The data for the heat cond. λ of CO₂ of Sotherby (C.A. 26, 7134) are vitiated by convection effects in the coaxial-cylinder app. The necessary correction can be detd. by the formula of Krausnik (C.A. 26, 2410), with the aid of the product of the Grashof and Prandtl criteria, and by the use of the method of successive approximations for the unknown true λ . The corrected values of λ (in cal. $\times 10^{-6}$ /cm. sec. degree), are, under 50, 60, 70, 80, 90 atm., at 10°, 23.2, 24.2, 24.9, —, —; at 20°, 5.9, 20.1, 21.2, 22.1, 22.8; at 30°, 5.3, 6.5, 6.7, 18.1, 19.0; at 40°, 5.2, 6.0, 7.0, 8.2, 12.2. The max. of the curve of Sotherby disappears altogether. The formula $\lambda = (C_v + \frac{1}{2}R)/M$, relating λ with the viscosity η (C_v = heat capacity at const. vol., M = mol. wt.) holds up to d_c attaining 0.8 of the crit. d_c above the crit. temp., and up to the d_c of the mod. vapor below it, i.e. practically over the whole range of purely gaseous mechanism of the viscosity. The ratio λ/η changes abruptly on passing from the gaseous to the liquid state. N. Thon

BOROVIK, Ye. S.

PA 173197

USSR/Physics - Resistance, Electrical
Magnetic Field
Tin
21 Dec 49

"Measuring the Resistance of Tin and Indium in a Magnetic Field," Ye. S. Borovik

"Dok Ak Nauk SSSR" Vol LXIX, No 6, pp 767-769

Dependence of relative resistance, $\Delta R/R_0$ (0-1.0), of In upon magnetic field, H (0-200 oersteds) at 4.22°K; ΔR is increment in resistance due to magnetic field and R_0 is resistance without the

173197

USSR/Physics - Resistance, Electrical
(Contd)
21 Dec 49

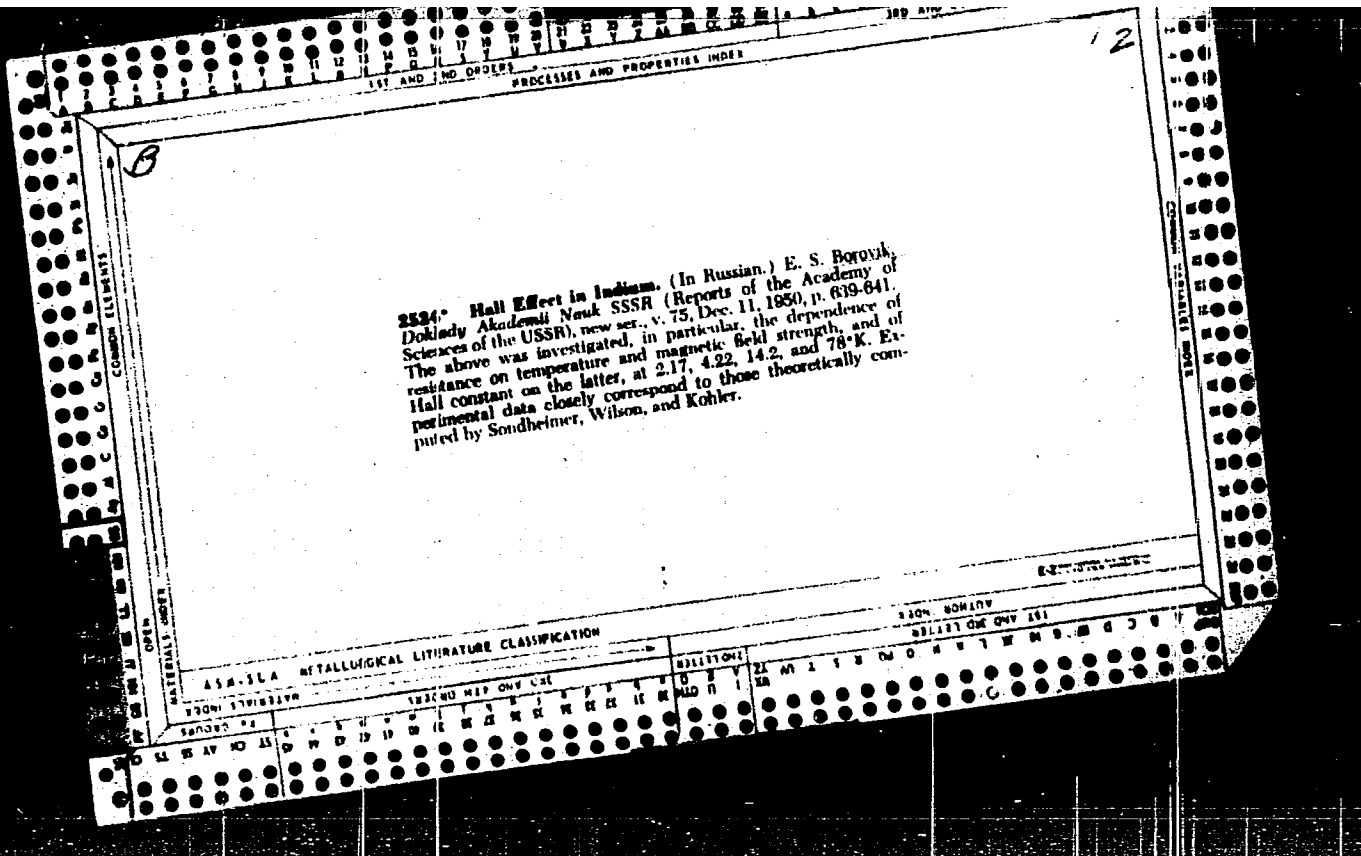
field. Dependence of relative resistance (0-100) in Sn upon angle of rotation (-90-90°) for various fields (15, 300 and 10, 650 oersteds). Submitted 31 Oct 49 by Acad B. I. Vavilov.

173197

M

*Hall Effect for Zinc at Low Temperatures. E. S. Borovik (*Doklady Akad. Nauk S.S.S.R.*, 1950, 79, (4), 601-603; *Physics Abs.*, 1951, 53, 593).—[In Russian]. The Hall and magneto-resistance effects have been studied on a single crystal of zinc, with its hexagonal axis almost \parallel to the current direction, at 78°, 20.4°, and 4.2° K. The ratio of the electric fields \perp and \parallel to the magnetic field H passes through a max. value when H makes the radius of curvature of the electron paths comparable with the mean free path ($\sim 14,000$ gauss at 20.4° and 4000 gauss at 4.2° K.). The max. value is ~ 0.16 at 20.4° and ~ 0.33 at 4.2° K. It is pointed out that similar effects can be traced in previous work on bismuth and cadmium.

Apr. 1971



Borovik

U S S R

The effect of form on the resistance of bismuth
 in a magnetic field. E. S. Borovik and N. G.
 of bismuth. *Zh. Fiz. i Matem. Mekh.* (1951)
 Cazarev. *Zh. Fiz. i Matem. Mekh.* (1951)
 43, 11. The effect of the orientation on the
 resistance of a Bi plate, whose thickness is less than the
 mean free path of the electron, in a magnetic field was
 studied. If the plane of the plate is parallel to the field, its
 resistance is at a min. This method can be used to det.
 the mean free path with precision. J. Royter Leach

BOROVIK, E.S.

Hall effect in beryllium and aluminium at low temperatures. Zh. eksper.
teor. Fiz. 23, No.1, 83-90 '52. (MLRA 5:9)
(PA 56 no.667:4938 '53)

BOROVIK, E.S.

RF-700 (Change of the resistance of metals in a magnetic field at low temperatures)
Изменение сопротивления металлов в магнитном поле при низких температурах.
ZHURNAL EKSPERIMENTAL'NOI I TEORETICHESKOI FIZIKI, 23(1): 91-100, 1952.

BOROVIK, Ye.S., SHUM, L.F.

"Research on Temperature Dependence of the Magnetic Susceptibility of
Alloys of the Lead-Tin Systems. Uch. zap. KhGU, V. 48, Tr. Fiz. otd.,
No. 4, Kh. St. Univ. publication, *1953.*

Temperature dependence of the magnetic susceptibility of alloys of the lead-beryllium system. B. S. Rozovik and L. K. Shumilina. *Uchenye Zapiski Kazanskogo Universiteta. Seriya Fiziko-Matem. Nauki.* 4, 161-3 (1953); *Referat. Zhur., Fiz.* 1955, No. 24979. — The magnetic susceptibility, μ , of Sn, Pb, and 62, 80, and 90% by wt. Pb were used and the measurements were made for the temp. range 20-300°. At room temp. $\mu_{Sn} = +0.081 \times 10^{-3}$ and $\mu_{Pb} = 0.109 \times 10^{-3}$. Values of μ_{alloy} were const. over the entire range of temp. A continuous increase in μ was observed for all of the alloys up to their eutectic temp. Below this temp. the values of μ decrease sharply. For alloys whose Pb content is greater than the eutectic compn. a min. was observed on the μ -temp. curve in the 2-phase region. The form of these curves was explained qualitatively on the basis of the additivity rule for μ of the liquid and solid phase. The relation of μ to the concn. is not linear. J. Rovtar Leach

istr. 4E43/4E2c/4E3d/
4E3c/4E4c

1/1

[Handwritten signature]

7
5

USSR/Physics - Hall effect

FD-149C

Card 1/1 : Pub. 146-13/20

Author : Borovik, Ye. S.

Title : Hall effect and change in resistance of lead, copper and magnesium

Periodical : Zhur. eksp. i teor. fiz., 27, 355-368, Sep 1954

Abstract : Hall effect and change of resistance in a magnetic field of pure semi-crystalline specimens of Pb, Mg and Cu were investigated simultaneously in a temperature range of 2-300°K. Comparison of experimental and theoretical data revealed values of mobilities and concentrations of mobile charges in the studied metals. Comparison between data of free path from various sources with results of investigation of galvanomagnetic phenomena was carried out. Tables and graphs. Thirty-one references including 19 foreign.

Institution : Physicotechnical Institute, Acad Sci Ukrainian SSR

Submitted : November 16, 1953

BOROVIK, E. S.

①

11564* (Anisotropic Hall Effect in Tin.) Anizotropiya
effekta kholla v olovo. E. S. Borovik. Doklady Akademii Nauk
SSSR, v. 65, no. 3, Mar. 21, 1954, p. 485-487.

Measurements at 4.22 K with consideration of potential dif-
ferences, resistance changes, and magnetic field magnitudes.
Graphs. 9 ref.

[Handwritten signature]
10/12/54

BOROVIK, Ye.S.

Anisotropy of the Hall effect in zinc. Dop. AN URSR no. 4: 354-358
'55. (MIRA 9:2)

1. Fiziko-tekhnichnyy institut AN URSR. Predstaviv diysniy chlen
AN URSR B.G. Lisarev.
(Hall effect)

DOKOVITS, E.S.

533 11 822
 Conference on Low-Temperature Magnetism:
 Khar'kov, 1st-3rd July 1954. *Bull. Acad. Sci. USSR Div. Phys. Math. Sci.* July/Aug. 1955, Vol. 19, No. 4, pp. 488-489. In Russian. The issue contains summary reports on the following topics: (1) Anomalous magnetic phenomena and properties of Landau levels in metals. E. S. Doryuk (pp. 423-429). (2) Investigation of Photoacoustic Effect in Cuprous Oxide at Low Temperatures. A. P. Komar, N. B. Ivanov & S. S. Shalyt (pp. 444-449). (3) Electrical Conductivity of Ferromagnetic Metals at Low Temperatures. G. A. Torgov (pp. 474-480).

P/

(14)

(72)

AA 11
 C
 Anomalous phenomena and the properties of elec-
 trons in metals. E. S. Borovik. *Izv. Akad. Nauk S.S.S.R.*
Phys. Ser. 19, 429-437 (1956). The Hall effect and the
 resistance change at low temps. were investigated on 11
 metals, Be, Mg, Zn, Sn, Pb, Al, In, and Cu. In the first 4
 metals (also in Cd, C, and Bi) the ratio R_H/R_0 (R_H , Hall
 effect field; R_0 , elec. field in the direction of the current
 flow) through a max. In the last 3 metals (also in Na)
 R_H/R_0 increases without limitation. In the last metals the
 elec. resistance in a magnetic field is reaching a limit, in the
 first 5, it is unlimited. The change in resistance in single
 crystals of the 1st group depends on the orientation in the
 magnetic field, whereas for In the anisotropy is small. In
 the critical discussion it is suggested that in the metals of the
 1st group the no. of holes is equal to the no. of electrons,
 whereas it is not equal in the metals of the 2nd group. The
 hypothesis is introduced that in the metals of the 1st type
 there are 2 different groups of electrons and 2 groups of
 holes with different effective mass. S. Pakhrin

SP

Inst. Acad. Sci. USSR.

BOROVIK, E. B. (Khar'kov)

"Galvanomagnetic Effect and Properties of Conduction Electrons in Metals," paper presented at the International Conference on Physics of Magnetic Phenomena, Sverdlovsk, USSR, 23-31 May 1956.

BOROVIK, E.S.; BROUDE, V.L.

Conference on low temperature physics. Ukr.fiz.zhur. 1 no.1:
106-108 '56. (MLRA 9:11)
(Low temperature research)

Borevik, Ya.S.
Category : USSR/Electricity - Conductors

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4247

Author : Borevik, Ya.S.

Inst : Physicotechnical Institute, Academy of Sciences Ukrainian SSR.

Title : On the Interrelation Between the Anisotropy of the Hall Effect and the Change of Resistance in a Magnetic Field. I. Investigation of Tin and Indium

Orig Pub : Fiz. metallov i metallovedeniya, 1956, 2, No 1, 33-42

Abstract : In the case of indium, the anisotropy of the Hall effect turned out to be just as negligible as the anisotropy of the variation in the resistance. The same measurements were made on tin (Referat Zh. Fizika, 1956, 20208) as on zinc (Abstract 4246), and similar laws were observed: a complex character of the anisotropy at low temperature, which makes it impossible to restrict oneself to the principal directions of H alone (incidentally, even at 20° K the character of the anisotropy approaches the usual tensor character); a tremendous value of anisotropy (the maximum values exceed the minimum values by tens of times); agreement between the maxima of the Hall fields and the

Card : 1/2

Category : USSR/Electricity .. Conductors

G-4

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4247

"anomalous minima" of resistance as plotted against the angle of rotation; a slowing down in the growth of the resistance with increasing H , when the direction of the latter corresponds to the minimum resistance plotted against the angle of rotation; the Hall field is not perpendicular to H if the latter is not directed along one of the crystallographic axis. The presence of only a single deep minimum of resistance for tin on the rotation diagram makes it possible to use for the calculations a simple model, consisting of an isotropic electron group and an anisotropic one, and analogous two groups of holes with the same concentrations. Such a rough model explains adequately the basic experimental data and gives, in particular, mobility values that lead to the weak anisotropy of the resistance at $H=0$.

Card : 2/2

✓ The interrelation between the anisotropy of the Hall ef-
fect and the change of the resistance of metals. I. The
investigation of zinc. E. S. Burdovik. *Soviet Phys. JETP*
3, 283-51 (1956) (English translation). — *See C.A.* 50, 14284a.
B. M. R.

Phys 1

Borovik, Ye. S.

Category : USSR/Electricity -- Conductors

G-4

Abstr Jour : Ref Zhur - Fizika, No 2, 1957, No 4246

Author : Borovik, Ye.S.
Inst : Physicotechnical Institute, Academy of Sciences Ukrainian SSR
Title : On the Interrelation Between the Anisotropy of the Hall Effect and the Change of Resistance of Metals in a Magnetic Field I. Investigation of Zinc.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 2, 262-271

Abstract : A cylindrical specimen of zinc, the axis of which was parallel to one of the binary crystallographic axis, was used to measure the resistance and the Hall fields as functions of the direction (angle ψ with the hexagonal axis) and of the magnitude of the magnetic field H (up to 25,000 oersted) at 4 and 20° K (a brief report on part of the results reported is contained in Referat Zh. Fizika, 1956, 20208). It is shown that at low temperatures it is impossible to determine the magnitude of the Hall field (or of the resistance) for arbitrary direction of H from its value for the directions of H along the crystallographic axis.

Card : 1/2

Category : USSR/Electricity - Conductors

G-4

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4246

It was established that the deep and narrow "anomalous minima" of the resistance plotted against the angle of rotation ($\psi = 0^\circ$ and 90°) correspond to maxima of the Hall field; a qualitative explanation for this variation is given: a sharp reduction in the effective mass should occur in directions perpendicular to the planes of the polyhedron bounding the first Brillouin zone, provided these planes intersect the Fermi surface; in the presence of several groups of electrons and holes, the positions of the extrema become shifted and may depend on H.

Card : 2/2

~~BOROVIK, Ye.S.; LAZARYEV, B.G.; TSIN, N.M.~~

Oil decomposition in diffusion pumps. Ukr.fiz.shur. 2 no.1:
78-86 Ja-Mr '57. (MLRA 10:5)

1. Fiziko-tekhnichnyy institut AN URSR.
(Vacuum pumps)

~~SECRET~~
BOROVIK, Ye.S.; LAZARYEV, M.F.; FEDOROVA, M.F.; TSIN, N.M.

Improvement of diffusion pump properties by employing liquid
nitrogen cooled traps. Ukr.fiz.shur. 2 no.1:87-94 Ja-Mr '57.
(MLRA 10:5)

1. Fiziko-tekhnichnyi institut AN URSR.
(Vacuum pumps)

4. Hydrogen condensation pump. B. G. Lashin, R. S. Borik, M. P. Fedorova, and N. M. Tsan. *Ukrain. Fiz. Zh.* 7, 176 (1957) (Russian summary). The fact is applied that gases at 20.4° K. have a rather low vapor pressure, thus e.g. N₂ will show an equilibrium pressure of about 10⁻² mm. Hg. A high vacuum of 10⁻³-10⁻⁴ mm. Hg can be obtained by pumping gases over a surface cooled with liquid H₂, where the condensation rate is high. Two types of pumps were investigated; one has a pumping rate of 15,000 l./sec. with the pumping element inserted into the evacuated space and the other has a pumping rate of about 4000 l./sec.; it was inserted in the vacuum line between the space to be evacuated and the ordinary diffusion pump. Both pumps can be used with the equipment usually employed, e.g. steel vacuum lines and vessels, rubber-gasketed flanges, and metal vacuum valves. Werner Jacobson

Fiziko-tekhnicheskii institut Akademii nauk URSR.

AUTHORS: Borovik, Ye. S. and Volotskaya, V. G. SOV/126-6-1-7/33

TITLE: Galvanomagnetic Effects in Pt at Low Temperatures
(Gal'vanomagnitnyye yavleniya v Pt pri nizkikh temperaturakh)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, No 1, pp 60-66 (USSR)

ABSTRACT: The paper deals with some experimental results on the resistance and Hall effect in Pt at 4.2 - 20°K and fields up to 27 000 Oe. Pt strip produced from wire by rolling, 1.1 mm wide and 0.08 mm thick, 5.3 mm long was used, after boiling in nitric acid and annealing in vacuo at about 10^{-8} mm Hg at up to 1500°C for an hour, followed by slow cooling to 500°C. The resistance results (at zero field) are compared with theory and the results of others; certain discrepancies are revealed, but the discussion of these does not, however, form an important part of the paper, most of which is devoted to the magneto-resistance and Hall effect results given in Figs. 2-4. The various groups of carriers are discussed in some detail (Table 2); the effective mass is shown to be less than the value

Card 1/2

Galvanomagnetic Effects in Pt at Low Temperatures SOV/126-6-1-7/33

commonly assumed (8 instead of 22); the electronic structure is also more complex. No essential difference from non-transition metals is found in the galvanomagnetic effects, but the electron mobility is much lower.

There are 5 figures, 2 tables and 13 references, 8 of which are Soviet, 3 German, 2 English.

ASSOCIATION: Fiziko-tehnicheskiy institut AN SSSR
(Institute for Physics and Technology, Ac. Sc., USSR)

Card 2/2

1. Platinum--Electrical properties 2. Platinum--Magnetic properties
3. Platinum--Temperature factors

SOV/57-28-9-17/33

AUTHORS: Borovik, Ye. S., Batrakov, B. P.

TITLE: Breakdown Investigations in Vacuum (Issledovaniye proboya v vakuume)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Vol 28, Nr 9, pp. 1971 - 1980 (USSR)

ABSTRACT: The investigation of two problems is the subject of this paper: The magnitude of surface strength of isolators in vacuo and the breakdown between metallic electrodes in vacuo. As the work reported in this paper was concluded in 1954, no use could be made of the information found in references 4 and 5. The vacuum plant was equipped with a hydrogen condensation pump, which operates on the following principle: The gases are liquefied at the surface of liquid hydrogen and then are drawn off. This pump was described in reference 6. This is a description of the plant used in the breakdown experiments. The following experimental evidence is presented: 1) When the vacuum surface strength of insulators is investigated, it appears that the breakdown proceeds along narrow channels on the surface of the insulator. Ribbed

Card 1/3

Breakdown Investigations in Vacuum

SOV/57-23-9-17/33

insulators do not exhibit a greater strength. Plexiglass and vinyplast were found to have the highest strength among the insulators investigated. 2) As regards the second problem it was found that long before the actual breakdown between metallic electrodes in vacuum a current between the electrodes is generated. It is mainly an electron current which causes the destruction of the anode. 3) The electric strength is not increased by a better de-gassing of the electrodes. 4) Also, varying the pressure in the range 10^{-6} to 10^{-8} mm. Hg. has no effect either

on the breakdown along insulators or on the breakdown between metallic electrodes. There are 7 figures, 4 tables, and 10 references, 5 of which are Soviet.

ASSOCIATION: Khar'kovskiy fiziko-tehnicheskij institut AN USSR (Khar'kov Physical-Technical Institute, AS UkrSSR)

SUBMITTED: November 28, 1957
Card 2/3

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, p 131 (USSR) SOV/58-59-5-10825

AUTHORS: Borovik, Ye.S., Boyarksiy, L.A.

TITLE: Study of Ferromagnetic Resonance in Mass-Radiator Waves

PERIODICAL: Uch. zap. Khar'kovsk. un-t, 1958, Vol 98, Tr. Fiz. otd. fiz.-matem. fak., Vol 7, pp 203 - 207

ABSTRACT: Using the mass radiator method, the authors studied ferromagnetic resonance in nickel and superalloy in the 1 - 3 cm wavelength region. To extend the measurement region they made use of the phenomenon of the electromagnetic wave absorption minimum. The region of the possible observation of the minimum (the "antiresonance point") was determined by means of calculations.

The authors' résumé



Card 1/1

BOUVAIT, E.S.

Tabelle 1. Vergleichende Werte für einige industrielle Verfahren zur Wasserverdampfung

Beispiele	Verdampfungsleistung (t/h)	Verdampfungsleistung (t/h) bei 100°C	Verdampfungsleistung (t/h) bei 120°C	Verdampfungsleistung (t/h) bei 140°C
1. Dampfer	1000	1000	1000	1000
2. Dampfer	200	200	200	200
3. Dampfer	100	100	100	100
4. Dampfer	50	50	50	50
5. Dampfer	25	25	25	25

zuerst geprüft werden. Es besteht aber die Gefahr der Abnahme, falls die Wirkleistung über die Zeit abnimmt. Die Wasserverdampfung ist eine sehr wichtige Aufgabe in der Industrie. Die Wasserverdampfung ist eine sehr wichtige Aufgabe in der Industrie. Die Wasserverdampfung ist eine sehr wichtige Aufgabe in der Industrie.

- (1) R. F. Stewart, Introduction to Nuclear Engineering, 2nd ed., McGraw-Hill, New York, 1964.
- (2) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (3) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (4) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (5) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (6) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (7) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (8) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (9) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (10) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (11) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (12) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (13) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (14) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (15) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (16) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (17) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (18) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (19) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.
- (20) R. F. Stewart, J. Phys. Chem. Educ. Progr., 46 (1964), 8.

Eine Wasserdampfkondensationspumpe mit eingebauten Verdichtern

R. B. BOUVAIT, B. G. LASSER, I. F. MICHALSKI

Die Wasserdampfkondensationspumpe ist eine wichtige Komponente in der Industrie. Sie wird verwendet, um Wasserdampf zu kondensieren und die resultierende Flüssigkeit zu pumpen. Die Wasserdampfkondensationspumpe ist eine wichtige Komponente in der Industrie. Sie wird verwendet, um Wasserdampf zu kondensieren und die resultierende Flüssigkeit zu pumpen.

Die Wasserdampfkondensationspumpe ist eine wichtige Komponente in der Industrie. Sie wird verwendet, um Wasserdampf zu kondensieren und die resultierende Flüssigkeit zu pumpen. Die Wasserdampfkondensationspumpe ist eine wichtige Komponente in der Industrie. Sie wird verwendet, um Wasserdampf zu kondensieren und die resultierende Flüssigkeit zu pumpen.

Die Wasserdampfkondensationspumpe ist eine wichtige Komponente in der Industrie. Sie wird verwendet, um Wasserdampf zu kondensieren und die resultierende Flüssigkeit zu pumpen. Die Wasserdampfkondensationspumpe ist eine wichtige Komponente in der Industrie. Sie wird verwendet, um Wasserdampf zu kondensieren und die resultierende Flüssigkeit zu pumpen.

24(0)

AUTHORS:

SOV/89-7-2-3/24
Borovik, Ye. S., Lazarev, B. G., Mikhaylov, I. F.

TITLE:

A Hydrogen Condensation Pump With a Built-in Liquifier (Vodorodnyy kondensatsionnyy nasos s avtonomnym ozhizhitelem)

PERIODICAL:

Atomnaya energiya, 1959, Vol 7, Nr 2, pp 117 - 121 (USSR)

ABSTRACT:

Most drawbacks of the pump described in reference 1 are eliminated in the newly developed pump by the fact that the hydrogen is liquified directly in the pump. Two sectional views show the components and the construction of the pump as well as give, to a certain extent, description of the components and their functions. The liquifier is in connection with the compressor ($10 \text{ m}^3/\text{h}$), but can also be attached to a $17 \text{ m}^3/\text{h}$ compressor because it has sufficient cooling surface. The operational capacity of the pump was tested with an iron container of $\sim 1.5 \text{ m}^3$ content. As the container had a number of flanges and threaded pipe connections, special inside cleaning was impossible and due to this fact a vacuum of only $5 \cdot 10^{-8} \text{ mm Hg}$ was achieved. The suction rate of the pump was experimentally determined to be $37 \cdot 10^3 \text{ l/sec}$ in the $10^{-7} - 10^{-5}$ pressure range, and it was also established

Card 1/3

A Hydrogen Condensation Pump With a Built-in Liquifier SOV/89-7-2-3/24

that this rate was independent of the pressure. A separate test established that the pump functions even if there is a considerable formation of gas in the vessel to be evacuated and if there is a considerable amount of dirt on the cooling surface. By inserting a water cooled shutter between the recipient and the pump the suction rate was decreased to $17 \cdot 10^3$ l/sec and even under these conditions at the evaporation of iron for example, a vacuum of $1 - 1.5 \cdot 10^{-6}$ mm Hg was achieved. There are diagrams showing the dependency of hydrogen consumption in case of strong secondary gas formation and the dependency of the liquifier's capacity on the pressure and the thermal stress respectively. The maximum capacity of the liquifier is ~ 4 l of liquid hydrogen/h at 60 atm. Calculating this data for a $10 \text{ m}^3/\text{h}$ -compressor, it means 2.5 lit/h. The maximum evaporation of the whole installation is $\sim 21/\text{h}$. The aggregates of the pump consume ~ 13 kw at a pumping efficiency of $37 \cdot 10^3$ l/sec, including the electric energy needed for liquifying the nitrogen in the liquifier. When the energy consumed for producing the nitrogen needed for cooling the main cock is also considered, the total consumption is ~ 17 kw. An oil diffusion pump of the same capacity has a higher energy consumption. B. P. Batrakov and V. I. Sharonov

Card 2/3

A Hydrogen Condensation Pump With a Built-in Liquifier SOV/89-7-2-3/24
participated in carrying out the measurements. There are 6
figures and 2 Soviet references.

SUBMITTED: February 13, 1959

Card 3/3

SOV/56-36-6-5/66

24(3)
AUTHORS:

Borovik, Ye. S., Volotskaya, V. G.

TITLE:

Investigation of Galvanomagnetic Phenomena in Chromium at Low Temperatures (Issledovaniye gal'vanomagnitnykh yavleniy v khrome pri nizkikh temperaturakh)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 6, pp 1650 - 1655 (USSR)

ABSTRACT:

Galvanomagnetic phenomena in transition metals have hitherto not been investigated to any considerable extent within the range of strong fields, i.e. in the case of a considerable increase of resistance in the magnetic field. The variation of resistance in molybdenum and tungsten (Refs 1,2) as well as in platinum, and the Hall effect in platinum (Ref 3) has already been investigated. In the present paper the authors deal with investigations of the Hall effect and the variation of resistance in chromium in magnetic fields of up to 27000 Oe within the temperature range of from 4.2 - 78°K, as well as with some earlier investigations of zirconium. The samples were obtained by means of vacuum distillation and were needle-shaped (diameter 0.35 mm, length 8 mm). Measurements of the temperature dependence

card 1/3

Investigation of Galvanomagnetic Phenomena in
Chromium at Low Temperatures

SOV/56-36-6-5/66

of the resistance of these samples (without field) are given by table 1. In the course of investigations of galvanometric properties, the direction of current coincided with the longitudinal axis of the sample, and the magnetic field was perpendicular to it. The anisotropy of resistance variation in the magnetic field amounted to 4% as a maximum. The diagram in figure 1 shows the course of the resistance variation in the magnetic field; at helium temperatures the resistance shows a practically linear increase with growing field strength. Within the range of 10 to 27 kOe the resistance increases to about three times its amount. Figure 2 shows the dependence of the Hall constant R on H at 78° (very slight, practically linear decrease with increasing H) and at 4.2° (exponential decrease to about 5 kOe, and then linear decrease to 27 kOe). The nearly field-independent value at nitrogen temperature ($R = 3.4 \cdot 10^{-3}$ CGSU) differs only little from the value at room temperature (3.6). In the following the results obtained are discussed and partly compared with those obtained for platinum. For the purpose of explaining experimental results, a model is chosen which is characterized by four groups of mobile charges: 2 groups of

Card 2/3

Investigation of Galvanomagnetic Phenomena in
Chromium at Low Temperatures

SOV/56-36-6-5/66

electrons with the concentrations n_2 and n_4 , and 2 groups of holes with the concentrations n_1 and n_3 . By means of this theory, the mobilities and concentrations of electrons are calculated on the basis of measurement data (Table 2). The theoretical and experimental values (Hall field and resistance variation with H) are compared (Fig 4); agreement is found to be good. Further numerical data for Cr, Pt, and Zn are given in table 3 for $T = 4.22^\circ\text{K}$ and $T = 0$. In the case of chromium (as well as in that of platinum) no direct influence of magnetization could be found. According to reference 9, chromium would go over into the antiferromagnetic state at $T < 475^\circ\text{K}$, which would, however, cause the occurrence of an anomaly in weak fields, which could not be experimentally determined. The authors thank B. G. Lazarev for his interest in this investigation. There are 4 figures, 3 tables, and 9 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR
(Physico-technical Institute of the Academy of Sciences, Ukrainskaya SSR)

SUBMITTED: December 22, 1958
Card 3/3

BOROVIK, Yevgeniy Stanislavovich; MIL'NER, Abram Solomonovich; PINES,
B.Ya., prof., otv.red.; VAYNBERG, D.A., red.; TROPIMENKO, A.S.,
tekhred.

[Lectures on ferromagnetism] Lektsii po ferromagnetizmu.
Khar'kov, Izd-vo Khar'kovskogo gos.univ., 1960. 234 p.
(MIRA 13:11)

(Ferromagnetism)

5.1600 5.1330
5.1400
5.1180

69091

S/120/60/000/01/035/051

E032/E314

AUTHORS: Borovik, Ye.S., Grishin, S.F. and Lazarev, B.G.

TITLE: On the Ultimate Vacuum of Condensation Pumps 1

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 1,
pp 115 - 118 (USSR)

ABSTRACT: The present paper is concerned with the determination of the ultimate vacuum of a hydrogen condensation pump and the possibility of using liquid helium to improve this ultimate vacuum. Since it was expected that in order to achieve the ultimate vacuum it is essential to exclude the penetration into the vacuum chamber of the oil diffusion pump vapour, a special apparatus was built in which all possible steps were taken to minimise this effect. A schematic drawing of the apparatus employed is shown in Figure 1. The apparatus was placed in a 40-litre vessel 1. The vessel was evacuated by the oil diffusion pump 2. The system was isolated from the oil-diffusion pump by the liquid nitrogen cooled vapour trap 3. On the low vacuum side, the oil-diffusion pump was evacuated by a two-stage mercury-diffusion pump incorporating a liquid nitrogen trap.

Card1/4

4

69091

S/120/60/000/01/035/051

EO32/E314

On the Ultimate Vacuum of Condensation Pumps

The polished copper screen 5, which was in the form of a cylinder and surrounded the working region, was also nitrogen-cooled with the aid of the dewar 6. In addition, there was a liquid nitrogen cooled venetian-blind type trap 7. Inside the screen 5 there was a polished cylindrical screen 8, made of copper with a liquid-hydrogen filled sphere 9 attached to it. The screen 8 and the sphere 9 form a fast condensation pump. The space inside the screen 8 was thus surrounded by walls cooled down to liquid-hydrogen temperatures and the rate of pumping for nitrogen within this space was 30 000 litres/sec. The sphere 10 inside the screen had a diameter of 155 m and could be filled with liquid hydrogen or liquid helium. The calculated pumping speed for nitrogen by the sphere 10 was 8 000 litres/sec. The space inside the screen 8 was thus isolated from the remaining part of the apparatus except for apertures whose total areas was about 10 cm². The rate of leakage of air through these

Card2/4

69091

S/120/60/000/01/035/051

E032/E314

On the Ultimate Vacuum of Condensation Pumps

apertures was less than 100 litres/sec and hence the region inside the screen 8 could be looked upon as corresponding to the ultimate vacuum of the condensation pumps, provided the pressure outside this region was about 10^{-8} mm Hg. Two manometers were employed, namely 12 and 13. In order to reduce the evaporation of helium between the manometer 13 and the sphere 10, provision was made for a narrow copper screen 14. The low pressures were measured with standard ionization manometers, type LM2. These manometers can measure pressures down to 5×10^{-9} mm Hg. An Alpert gauge (Ref 3) was used to measure the very low pressures. It was found that a vacuum of 10^{-10} mm Hg could be obtained in all experiments with liquid-hydrogen filled condensation pumps. The lowest pressure (1.2×10^{-10}) was achieved after a 10-day pumping with liquid nitrogen in all the traps. A pressure of 1.2×10^{-11} mm Hg was obtained when liquid

Card3/4

✓

69091

S/120/60/000/01/035/051

EQ32/E314

On the Ultimate Vacuum of Condensation Pumps

helium was employed as the cooling agent.

There are 1 figure and 4 references, 3 of which are Soviet and 1 is English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-engineering Institute of the Ac.Sc., Ukrainian SSR)

SUBMITTED: January 19, 1959

Card 4/4

68480

S/126/60/009/01/007/031

E021/E191

24.7900

AUTHORS: Borovik, Ye.S., and Mamaluy, Yu.A.

TITLE: The Temperature Dependence of the Magnetic Susceptibility of Barium Ferrite

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 1, pp 36-40 (USSR)

ABSTRACT: Samples were prepared from powders of $BaCO_3$ and Fe_2O_3 to give stoichiometric $BaO \cdot 6Fe_2O_3$. The moist powders were mixed for three hours, dried at 1000 °C for five hours, pressed and sintered at 1200 °C for one hour. Measurements of the magnetisation were carried out by a ballistic method using Belov's apparatus (Fig 1). Results of measurements above the Curie point (450 °C) are given in Fig 2. Some previous results (Ref 2) are also shown. All the points from both investigations lie on the same curve. The curve obtained agrees with Neel's theory for paramagnetic susceptibility to a temperature of 469 °C. Results obtained at temperatures below the Curie point are given in Fig 3. The Hopkinson effect (an increase in initial susceptibility near the Curie point) is absent with magnetisation of less than 1% of I_s .

Card
1/2

68480

S/126/60/009/01/007/031
E021/E191

The Temperature Dependence of the Magnetic Susceptibility of
Barium Ferrite

Card
2/2

The theoretical equation for initial susceptibility is given (Eq 3). The calculated result is 0.012 and the experimental result 0.04. In spite of this deviation it is considered that magnetisation takes place in the main by processes of rotation. X

There are 4 figures and 9 references, of which 6 are Soviet and 3 English.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet imeni
A.M. Gor'kogo
(Khar'kov State University imeni A.M. Gor'kiy)

SUBMITTED: June 16, 1959

80881

S/126/60/009/06/005/025

EQ73/E335

24.2200
AUTHORS: Borovik, Ye.S. and Mamaluy, Yu.A.
TITLE: Temperature Dependence of the Magnetisation of Hexagonal Ferrites in Weak Fields

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 6, pp 828 - 831 (USSR)

ABSTRACT: In an earlier paper (Ref 1) the authors described the results of investigations of the temperature dependence of the susceptibility of barium ferrite in weak fields below the Curie point. A feature of the dependence $I = f(T)$ for barium ferrite is the absence of an increase in the initial susceptibility on approaching the Curie point (Hopkinson effect). Therefore, the authors consider it of interest to elucidate whether this feature is restricted to barium ferrite or whether it is also a property of other rigid ferrites. Furthermore, the investigations on barium ferrite were continued in weaker fields than was done in the earlier work (Ref 1).
The magnetisation of the specimen was measured by means of a ballistic method in the same way as in the earlier work. The temperature dependence of the magnetisation was studied in ferrites of barium, strontium and

Card1/3

80881

S/126/60/009/06/OC5/025

E073/E335

Temperature Dependence of the Magnetisation of Hexagonal Ferrites
in Weak Fields

lead. Except for some changes in the temperature regime for the lead and strontium ferrites, the specimens were produced by the same methods which were used earlier. The measured results show that the investigated ferrites do not possess any Hopkinson effect. In addition to the ordinary Hopkinson effect, maximum susceptibility was observed for cobalt in the range in which there is a change in the sign of the anisotropy constant. It is pointed out that this character of the changes in I_s/K

values for barium ferrite is caused not so much by the changes in $I_s/K = f(T)$ curve but by the fact that the saturation magnetisation decreases to a considerable extent even at temperatures differing greatly from that of the Curie point. In the case of soft (cubic) ferrites, which show a Hopkinson effect, a rapid drop in the saturation magnetisation begins at relatively higher temperatures than it does for barium ferrites. ✓

Card 2/3

80881

S/126/60/009/06/005/025

E073/E335

Temperature Dependence of the Magnetisation of Hexagonal Ferrites
in Weak Fields

There are 5 figures and 9 references, 2 of which are
Soviet, 1 Japanese (in English) and 6 English.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im.
A.M. Gor'kogo (Khar'kov State University im. A.M. Gor'kiy)

SUBMITTED: January 18, 1960

Card 3/3

816822

S/057/60/030/05/11/014
B012/B056

5.4210
AUTHORS: Borovik, Ye. S., Grishin, S. F., Grishina, Ye. Ya.
TITLE: Elasticity of Nitrogen¹ and Hydrogen¹ Vapors at Low Pressures²
PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 5,
pp. 539 - 545

TEXT: For the purpose of determining the elasticity of nitrogen- and hydrogen vapor at low pressures, a method of direct pressure measurement of the saturating vapors was here applied. This method consisted in the following: The gas under investigation is condensed in a high vacuum on a cooled surface; after the end of condensation and after a certain period of waiting for the establishment of equilibrium in the free volume, such a pressure is adjusted on the surface, at which the rate of condensation is equal to the rate of evaporation in the substance under investigation. Fig. 1 shows the scheme of the device used, which is also described. Pressure- and temperature measurement as well as determination of the elasticity of the hydrogen- and nitrogen vapors are described. Figs. 2 and 3 give the measurement results, and Tables 1 and 2 show the

Card 1/2

81682

Elasticity of Nitrogen- and Hydrogen Vapors at Low S/057/60/030/05/11/014
Pressures B012/B056

dependence of the elasticity of the vapors on temperature. - It is shown that the hydrogen final vacuum may be increased in a helium condensation pump by pumping out the vapors above the liquid helium and reducing the temperature of the pump-surface. Table 3 shows the possibility of improving the final vacuum in this manner. In conclusion it is shown that the method described makes it possible, for the purpose of measuring vapor elasticity at low pressures, to measure vapor pressures up to 10^{-9} - 10^{-10} torr. Measurement of the dependence of the elasticity of hydrogen vapors on temperature was carried out within the range of $1 \cdot 10^{-9}$ - $1.8 \cdot 10^{-6}$ torr, and that of the nitrogen vapors was carried out within the range of $1.1 \cdot 10^{-10}$ - $3.2 \cdot 10^{-7}$ torr. There are 3 figures, 3 tables, and 8 references: 3 Soviet, 4 English, and 1 German.

ASSOCIATION: Fiziko-tehnicheskly institut AN USSR Khar'kov (Institute
of Physics and Technology of the AS UkrSSR, Khar'kov)

SUBMITTED: August 11, 1959

Card 2/2

20387

S/184/61/000/001/001/014

A104/A029

11.3110
11.1220

AUTHORS: Borovik, Ye.S., Professor, Doctor of Physics and Mathematics
Mikhaylov, I.F., Engineer

TITLE: Automated Hydrogen Liquefaction Cycle Without Gas-Holder

PERIODICAL: Khimicheskoye Mashinestroyeniye, 1961, No. 1, pp. 1-2

TEXT: The increased use of liquid hydrogen and other liquid gases for cooling large machinery (Refs 1-4) is discussed. In order to simplify the complicated maintenance of gas-holders, a closed cycle liquefaction device without gas-holder and with automatic pressure adjustment of the circulating gas was developed (Fig 1). The cycle was used to supply the hydrogen liquefier of a condensation pump at a rate of $4 \cdot 10^4$ l/sec (Ref 2). The limit amount of liquid hydrogen is determined by the position of the hydrogen outlet tube in the liquefier collector. Liquid hydrogen collects up to a certain level, above which it is carried away by the outgoing gas. Finally, the entire amount of gas can be pumped into cylinders through a filter (7) and a valve (8). Both automatic valves (6) and (11) are pneumatic; their performance is based on the deflection of the membrane caused by varying pressures. The constant counterpressure
Card 1/1

20387

S/184/61/000/001/001/014
A104/A029

Automated Hydrogen Liquefaction Cycle Without Gas-Holder

of valve (11) is insured by gas contained in the ballast container (9) and of the valve (6) by atmospheric pressure. Fig 2 shows the design of the ultimate pressure valve; its body consists of two parts (1) and (5) divided by a 20 mm diameter rubber membrane (2). The valve ensures the upper pressure limit to an accuracy of 1 atm at a 200-atm maximum pressure. Rubber membranes of 1 mm thickness withstand pressure drops of 300 atm. Fig 3 shows the design of the automatic gas supply valve consisting of a short cylinder (1), the ends of which are covered by two rubber diaphragms (2). The operating diameter of the diaphragms is 105 mm and the valve maintains a constant pressure to an accuracy of 0,002 atm. High accuracy is essential in order to prevent air intake through the pumping line of the compressor. A two-stage $\text{KB}\Delta$ (KVD) air compressor of 10 m³/h capacity per operating pressure of 60 atm was used. High compression in the cylinder leads to intensified decomposition of lubricants, which necessitates careful purification of high-pressure hydrogen before entering the liquefier. Purification with the help of an adsorption filter and a freezer ensures continuous operation of the liquefier for six

Card 2/6

S/184/61/000/001/001/014
A104/A029

Automated Hydrogen Liquefaction Cycle Without Gas-Holder

months. Analysis of the operating gas after six months showed that the content of oxygen does not exceed 0,050%, which freezes quickly. The freezer is a counter-flow heat exchanger with its lower part immersed in liquid nitrogen. The consumption of nitrogen for one compressor is 0.5 - 0.8 liter per minute. One compressor is sufficient in continuous operation, whereas two must be switched on prior to attaining the normal operation rate. During operation with two KVD compressors liquid hydrogen begins collecting after two hours. In steady conditions the throttle valve required no regulation. The liquefaction cycle of the installation consists of: two KVD compressors, two 40-liter containers, one of them filled with hydrogen; a BH-2 (VN-2) forepump for pumping out nitrogen; and purification devices as described above. The installation requires a working area of 1.5 - 2 m². There are 3 figures and 4 references: 2 Soviet, 2 English.

Card 3/6

21544

21.4230 21.1200
21.4240

S/057/61/031/004/010/018
B125/B202

AUTHORS: Borovik, Ya. S., Busol, F. I., and Grishin, S. F.

TITLE: Study of the possibility of producing steady magnetic fields in liquid hydrogen-cooled coils

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 4, 1961, 459-466

TEXT: The authors attempted to determine the maximum admissible thermal stress as well as to find rational constructions of the coils and of methods for their cooling. Furthermore, they demonstrate that a large amount of energy can be saved by cooling the coils used for the production of magnetic fields. This, however, is only possible with $A/Q < R_{300}/R_T$.

In this case, A denotes the energy to be consumed for cooling, Q - the Joulean heat liberated in the coil, R_{300} the resistance at room temperature, and R_T the resistance at the very low operational temperature of the coil.

By saving part of the energy consumed in the production of the magnetic field the realization of a thermonuclear reaction with usable energy yield

Card 1/05

2154a

S/057/51/031/004/010/018
B125/B202

Study of the possibility of ...

can be rendered more easy. According to the authors, at present only liquid hydrogen is suited for cooling the coils. Metals of the first group Cu, Ag, Au in which only the electrical resistance decreases linearly with the field strength as well as alkali metals, indium, and aluminum are suited. Cu and Al proved to be most suited for practical purposes. The energy consumed in the production of the magnetic field can be reduced by about one fifth by using high-purity commercial aluminum. By improving the cooling machines and increasing the purity of the metal this ratio can be improved. The experiments were made with apparatus I and II (see Figs. 1, 2) with artificial flows of liquid hydrogen in apparatus I also with natural convection of hydrogen. If the critical stress is exceeded the resistance of the coil rapidly increases as a result of its heating. The solenoid of the first kind (SI) consisting of 18 double wire disks had 2520 windings. The solenoid of the second kind (SII) consisted of 48 double wire disks with altogether 5760 windings. Fig. 2 shows the scheme of apparatus II. After a previous cooling of the balloon and the coil to the boiling temperature of liquid nitrogen, about 15 to 20 l of liquid hydrogen are pressed into balloon 4, and 5 to 7 l into balloon 5. Balloon 4 is separated from the gas holder by a valve

Card 2/9

21544

S/057/61/031/004/010/018
B125/B202

Study of the possibility of ...

and the necessary pressure of the hydrogen vapors is produced by means of the heater 12. At a given instant valve 10 is opened and the current passing through the coil is switched on. A maximum current of 50 a passed through the coils. Results of experiments: Fig. 3 shows typical oscillograms for the amperage and the voltage in coil CIII. The initial "flash-up" of the voltage and the relatively slow increase of the amperage (~ 1.5 sec) are due to the inductivity of the coil. Figs. 4 and 5 show the time dependence of the magnetic field strength for the coils CII and CIII in the experiments with circulating hydrogen at different thermal stresses. A field strength of 43,000 oersteds was attained in the center of the coil with supercritical operation for a duration of time τ of the order of magnitude of one second; if the field strength was reduced to 36,000 oersteds, τ was 3 sec and 34,000 oersteds could be maintained for ~ 10 sec. On further reduction of the field strength by some percents, a steady state was observed. In coil CIII the maximum attainable field strength of 24,000 oersteds could be maintained for ~ 1 to 2 sec; 19,500 oersteds could be maintained for 10 sec, and 16,000 oersteds for an infinitely long period. In this case $q_{cr} = 0.24 \text{ watt/cm}^2$. With natural

Card 3/9

22544

Study of the possibility of ...

S/057/61/031/004/010/018
B125/B202

convection, the critical thermal stresses and the corresponding maximum field strengths are essentially lower. Thus, in coil CII a delay time of ~ 1 sec corresponds to a field strength of 31,000 oersteds, and $\tau \sim 10$ sec corresponds to 26,000 oersteds. In the hydrogen flow the thermal loads are independent of distribution which is not the case for natural convection. The main results of the experiments are shown in Table 2; they correspond to a pressure gradient of from 0.4 to 0.5 atmospheres. The thermal stresses in natural convection are about twice as low as in hydrogen flows under pressure. In all coils the critical thermal loads were considerably lower than in the preliminary experiments with one single slit. Besides, the values of q are gradually reduced when instead of coil CI, coils CII and CIII are used. The Reynolds numbers for CI, CII, CIII are 3500, 1000, and 500, respectively. These diverging experimental results are probably not due to the different construction of the coils but to the different conditions of circulation of hydrogen. With high-purity commercial aluminum, field strengths of up to 100,000 oersteds can be attained with coils of ~ 1 m. The liquid hydrogen necessary for such a solenoid cannot be provided for even by the most up-to-date methods of liquefaction.

Card 4/9

S/057/61/051/004/010/018
B125/B202

Study of the possibility of ...

There are 7 figures, 2 tables, and 11 references: 5 Soviet-bloc and 6 non-Soviet-bloc. The two most recent references to English-language publications read as follows: V. G. Volotskaya, Nucleonics, 17, 147, 1959, H. K. Laquer, a. E. F. Hammel. Rev. Sci. Instr., 28, 875, 1957.

SUBMITTED: March 7, 1960

Card 5/9

BOROVIK, Ye.S.; LIMAR', A.G.

Generation of pulse magnetic fields of long duration. Zhur.tekh.
fiz. 31 no.8:939-943 Ag '61. (MIRA 14:8)

1. Fiziko-tekhnicheskiy institut AN USSR, Khar'kov.
(Magnetic field)

30095

S/057/61/031/011/010/019

B104/B108

76.Y311

AUTHORS:

Borovik, Ye. S., Mitin, R. V., and Knyazev, Yu. R.

TITLE:

Long high-pressure arcs

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 11, 1961, 1329 - 1336

TEXT: A device for producing long arcs (up to 8 cm) at pressures of some ten atmospheres is described. Diagrams are shown in Figs. 1 and 2. The chamber 1 (Fig. 1), made of stainless steel (inner diameter 85 mm, 400 mm high), is closed by steel flanges 2. The chamber is designed for pressures up to 100 atm. The two copper electrodes are water-cooled. The anode 3 is fixed, and the cathode 4 is adjustable. The maximum electrode spacing is 10 cm. The heat-insulating screen-system 5 is rotated by an electric motor 8,9 (2500 rpm). A sectional view of one of the electrodes is shown in Fig. 2. Without rotating insulation it was impossible to obtain long arcs in a hydrogen atmosphere. With rotating insulation the arcs became more stable and reached a length of 8 cm. In helium the maximum arc length without rotating insulation was 4 cm, and with rotating insulation it was 8 cm (He pressure, 30 atm; $V_{\max} = 400$ v). The axial losses and the

Card 1/4₂