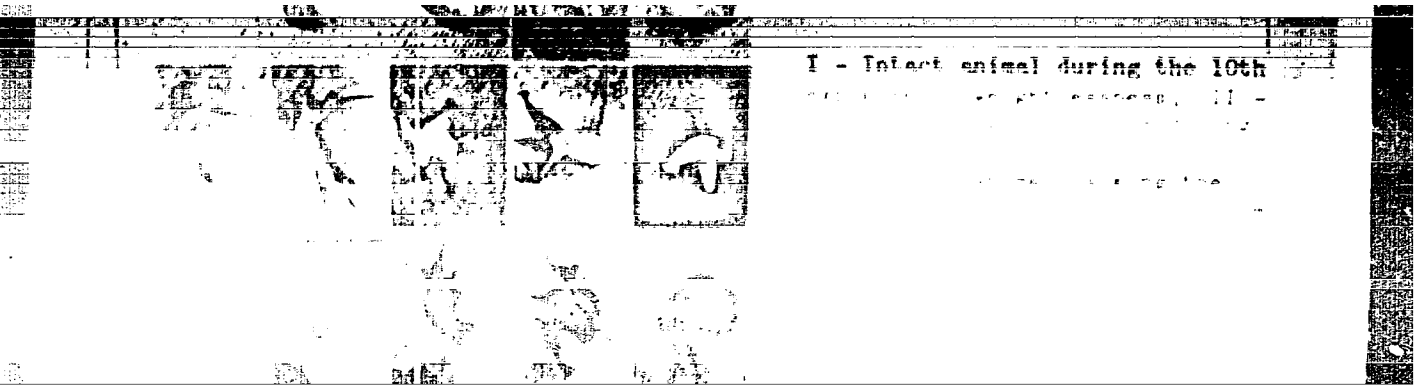

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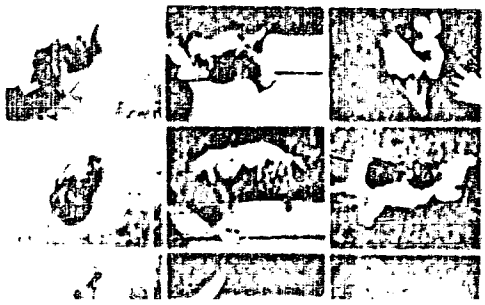

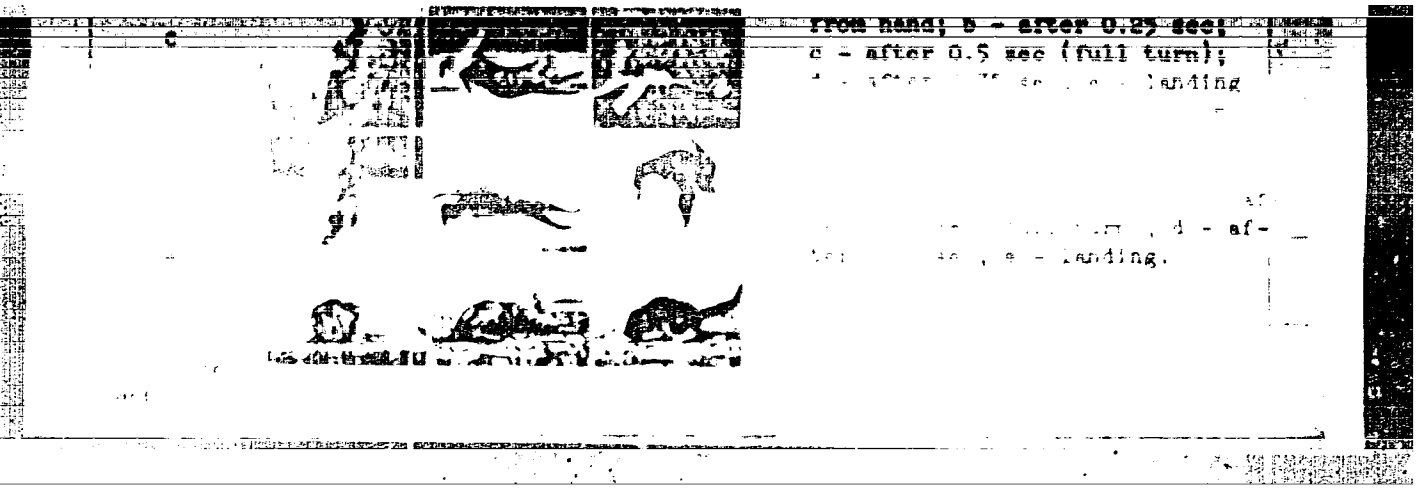

L 31992-66 FSS-2/EAT(1) DD/GD

ACC NR: AT6012903 SOURCE CODE: UR/0000/65/000/000/0245/0252

AUTHOR: Kitayev-Smyk, L.A.; Zverev, A.T.

ORG: none

TITLE: The influence of short-term weightlessness and the combined action of weightlessness and angular and Coriolis acceleration on some functions of the human operator

SOURCE: Sistema chelovek i avtomat (Man-automaton systems). Moscow, Izd-vo Nauka, 1965, 245-252

TOPIC TAGS: weightlessness, angular acceleration, Coriolis force, man, man machine communication, automaton, human engineering, human physiology, vestibular distance

ABSTRACT: The progress of cosmonautics has posed the problem of development of an optimal version for the inclusion of man in the cosmic-apparatus system. In the solution of this problem it will be necessary to take into account some of the specific effects to which the operator-cosmonaut will be subjected in flight, such as weightlessness. The present article was written as part of the program of investigation of the activity of man-operator subjected to weightlessness and to the combined action of weightlessness and angular and Coriolis acceleration. The conditions of weightlessness were created in an aircraft in parabolic flight, with the duration of weightlessness lasting for 28—30 sec, preceded by and followed by G force up to 15 sec. In some tests, weightlessness was established without

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L 31992-66
ACC NR: AT6012903

being preceded or followed by G force application. It was found that an increase in the time of motion reaction and a rise in the error during operation in weightlessness may be the result of known disorders of the function of the visual and motor analyzer, as well as a disorder in central integration. The difference in the direction of the variation in the time of the motion reaction during weightlessness and G force may be compared to the contrasting variations in the muscular tonus in these conditions. The substantial decrease in the quality of work of the operators, and the appearance of vestibulovegetative disturbances in them during the combined action of weightlessness and Coriolis acceleration, which, first of all, influences the vestibular apparatus, confirms the opinion of many authors that weightlessness primarily promotes disorder in vestibular function. A reduction in the performance quality during weightlessness and angular and Coriolis acceleration, furthermore, may promote a variation in the coupling between the human body and the support, i.e., the seat. The character of motion is undoubtedly affected by the absence of the weight of the extremities and the trunk. This, according to the authors, primarily explains the reduction in the time of putting on and taking off the parachute harness in conditions of zero gravity. In an evaluation of the data obtained it is necessary to take into consideration the fact that during the first 30 sec of weightlessness, the processes of adaptation and stabilization occurring in the neuropsychic, cardiovascular, and other systems of the organism apparently are not completed. Orig. art. has: 3 figures and 2 tables. [08]

SUB CODE: 05/ SUBM DATE: 02Aug65/ ATD PRESS: 5021

Card 2/2 LC

SHAGIDULLIN, R.R.; SATTAROVA, F.K.; RATEVSKIY, O.A.; BUNIKOV, G.K.; KITAYEV, Yu.P.

Infrared absorption spectra of semi and thiosemicarbazones of the aldehyde and ketone series. Izv. AN SSSR. Ser. khim. no.6:960-965 Je '64. (MIRA 17:11)

1. Khimicheskiy institut im. A.Ye. Arbuzova AN SSSR.

RODENKOVA, Ye.G.; RUMYANTSEVA, E.V.; sortirovshchitsa pismennoy korrespondentsii; KITAYEVA, A.V., pochtal'on; KLIMOVA, L.V.; sortirovshchitsa pismennoy korrespondentsii; ZHALILOVA, M., brigadir pochtal'onov; KIRILLOVA, T.I.; KHARINA, T.I., brigadir pochtal'onov; TUZOVA, O.A., sortirovshchitsa.

Leading postal workers are sharing their experiences. Vest. sviazi 20 no.11:22-24 N '60. (MIRA 13:12)

1. Nachal'nik 98-go otdeleniya svyazi g.Moskvy (for Rodenkova). 2. Leningradskiy pochtamt (for Rumyantseva). 3. Arzamasskaya kontora svyazi Gor'kovskoy oblasti (for Kitayeva). 4. Minerallovodskoye otdeleniye perevozki pochty (for Klimova). 5. 5-ye otdeleniye svyazi g.Chelyabinska (for Zhalilova). 6. Nachal'nik 24-go otdeleniya svyazi g.Ivanova (for Kirillova). 7. Kuybyshevskiy pochtamt (for Kharina). 8. Otdel obrabotki pismennoy korrespondentsii Sverdlovskogo otdeleyniya perevozki pochty (for Tuzova).
(Postal service--Employees)

SOV/51-6-3-3/28

AUTHORS: Sobolev, N.N., Potapov, A.V., Aitayeva, B.F., Fayzullov, F.S., Alyamovskiy, V.N., Antropov, Ye.T. and Isayev, I.L.

TITLE: Spectroscopic Studies of the State of Gas Behind a Shock Wave. I (Spektroskopicheskoye issledovaniye sostoyaniya gaza za udarnoy volnoy. I)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 3, pp 284-296 (USSR)

ABSTRACT: The paper describes attempts to measure the temperature behind a shock wave using relative intensities of two spectral lines. Shock waves were produced in a shock tube (Fig.5). 9.2 cm in diameter and 4.5 m long. The high-pressure chamber I (50 cm long) was filled with hydrogen at pressures of 110-130 atm. The low-pressure chamber II (4 m long) was filled with air or nitrogen at 10 mm Hg. The two chambers were separated by an aluminum diaphragm, bursting of which produced shock waves in the low-pressure chamber. The spectrum of radiation emitted by the region behind a shock wave was recorded either photographically or photoelectrically using a spectrograph ISP-51. In the latter case two photo-

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Spectroscopic Studies of the State of Gas Behind a Shock Wave. I

multipliers (FEU-17 or FEU-22, cf. Fig.6) were used to register two spectral lines; the signals from the photomultipliers were amplified (cf. circuit in Fig.7), displayed on an oscillograph OK-17M and photographed. The shock-wave velocity was found by measuring the time which it took the wave to travel between two ionization counters, denoted by $\Pi_{1,2}$ in Fig.5. Experiments were carried out at shock-wave velocities of 3-4 km/sec at which the temperatures behind shock fronts were expected to be 3500-4500°K. At these temperatures neither air nor nitrogen emits atomic lines. The authors consequently introduced small amounts of Li and Na in the form of LiCl or NaCl. The temperatures behind shock-wave fronts, calculated from the relative intensities of Li and Na lines, were highly scattered (Table 2) and the scatter varied from one line pair to another and from one experiment to another. This scatter was due to partial re-absorption, as well as to disturbance of the thermodynamic state of the gas by the comparatively large amounts of salts which had to be used. Moreover,

Spectroscopic Studies of the State of Gas Behind a Shock Wave. I

the salts settled on the cold walls of the shock tube and their emission was consequently concentrated near the walls (Fig.9). To ensure a uniform distribution of the emitting substances behind a shock-wave front the authors used gaseous dicyanogen in their second series of experiments. They deduced temperatures from the relative intensities of vibrational bands of cyanogen (dicyanogen dissociates at these temperatures) using the method described by Brinkman (Ref.6) and Smit (Ref.7). Again no reliable values of the temperature behind wave fronts could be obtained (Tables 3,4) because of the long time necessary to establish equilibrium distribution in vibrational degrees of freedom of cyanogen. The authors conclude that the method of relative intensities is suitable only for determination of temperatures above 5000°K; between 1500 and 5000°K the self-reversal method (Ref.6) should be

 employed. There are 10 figures, 4 tables and 9

SOV/51-6-3-3/28

Spectroscopic Studies of the State of Gas Behind a Shock Wave. I

references, of which 3 are Soviet, 2 English, 1 translation of English into Russian and 3 Dutch.

SUBMITTED: April 3, 1958.

Card 4/4

KITAYEVA, K.

Inspection committee of the primary organization. NTO 2 no.7:59-60 Jl '60. (MIRA 13:7)

1. Zamestitel' predsedatelya soveta Nauchno-tekhnicheskogo obshchestva stroitel'no-montazhnogo tresta No.16, g. Yaroslavl'. (Technical societies)

S/123/61/000/022/013/024
A004/A101

AUTHORS: Voytovich, V.A., Kitayeva, L.I., Berdinkova, V.V., Kuznetsova, T.V.

TITLE: Anticorrosion protection of metal parts by plastics. Report I. Practice of using the ГЭН-150 (В) (GEN-150[V]) elastomer

PERIODICAL: Referativnyy zhurnal. Mashinostroyeniye, no. 22, 1961, 79, abstract 22B477 ("Tr. Proyektn. tekhnol. i n.-i. in-ta. Gor'kovsk.sovnarkhoz", 1960, no. 2 (4), 35 - 37)

TEXT: The authors describe a new anticorrosion coating, the GEN-150(V) elastomer, representing a composition of nitrile caoutchouc and a special synthetic resin. Prior to heat treatment the material dissolves well in acetone, benzene, toluol or ethyl acetate. The elastomer solution can be applied by a brush, by pouring, spraying or dipping. If the coating is applied by spraying a 5% acetone solution of the elastomer is used. Spraying is effected with a sprayer designed by the Konstantinovka "Avtosteklo" Plant. The application of the coating by other methods requires a 15-20% solution in benzene, toluol, ethyl acetate or Р-4 (R-4) solvent. The metal surface is prepared for the coating in the following way: sandpaper cleaning, degreasing, careful drying. To

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obtain a dense coating, 4 - 5 elastomer layers are applied. The first layer is held at room temperature for 2 hours (at 50°C for 1 hour). The second and subsequent layers are applied in the same way, the final top layer is held in air for 2 - 3 hours, at 50°C for 1 hour and at 150°C for 2 hours. The obtained film possesses an adhesion to steel and aluminum of 35 kg/cm^2, does not break at repeated bending through 360°C and does not lose its properties during a 200-hour holding in oil at 150°C.

N. Savina

[Abstracter's note: Complete translation]

ACC NR: AR6035016 SOURCE CODE: UR/0044/66/000/008/B049/B049

AUTHOR: Ved', Yu. A.; Kitayeva, L. N.

TITLE: The assymptotic behavior of solutions of second-order differential equations with delayed argument

SOURCE: Ref. zh. Matematika, Abs. 9B231

REF SOURCE: Sb. Materialy XIII Nauchn. konferentsii prof.-prepodavat. sostava Fiz.-matem. fak. Kirg. un-t. Sekts. matem. Frunze, 1965, 26-29

TOPIC TAGS: second order differential equation, differential equation, assymptotic behavior, delayed argument

ABSTRACT: Sufficient conditions for an "nearly linear" behavior of solutions at infinity of the equation

$$y''(x)=\sum_{k=0}^{1}\sum_{j=0}^{1} p_{kj}(x)\,y^{(k)}(\sigma_j(x))+$$
$$+F(x,\ y(\sigma_j(x)),\ y'(\sigma_j(x))),\quad x>a$$

are given. Under certain constraints for known functions (continuity, absolute convergence of improper integrals $\int_{-\infty}^{\infty}$, the Lipshitz condition with an absolutely

Card 1/2 UDC: 517.949.2

ACC NR: AR6035016

integrable "constant" on the infinite interval), there exist equal limits for all the solutions of y(x)

$$\lim_{x\to\infty}\frac{y(x)}{x}=\lim_{x\to\infty}y'(x),$$

The sufficient condition in order for these limits to be distinct from zero is given. Kh. Tsvang. [Translation of abstract] [DW]

SUB CODE: 12/

Card 2/2

KANEVSKAYA, S.M.; RADZYUKEVICH, T.M.; KITAYEVA, L.N.; SOKOLOVA, N.N.

Introduction of a rapid drying SM-1 binder. Lit. proizv. no.10: 5-6 O '63. (MIRA 16:12)

KITAYEVA, L.N.

Clinical evaluation of the indices of the cerebrospinal fluid in treating children with tuberculous meningitis. Sov.med. no.3:82-87 '62. (MIRA 15:5)

1. Iz kliniki detskikh bolezney (zav. - prof. A.I. Miloserdova) Kuybyshevskogo meditsinskogo instituta (dir. - kand.med.nauk D.A. Voronov).

(MENINGES—TUBERCULOSIS) (CEREBROSPINAL FLUID)

SOV/137-58-10-21523

Translation from: Referativnyy zhurnal. Metallurgiya. 1958. Nr 10. p 152 (USSR)

AUTHORS: Makogon, M. B., Panin, V. Ye., Kitayeva, L. P., Korotayev, A. D., Sukhovarov, V. F., Shcherbakova, N. I

TITLE: The Effect of Annealing and Intermediate High-temperature Deformation on Compression Curves of Copper and its Alloys (Vliyaniye otzhiga i promezhutochnoy vysokotemperaturnoy deformatsii na krivyye szhatiya medi i yeye splavov)

PERIODICAL: Dokl. 7-y Nauchn. konferentsii, posvyashch. 40-letiyu Velikoy Oktyabr'sk. sots revolyutsii Nr 2 Tomsk Tomskiy un-t, 1957, pp 59-60

ABSTRACT: The effect of plastic deformation (D) on the progress of recovery processes in Cu and its alloys with Ni (5, 10, 15 atom-%), Al (5, 10, 15 atom-%), and Zn (5 atom-%) was investigated. Mechanical properties of metal which had been subjected to deformation at room temperature were compared after the metal had been annealed as well as subjected to slight deformation under identical temperature conditions. It was established that application of stress stimulates the recovery processes; this is manifested by the fact that mechanical

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The Effect of Annealing (cont.)

properties of work-hardened specimens (S) which have been subsequently subjected to mild deformation at elevated temperatures are lower than the properties of S's which have been annealed only at identical temperatures. A drop in secondary reduction curves of S's which have been preliminarily subjected to deformation at room temperature is observed at elevated temperature. The stimulating effect of loading, which becomes greater with increasing temperatures, begins to diminish as the T_p point is approached and, finally, goes down to zero. It is shown that the D of work-hardened S at temperatures beyond the recrystallization threshold contributes to complete relief of work-hardening stress achieved at room temperature and at the same time, produces new distortions which cannot be completely relieved during D at the given temperature. Compared with pure Cu, other conditions being equal the intensity of recovery processes under load is lower in the Cu alloys investigated. As the concentration of Ni is increased and the concentration of Al in the Cu alloy is reduced, the intensity of recovery diminishes. In alloys with relatively small cohesive bonds (Cu-Al), the recovery processes occur more intensively than in the case of alloys in which the cohesive forces are greater (Cu-Ni).

1. Copper--Heat treatment 2. Copper alloys--Heat treatment
3. Copper--Deformation 4. Copper--Mechanical properties

V. N.

Card 2/2

MAKOGON, M.B.; KITAYEVA, L.P.

Study of the kinetics of ordering and some mechanical properties of the Mg_3Cd alloy. Ukr. fiz. zhur. 8 no.2:233-238 F '63. (MIRA 16:2)

1. Sibirskiy fiziko-tekhnicheskiy institut AN SSSR, Tomsk.
(Magnesium-cadmium alloys)

BUSHNEV, L.S.; KITAYEVA, L.P.

Electron microscope study of the domain and dislocation structure of the ordered alloy Mg_3Cd. Kristallografiia 9 no.6:879-885 N-D '64. (MIRA 18:2)

1. Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut.

metalloderive

TOPIC TAGS: domain growth, magnesium cadmium alloy, electric conductivity, kinetics

ABSTRACT: The authors have investigated the kinetics of the domain growth in [illegible] by x-ray diffraction and by the measurement of [illegible]. The experiments were conducted at 60 [illegible] after the dis- [illegible] transition. A linear relationship between the electrical conductivity and the inverse of the domain size was found (the latter being larger than 100 A). The time dependence of the domain size is given by the equation

$$\epsilon = kt^{0.3}$$

The authors are grateful to L. S. Bushnev for help. Orig. art. has: 3 figures, [illegible] and 2 equations.

Card 1/2

AP4048769

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut im. V. D. Kuznetsova (Siberian Physicotechnical Institute)

ENCL: 00 SUB CODE: MM, SS

NR REF SOV: 006 OTHER: 009

L 4915-66 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD

ACCESSION NR: AP5025321 UR/0126/65/020/003/0379/0383
539.22:661.846

AUTHOR: Tukhfatullin, A. A.; Makogon, Yu. B.; Kitayeva, L. P.

TITLE: Study of the character of order-disorder transformation in alloy Mg_3Cd

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 3, 1965, 379-383

TOPIC TAGS: metal heat treatment, metal analysis, x ray diffraction, crystal structure, magnesium base alloy, cadmium containing alloy

ABSTRACT: X-ray diffraction studies of ordering in Mg_3Cd alloys (22-30 atom% Cd) during slow cooling from above-critical temperatures, made by A. Moore and G.V. Raynor (Acta met., 1957, 5, 10, 601), revealed the coexistence of ordered and disordered regions in the samples. The present study was made to determine if this coexistence was an equilibrium state or an effect of the unbalanced state of the alloy. The X-ray diffraction study of the Mg-Cd alloy (25.2 atom% Cd) was made after annealing at 350C for 1 hour, followed by ordering, consisting of annealing at 275C for 2 hours, slow cooling during 5 hours to 130 C, annealing for 72 hours at 130C, and subsequent cooling to room

Card 1/3

0901 0203

temperature at the rate of 5 degrees per hour. The changes in the width of the main (202) and superstructure (112) lines in the X-ray diffraction patterns, taken of the quenched samples, were measured and plotted in the graph as functions of the quenching temperatures. The equilibrium coexistance of 2 phases (ordered and disordered) was proven at the definite temperature interval (18-20C) after quenching from temperatures >150C. At temperatures >170C the Mg_3Cd alloy was entirely in the disordered state. The destruction of long-range order occurred by the formation of disordered regions in an ordered matrix. The volume of disordered regions increased with increased quenching temperature, and at temperatures >170C the entire sample was converted into the disordered state. It was shown by Z. A. Matysina, A. I. Nosar, and A. A. Smirnov (Ukr. fiz. zhurnal, 1963, 8, 3, 339) that electric resistivity of alloys was directly proportional to the value of $(1-S^2)$, where S was the degree of long-range order. The degree of long-range order of the samples after quenching from temperature T was determined by the authors from the ratios of intensities ($I_s : I_m$) of the superstructure (112) and main (202) lines by taking the S of the ordered sample at S=1 and calculating the S of quenched samples by using the formula:

$$S_T = \sqrt{(I_s/I_m)_{S=S_T} \quad (I_s/I_m)_{S=1}}.$$

L 4915-66

ACCESSION NR: AP5025321

The comparison of obtained data agreed well with the corresponding calculated and measured resistivities. Orig. art. has: 4 figures, 3 formulas, and 1 table.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut (Siberian Physicotechnical Institute)

SUBMITTED: 18May64/—Sep65 ENCL: 00 SUB CODE: MM, SS

NO REF SOV: 004 OTHER: 005

BC

Card 3/3

L 40739-65 EWT(m)/EWP(w)/EWA(d)/EPR/T/EWP(t)/EWP(b)/EWA(c) Ps-4 IJP(c)

ACCESSION NR: AP5005887 JD S/0020/65/160/003/0582/0585

AUTHOR: Kitayeva, L. P.; Makogon, M. B.; Kobytev, V. S.

TITLE: Mechanical properties of the ordered alloy Mg_3Cd

SOURCE: AN SSSR. Doklady, v. 160, no. 3, 1965, 582-585

TOPIC TAGS: ordered alloy, magnesium alloy, ultimate strength, yield point, domain size

ABSTRACT: The authors investigated the effect of ordering on the mechanical properties and on the character of deformation in an Mg_3Cd alloy having a hexagonal close packed (hcp) structure. The procedure for preparing the alloy and the samples was described in detail elsewhere (Fiz. met. i metalloved. v. 18, no. 5, 1964). The samples were [illegible] at a rate of 0.23% per minute and the stress-strain curve was [illegible] recorded on photographic paper. To obtain different [illegible] the samples were quenched from 220° and soaked for vari-

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L 40739-65
ACCESSION NR: AP5005387 0

ous times at 80°, after which they were deformed at room temperature. [illegible] dimension was determined by x-ray diffraction. Metallo- [illegible] of the sample surfaces were made after % deformation [illegible] were either fully ordered [illegible] with [illegible] 6.5 Å and with a degree of order that is at equili- [illegible] and samples deformed at temperatures [illegible] and above. [illegible] dered alloys Mg_3Cd exhibited an increase in the ulti- [illegible] decreasing degree of order and a large strengthening [illegible] the ordered state. The ultimate strength decreased [illegible] domain size, and the plasticity differed greatly in [illegible] ordered states at room temperature. Explanations [illegible] for these phenomena. The metallographic investigations [illegible] that in both the ordered and disordered states coarse [illegible] predominates after 5% deformation. From a comparison of the [illegible] coefficients and the character of the deformation it is [illegible] that the main cause of the low value of the hardening coef- [illegible] in the disordered state with domain size 6.5 Å is the pre-

Card 2/3

L 40739-65
ACCESSION NR: AP5005987

sence of mechanical polygonization and tuning along with the slip.
Thin report was presented by G. V. Kurdyumov. Orig. art. has: 4 figures.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut im. V. D. Kuznetsova (Siberian Physicotechnical Institute)

SUBMITTED: 05Aug64 ENCL: 00 SUB CODE: MM

NR REF SOV: 009 OTHER: 011

Card 3/3

L 5027-66 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD

ACC NR: AP5027146 UR/0126/65/020/004/0587/0591

AUTHOR: Kitayeva, L. P.; Bushnev, L. S.; Makogon, M. B.

ORG: Physicotechnical Institute im. V. D. Kuznetsov (Sibirskiy fiziko-tekhnicheskiy institut)

TITLE: Microscopic study of deformation in an Mg_3Cd alloy

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 4, 1965, 587-591

TOPIC TAGS: crystal deformation, magnesium alloy, cadmium alloy, twinning

ABSTRACT: The study was made on an alloy with a composition of magnesium + 25.2 at % cadmium. Samples with a diameter of 1 mm and a calculated length of 50 mm were stretched on a UPR machine at a rate of 0.23%/min. The elongation curve was recorded automatically. For electron microscope investigations, samples were produced by rolling to a thickness of 0.27 mm. After annealing and deformation by stretching, the samples were thinned down in an electrolyte (methyl alcohol and nitric acid in a 2:1 ratio). The thin foils were examined in a UEMB-100 electron microscope at an

Card 1/3

UDC: 539.292;548.4

accelerating voltage of 85 kilovolts. The grain size of all the samples was about 20 microns. To obtain an ordered state, the samples were subjected to prolonged heat treatment under the following conditions: holding at 270° for 1 hour cooling to 170° in the furnace, cooling to 130° at a rate of 10 degrees/hour and holding at 130° for 72 hours, and finally cooling to room temperature at a rate of 5 degrees/hour. The deformation chart was studied after 0.2 and 5% deformation, and the dislocation distribution after 2-5% deformation. A figure shows the dependence of the strength coefficient K on the degree of deformation for the ordered and the unordered state. The strength coefficient is determined as the difference in the flow stresses with a 1% change in the deformation. At $\varepsilon = 1\%$

$$K_1 = \frac{\sigma_1 - \sigma_{0,2}}{0,8}, \qquad (1)$$

where $\sigma_{0.2}$ and σ_1 are the flow stresses at = 0.2 and 1%, respectively. The value of $\sigma_{0,2}$ is taken beyond the yield point. According to the authors, the large coefficient of strain hardening in the ordered alloy is connected with the existence of superdislocations and with a breaking up of the antiphase domains during

L 8936-66
ACC NR: AP5027146

the deformation. This mechanism is applicable also to the Mg_3Cd alloy, since the superdislocations observed in the ordered state have a domain structure. The sharp drop in K with an increase in the degree of deformation in the unordered alloy is probably bound up with the development of mechanical polygonization and twinning, the intensity of which depends on ε. At $\varepsilon = 0.2\%$ polygonization or twinning were not observed. Orig. art. has: 1 formula and 6 figures.

SUB CODE: MM, IC/ SUBM DATE: 30Sep64/ ORIG REF: 008/

OTH REF: 006

GC

Card 3/3

BLANK, L.I., inzh.; KITAYEVA, N., inzh.

Mechanized recording of the performance of construction machines. Mekh. stroi. 20 no.8:9-11 Ag '63.
(MIRA 16:11)

[illegible], [illegible].

[illegible], M. A. " On the clinical treatment of [illegible]", Trudy [illegible] gos. med. in-ta, Vol. XVIII, 194[illegible], p. [illegible].

SO: [illegible], [illegible] Sept 5[illegible], (Letopis 'Zhurnal 'nykt Statey, No. 2[illegible], 194[illegible]).

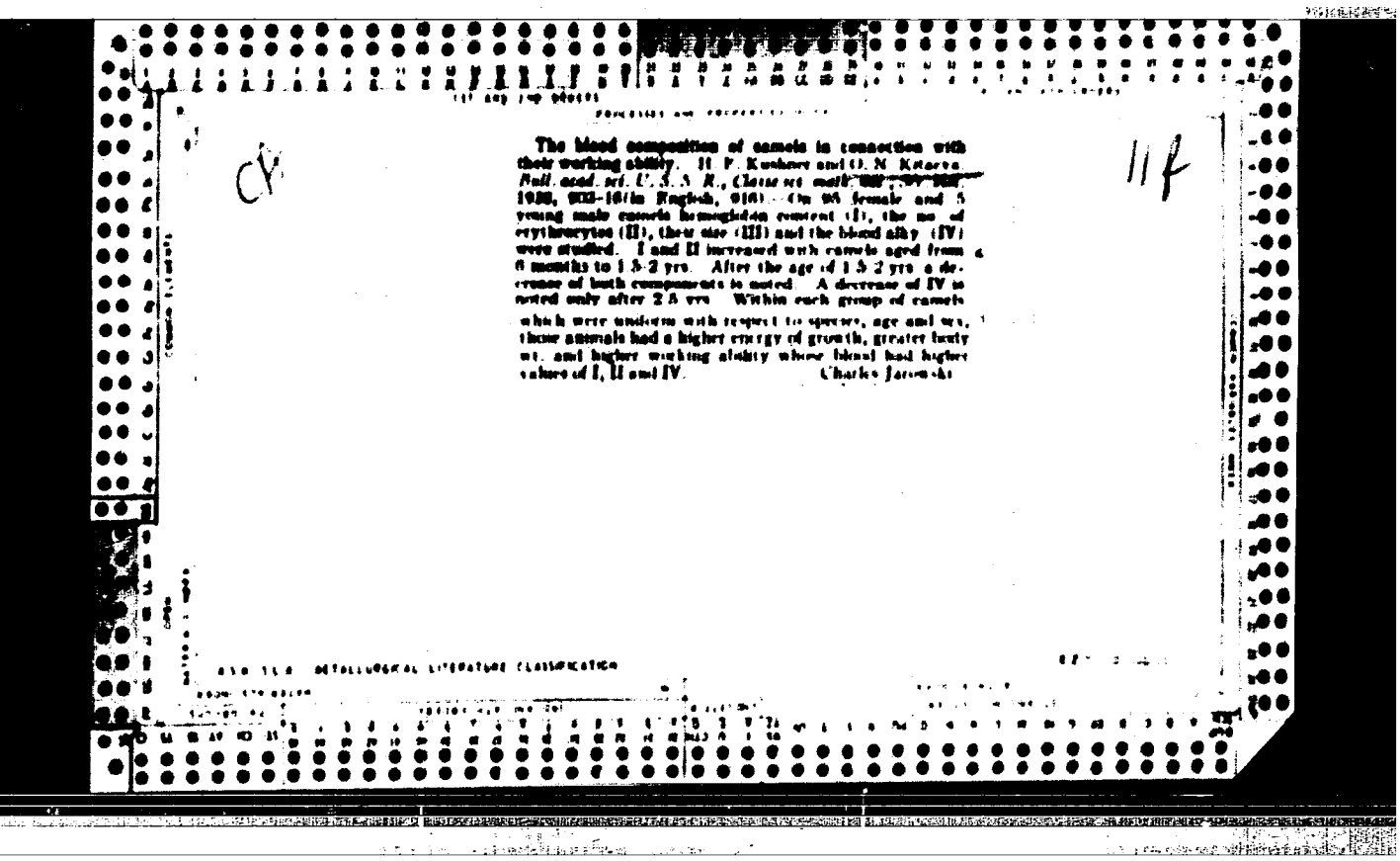
KITAYEVA, N.M., sanitarnyy vrach

Hygienic rating of the microclimate and air in theaters; according to data from investigations at the Order of Lenin Academic Bol'shoi Theater of the U.S.S.R. Gig. i san. 22 no.1:68-69 Ja '57. (MLRA 10:2)

1. Iz Moskovskoy gorodskoy sanitarno-epidemiologicheskoy stantsii.
(AIR
sampling in theater in Russia (Rus))

GOROMOSOV, M.S.; TSIPER, M.A.; KITAYEVA, N.N.

Establishing hygienic norms for air conditioning in motion-picture theaters. Vod. i san. tekh. no.11:29-32 N '60. (MIRA 13:11)
(Motion-picture theaters—Air conditioning)



The blood composition of camels in connection with their working ability. II. P. Kushner and O. N. Kitaeva. *Bull. acad. sci. U. S. S. R., Classe sci. math. [illegible]* 1938, 933-46 (in English, 946). (In 95 female and 5 young male camels hemoglobin content (I), the no. of erythrocytes (II), their size (III) and the blood alky (IV) were studied. I and II increased with camels aged from 6 months to 1.5-2 yrs. After the age of 1.5-2 yrs a decrease of both components is noted. A decrease of IV is noted only after 2.5 yrs. Within each group of camels which were uniform with respect to species, age and sex, those animals had a higher energy of growth, greater body wt. and higher working ability whose blood had higher values of I, II and IV. Charles Jarowski

A-4

BC

Blood composition in sheep and their hybrids with [illegible] [illegible] [illegible] in connection with the [illegible] of [illegible]. K. Y. Kuznetsov and O. F. Khabaeva (Compt. rend. Acad. Sci. U.R.S.S., 19[illegible], [illegible], 47—[illegible]).—In 345 animals whose blood was examined at an altitude of 1800 m. it was found that the Precoce type (a Merino) is superior for high-altitude breeding. W. F. F.

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

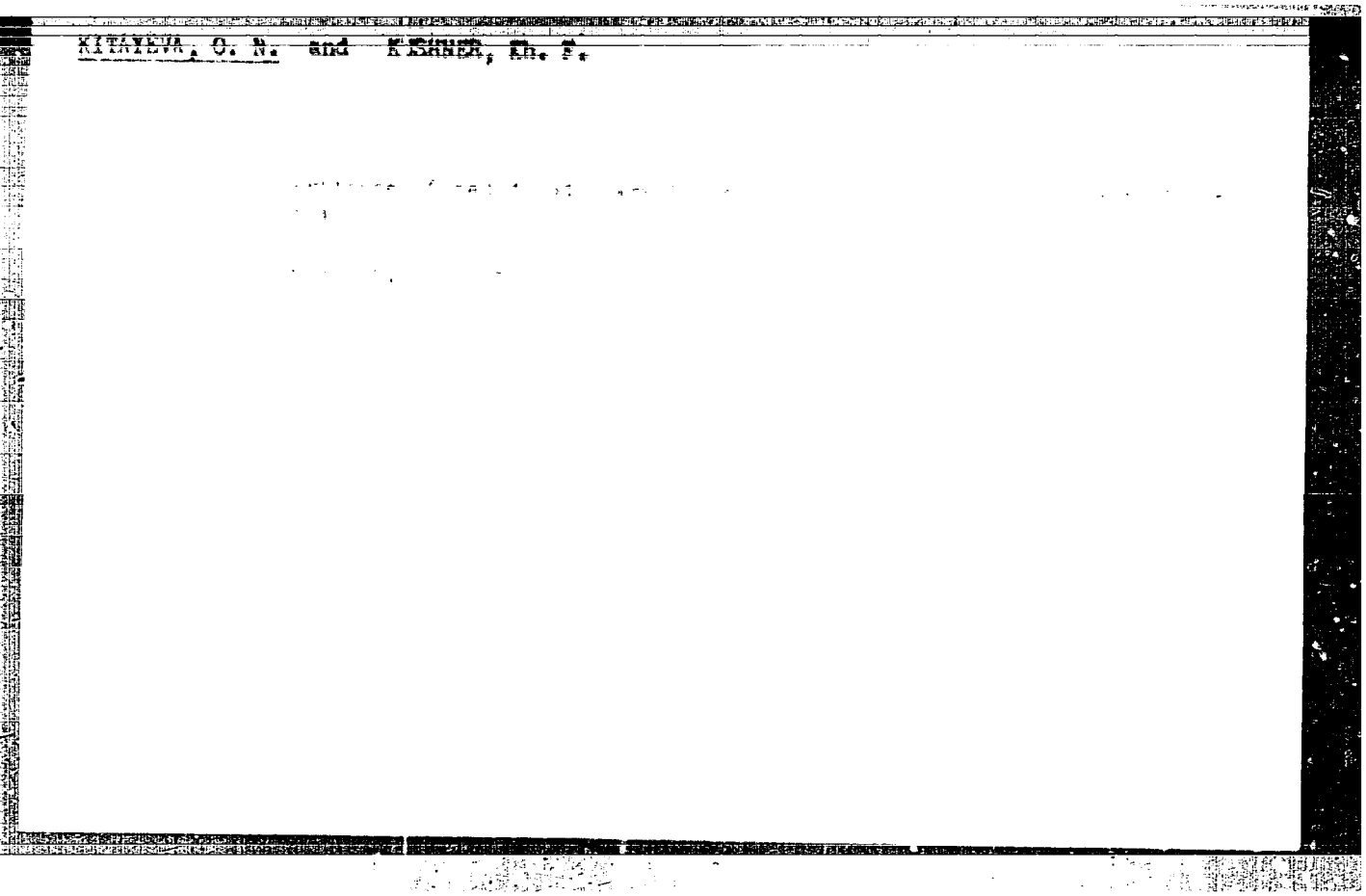
PROCESSES AND PROPERTIES INDEX

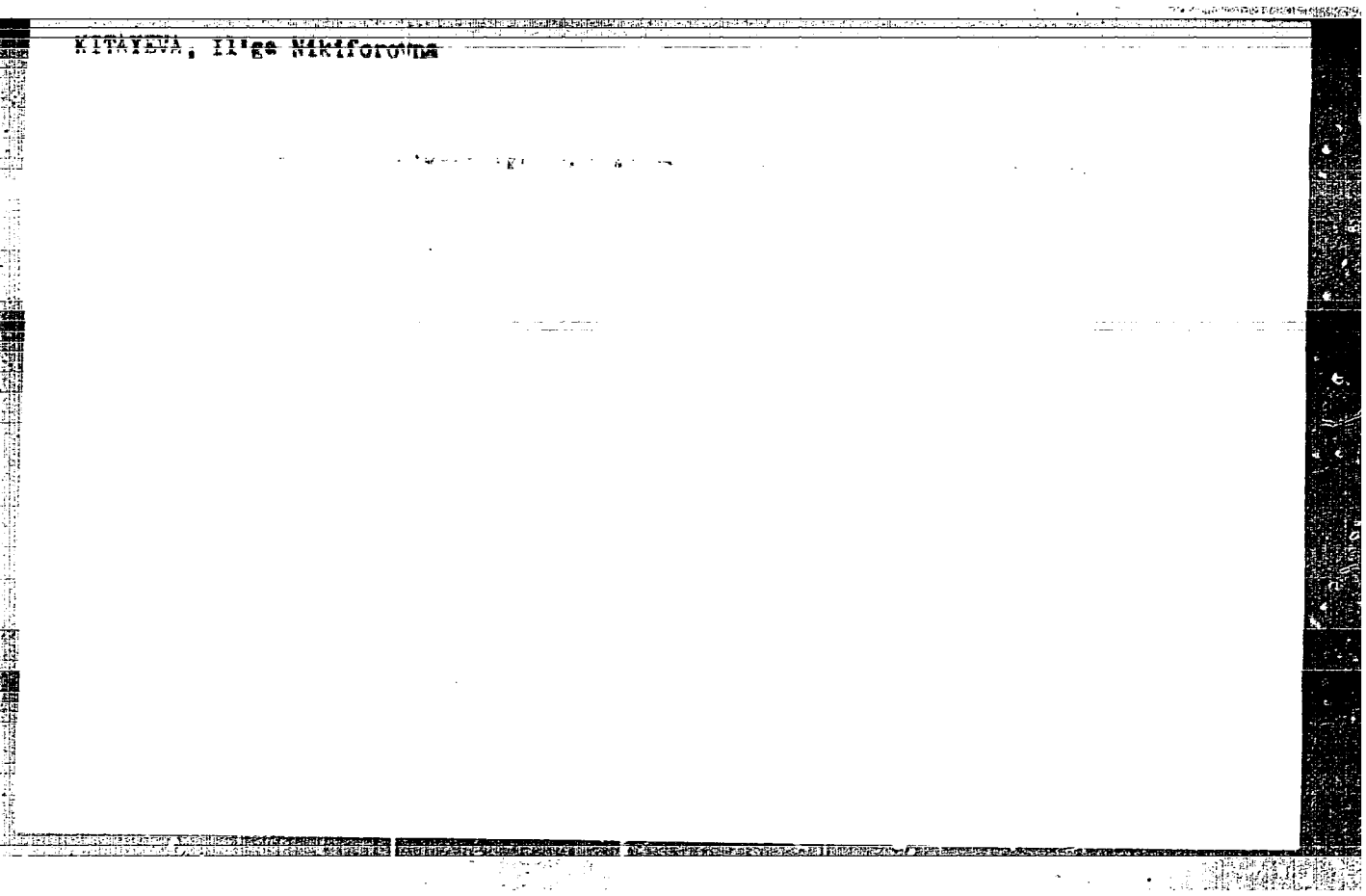
a-4

BC

Breed determined differences in blood indices of fowls. [illegible] (Compt. rend. Acad. Sci. U.R.S.S., 19[illegible], [illegible], [illegible]).—Haemoglobin, red count, erythrocyte size and blood alkalinity were determined in many varieties of fowls. W. F. F.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION





KISELEVA, O. N.

BA
B-III

Effect of poultry diet during the mating season on growth and productivity of the progeny. Kh. F. Kushner and O. N. Kiseleva (C. R. Acad. Sci. URSS, 1948, 60, 807—809).—Qual. and quant. improvement of chicken feed before and during the mating season reduces the mortality rate of the chicks, which grow faster, commence egg-laying sooner, and lay more and larger eggs than do animals from parents not receiving the higher ration scale. R. Truscoe.

KUSHNER, Kh. F.; KITAYEVA, O. M.

Measures in control of negative results of inbreeding in poultry. Doklady Akad. nauk SSSR 79 no.4:665-668 1 Aug 1951. (CIML 21:1)

1. Institute of Genetics, Academy of Sciences USSR.
2. Presented 4 June 1951 by Academician K. I. Skryabin.

1. Kh. F. KUSHNER, O. N. KITAYeVA

2. USSR (600)

4. Blood - Transfusion

7. Experiment in overcoming negative effects of inbreeding and effectiveness of fresh blood transfusions in poultry breeding. Trudy Inst. gen. no. 19. 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KUSHNER, Kh.F.; KITAYEVA, O.N.

Experimental data on the breeding value of crossbred chickens.
Trudy Inst.gen. no.20:225-236 '53. (MLRA 7:1)
(Poultry)

KUSHNER, Kh.F.; KITAYEVA, O.N.

New experimental data on the problem of breeding related and unrelated varieties of chickens. Trudy Inst.gen. no.20:237-248 '53.
(MLRA 7:1)
(Poultry)

KITAYEVA, O. N., PETROVA, O. N., SHAPIRO, N. I., and NUZHDIN, N. I.

"The Sterilizing Effect of Innizing Radiation on Mammals" Report II TheEffect of X-and Gamma-Irradiations on the Estrus Cycle of Female Mice." in the book "Collection of Works on Radiobiology" edited by N. I. Nushdin Publ. House of AS USSR, Moscow 1955

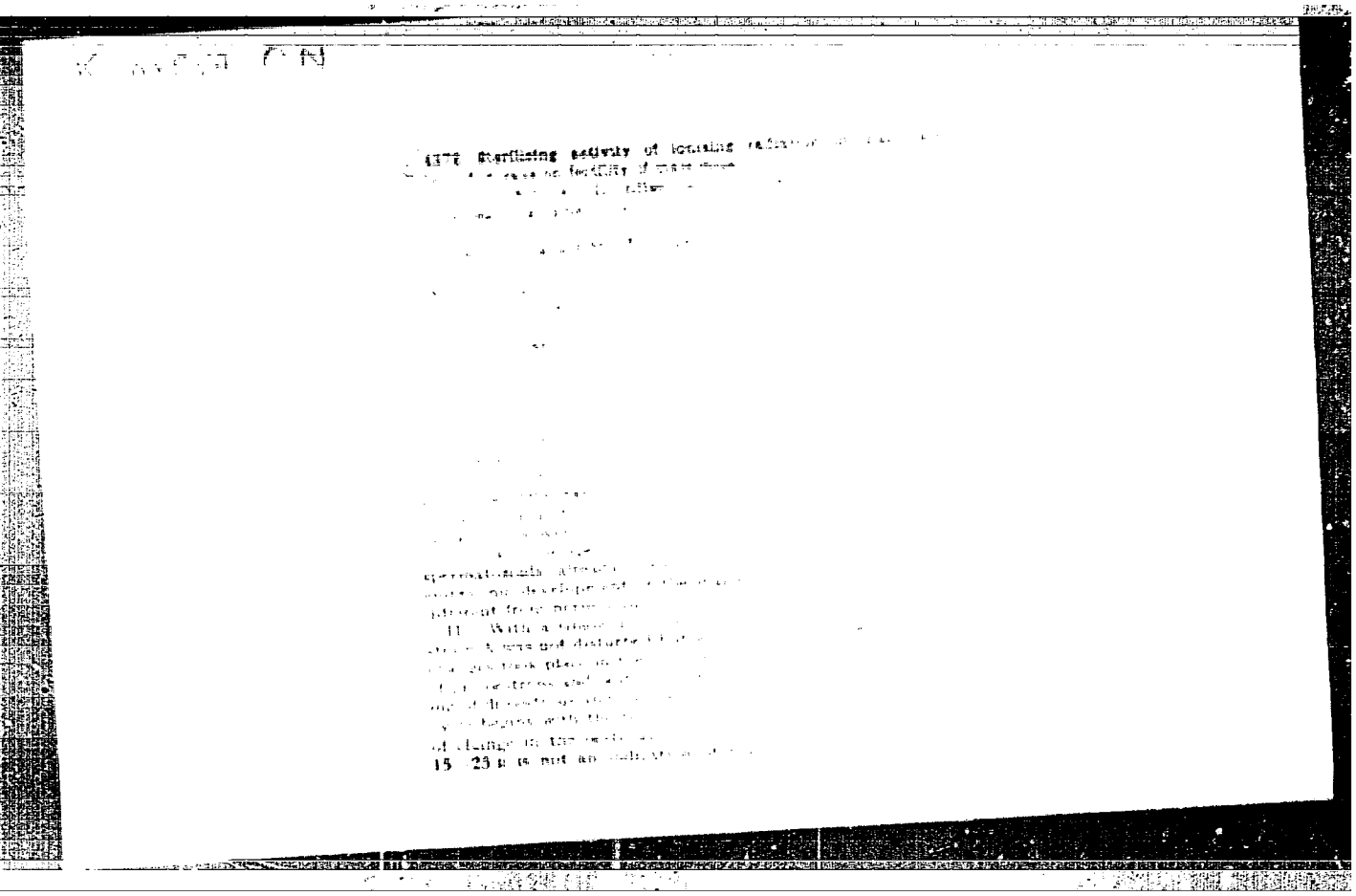
V 7613

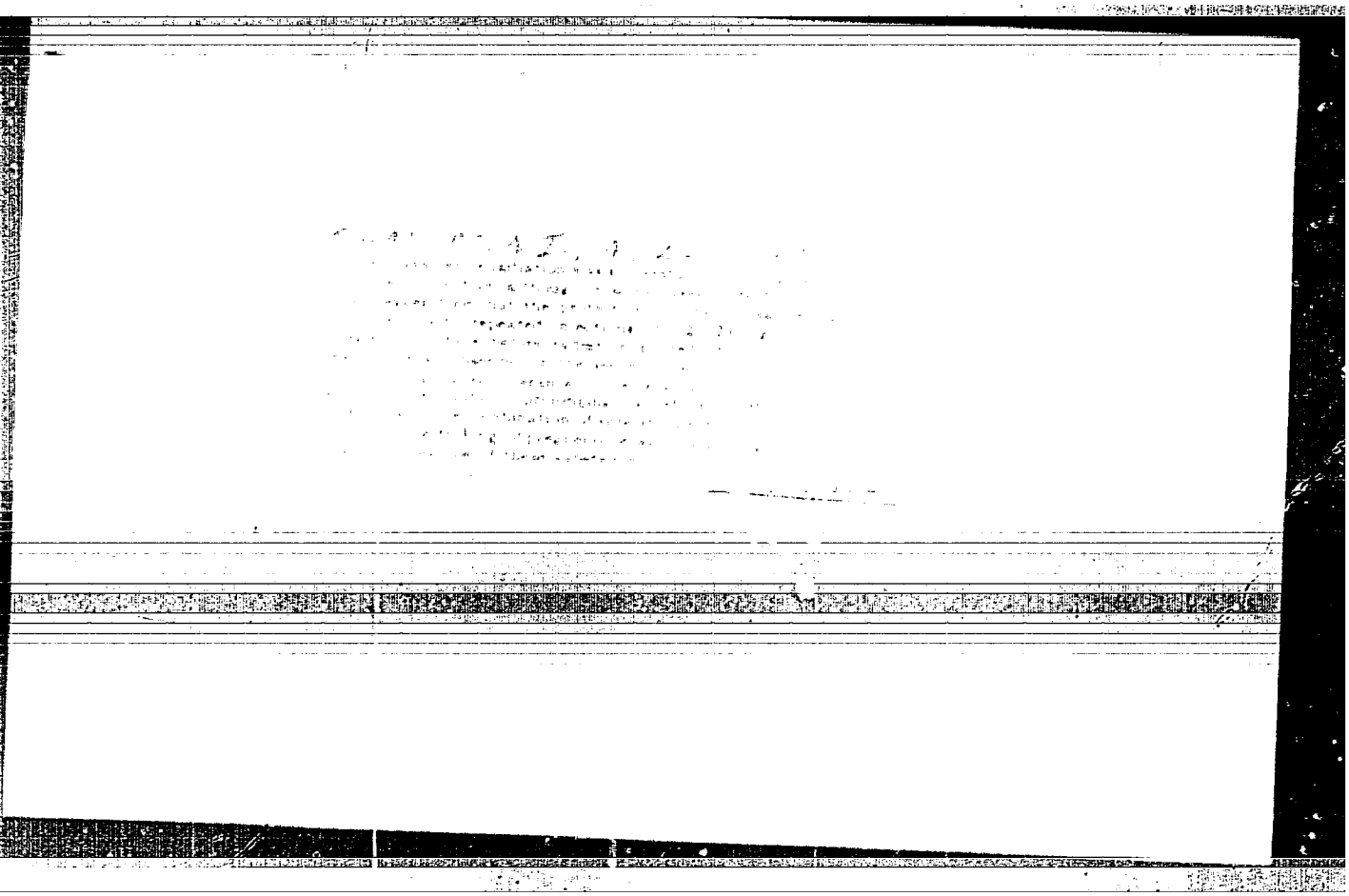
HD

EFFECT OF IONIZING RADIATIONS ON THE FERTILITY OF MICE AND THE VIABILITY OF THEIR PROGENY. N. I. Nazhdin, N. I. Shapiro, C. N. Petrova, and O. N. Kitaeva. p.14-33 in Meetings of the Division of Biological Sciences, Section of the Academy of Sciences of the U.S.S.R. on the Peaceful Use of Atomic Energy. July 1 - 5, 1955. Moscow, Publishing House of the Academy of Sciences of the U.S.S.R., 1955. 239p. (In Russian)

Roentgen irradiation of male mice (200r and 400r doses) decreases their mating capacity and the litter numbers of those crossed with non-irradiated females. The latter is due to the high mortality of the embryos at various stages of embryogenesis. Among the progeny of the irradiated males there occur a great number of still births. One to three months after irradiation the fertility of the males is restored. The mice originating from ova inseminated with sperm developing from the regenerated germ cells do not differ from the control ones as regard their viability. The post-embryonic development of the progeny of the irradiated males does not exhibit any deviations from the norm. The number of litters from males of the first generation originating from the irradiated males is markedly reduced as compared with the control. It was found that the sanitary character of sterility is caused by roentgen irradiation. A single total roentgen irradiation of female mice disturbs the course of the oestrual cycle as manifested in a decrease in frequency of the oestrual and pro-oestrual stages and an increase in that of meta- and dioestrus. The degree of disturbance depends on the dose and length of the post-irradiation period. The minimum effective dose of a single roentgen irradiation is about 50r. The disturbance in the course of the cycles sets in after a certain latent period lasting to two months, depending on the dose. Within a six-month period following irradiation (doses 50, 100, 200 and 400r) the disturbance in the oestrual cycle was found to be irreversible. The disturbance in the oestrual cycle as caused by roentgen irradiation is similar in character in mice of the A and C_{57}-black strain as well as in multipara and virgin females of strain A. A single total exposure of the females to 15 and 25r doses, although not affecting the course of the oestrual cycle, decreases their fertility. Chronic exposure to small doses of gamma rays likewise evokes disturbances in the course of the oestrual cycle in C_{57}-black females. (auth)

(3)





SHAPIRO, M.I.; MUZHDIN, M.I.; KITAYEVA, O.N.

Studying the reasons of disorders in the estrual cycle of mice following total X irradiation. Izv. AN SSSR. Ser.biol. no.5: 537-555 S-O '57. (MIRA 10:10)

1. Institut biologicheskoy fiziki Akademii nauk SSSR i Institut genetiki Akademii nauk SSSR.
(ESTRUS) (X RAYS--PHYSIOLOGICAL EFFECT)

AUTHOR: Kitayeva, O. N. 507/20-120-3-21/67

TITLE: The Influence Exercised by Fractionated X-Ray Treatment on the Ovary of Mice (Vliyaniye fraktsionirovannogo rentgenovskogo oblucheniya na yaichniki myshey)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 3, pp. 514 - 517 (USSR)

ABSTRACT: This paper begins with a short discussion of earlier works dealing with this topic. The author in this case used only comparatively weak irradiation doses (~ 50 r). Three years old female white mice were used as test subjects. They were subjected to a total irradiation by X-rays, the dosage being 30 to 60 r (with single and fractionated action). At the same time, a group of female mice was irradiated once with 1[illegible] r. Fractionation was carried out by dividing the doses (60 and 30 r) into two equal parts with an interval of 1,2,4 and 8 days. Non-irradiated mice of one and the same age were used as control subjects. The examination of the mice after treatment is discussed in short. In the case of irradiated mice (as compared to not irradiated animals), a considerable decrease of primordial follicles is found

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already during the first few days following treatment. The number of growing follicles is not reduced until later. The destruction of follicles of irradiated animals shows a direct dependence on the irradiation dosage. After a single irradiation with 60 r the primordial follicles disappear almost entirely (about 3 or 4 days after irradiation). The number of growing follicles is not reduced to the same extent as that of the primordial ones; it occurs only after some length of time. In the case of a fractionated X-ray irradiation more follicles are conserved than if irradiation takes place only once with the same dose. The longer the interval between irradiations the larger will be the number of conserved follicles. If mice are subjected to a single irradiation with 60 r, the number or primordial follicles decreases very considerably, but this is the case to an even greater extent in the case of fractionated irradiation with the same dose. In conclusion, the author thanks N.I.Nuzhdin, Corresponding Member, AS USSR, and N.I.Shapiro for their advice and aid. There are 1 table and 13 references, 3 of which are Soviet.

The Influence Exercised by Fractionated X-Ray Treatment SOV/20-120-3-21/67
on the Ovary of Mice

PRESENTED: February 17, 1958, by T.D.Lysenko, Member, Academy of Sciences, USSR

SUBMITTED: February 13, 1958

1. Genital glands--Effects of radiation 2. X-rays--Physiological effects

Card 3/3

42690

S/747/62/000/000/011/025
D296/D307

AUTHORS: Nazhdin, N. I., Shapiro, N. I., Petrova, O. N. and Kitayeva, O. N.

TITLE: The influence of x and γ radiation upon the oestrus of mice

SOURCE: Radiatsionnaya genetika; sbornik rabot. Otd. biol. nauk AN SSSR, Moscow, Izd-vo AN SSSR, 1962, 133-179

TEXT: Histological and cross-breeding methods as well as observation of the oestrus have been extensively used to study the mechanism responsible for radiation-produced sterility. The authors criticize the technical shortcomings of previous studies which led to contradictory results. They studied the effect of ionizing radiation upon the fertility of female mice, by following up the oestrus using unstained vaginal smears, taken daily in the first three months, and also in the sixth month after exposure to total body radiation. The phases of the cycle were established qualitatively and quantitatively on the basis of the relative proportion of the 3 main ele-

Card 1/3

ments: epithelial cells, keratinized flakes and leucocytes. As the oestrus represents a satisfactory but nevertheless indirect index of fertility, the number of pregnancies and of progeny was also recorded as a direct indication after the irradiated females had been kept with males for 40 days. A single exposure to x rays was found to decrease the number of cycles and their frequency in the group total. Within the cycle the proportion of the pro-oestrus and oestrus stage were diminished and the proportion of the met-oestrus and di-oestrus stage correspondingly increased. The degree of these changes was directly dependent on the dose and on the time since the exposure. Doses under 50 r had no effect upon the oestrus although fertility was impaired even by doses of 15 - 25 r. After exposure to 50 r there is a "latency period" of 6 weeks during which no effect is noticed and which becomes shorter after exposure to higher doses (100 - 400 r). 3 months after the irradiation no cycles could be observed in any of the animals. The disorders were irreversible, at least for the period of observation (6 months). Nulliparous and multiparous mice as well as mice of different strains responded in a similar manner. Chronic exposure to γ rays, even in

small doses, very close to the maximum permissible dose, led to similar changes after a latency period of 12 months (0.4 r daily - total dose 118.7 r) up to 15 months (0.2 r daily - total dose 72.8 r or 0.1 r daily - total dose 36.4 r). 0.05 r daily had no effect upon the oestrus. There are 15 figures and 12 tables.

ASSOCIATION: Institut genetiki AN SSSR (Institute of Genetics, AS USSR) and Institut biologicheskoy fiziki AN SSSR, Moskva (Institute of Biological Physics, AS USSR, Moscow)

X

42691

S/747/62/000/000/012/025
D296/D307

27/1220

AUTHORS: Shapiro, N. I., Muzhdin, N. I. and Kitayeva, O. N.

TITLE: Study of the causes leading to disorders of the oestrus in mice exposed to total body radiation

SOURCE: Radiatsionnaya genetika; sbornik rabor. Otd. biol. nauk. AN SSSR. Moscow, Izd-vo AN SSSR, 1962, 180-210

TEXT: In a previous paper (Sb. rabot po radiobiologii, Izd-vo AN SSSR, 1955, 113-149) the authors had shown that the oestrual cycle in mice is highly radiosensitive. In the present study the authors tried to establish whether the sterility caused by ionizing radiation is due a) to impairment of production of the gonadotrophic hormone from the pituitary gland, b) interference with the response by the vaginal epithelium to oestrogens, c) destruction of the ovarian follicles, or d) other causes. They also tried to devise an experimental technique for the restoration of the oestrus. Mice were exposed to total body irradiation by means of x rays in a dose of 100 r; homogenates of the pituitary glands were then used to carry

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Study of the causes ...

S/747/62/000/000/012/25
D256/D307

out the Zondek gonadotrophic reaction on infantile mice and were found to possess the normal gonadotrophic activity. The vaginal epithelium of the irradiated mice gave a normal response to injections of diethylstilatrophy oestrol, as shown by vaginal smears. To prove their contention that after-exposure to radiation of the ovarian follicles is the main cause of the oestrual disorders, the authors transplanted normal ovaries into the irradiated mice, whereupon the normal oestrus cycle was restored. If the transplanted ovaries were surgically removed or underwent resorption the cycle again became disrupted. Histological investigation revealed complete absence of follicles and an almost complete lack of corpora lutea in the ovaries of the irradiated mice. These ovaries mainly consisted of stroma whereas the transplanted ovaries showed a normal structure. To establish whether very high doses of gonadotrophic hormone could still produce a response from any residual ovarian tissue in the irradiated ovaries the mice were given 60 mouse units of gonadotrophic hormone. The ovaries and uterus responded with an increase in weight and size but no restoration of the atrophied follicles could be observed. There are 13 figures and 6 tables.

Card 2/3

Study of the causes ... S/747/62/000/000/012/025
D296/D307

ASSOCIATION: Institut biologicheskoy fiziki i Institut genetiki AN SSSR, Moskva (Institute of Biological Physics and Institute of Genetics, AS USSR, Moscow)

Card 3/3

KITAYEVA, R.I.

Effect of corchoroside on the course and outcome of experimental myocarditis and myocardial sclerosis. Farm. i toks. 27 no.1:43-48 Ja-F '64. (MIRA 17:11)

1. Kafedra farmakologii (zav. - doktor med. nauk V.I. Zavrazhnov) Voronezhskogo gosudarstvennogo meditsinskogo instituta.

KITAYEVA, R.I.

Effect of corchoroside in experimental myocarditis. Farm. i toks. 25 no.1:62-66 Ja-F '62. (MIRA 15:4)

1. Kafedra farmakologii (zav. - dotsent V.I.Zavrashnov) Voronezhskogo gosudarstvennogo meditsinskogo instituta.
(HEART--DISEASES) (CARDIAC GLYCOSIDES)

Kitayeva, S. Kh.

IL'INSKAYA, A.A.; KITAYEVA, S.Kh.

Photoelectric colorimeter determination of iron and sulfate content in cellulose. Bum.prom. 27 no.12:7-10 D '52. (MLRA 7:10)

1. Moskovskiy filial TsNIIB.
(Cellulose) (Colorimetry)

AITAYEVA, S.A.; [illegible], V.V.

Studying the process of woodpulp electrodialysis. Bum.prom. 32 no.6:6-7 Je '57. (MLRA 10:8)

1.Moskovskiy filial TSentral'nogo nauchno-issledovatel'skogo instituta bumagi i Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo Akademii nauk SSSR.
(Woodpulp) (Electrodialysis)

MILOV, B.G., doktor tekhn. nauk; KITAYEVA, S.Kh.

Reducing dielectric losses in cellulose for capacitor and high-voltage cable papers. Bum. prom. 34 no.5:4-7 My '59. (MIRA 12:6)

1.Moskovskiy filial TSentral'nogo nauchno-issledovatel'skogo instituta tsellyulozno-bumazhnoy promyshlennosti.
(Cellulose) (Dielectric heating) (Paper)

KITAYEVA, S. Kh.

Cand Tech Sci - (diss) "Study of the effect of ash elements of wood sulfate cellulose on its dielectric losses." Leningrad, 1961. 17 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Leningrad Order of Lenin Forestry Engineering Academy imeni S. M. Kirov); 150 copies; free; (KL, 7-61 sup, 238)

MILOV, B.G., doktor tekhn.nauk.; KITAYEVA, S.Kh., starshiy nauchnyy sotrudnik

Ways of improving the technology of the production of woodpulp for condenser paper. Bum.prom. 36 no.1:9-12 Ja '61. (MIRA 14:3)

1. Moskovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo institut bumazhnoy promyshlennosti.
(Woodpulp) (Paper)

KITAYEVA, T.G.

Relation between enzymatic and antiviral activity of ribonuclease. Izv. SO AN SSSR no.8 Ser. biol.-med. nauk no.2 [illegible]
[illegible] (MIRA 16:1)

1. Institut tsitologii i genetiki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

KITAYEVA, T.G.

Studying the effect of nucleases on the capacity of the influenza virus for the reaction of hemagglutination. Izv. Sib. otd. AN SSSR no.7:106-108 '62. (MIRA 17:8)

1. Institut tsitologii i genetiki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

KITAYEVA, V.

In the State Committee of the Light Industry Attached to the State Planning Commission of the U.S.S.R. Kozh.-obuv. prom. 7 no. 10:35-36 O '65 (MIRA 19:1)

KITAYEVA, V.F.

KITAYEVA, V.F.--"Investigations of the Forms and Widths of Spectrum Lines in a Constant Current Electric Arc." Dissertations For Degrees In Science And Engineering Defended At USSR Higher Educational Institutions(34). Moscow State U imeni M.V. Lomonosov, Physical Faculty, Moscow 1955

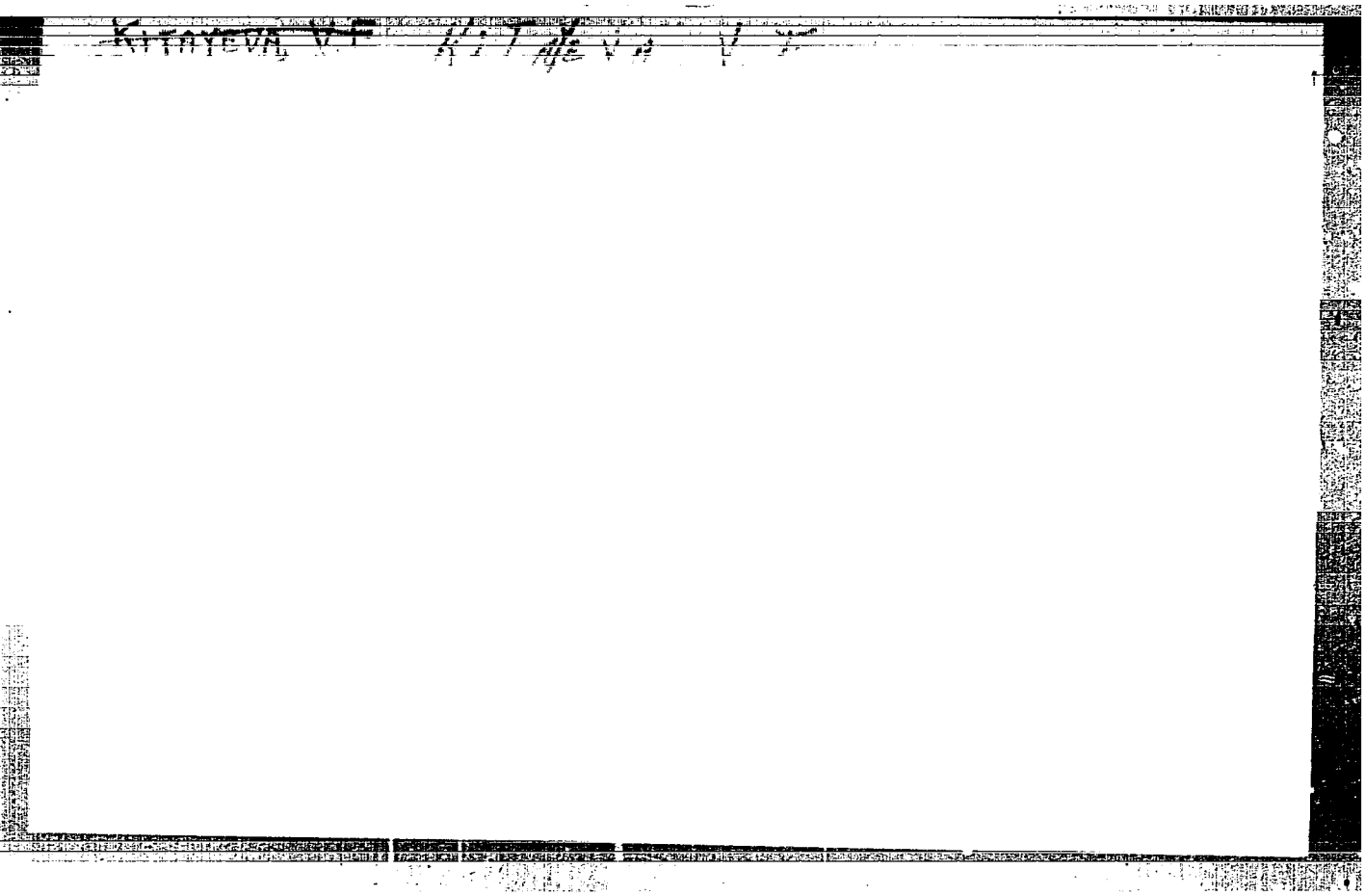
SO: Knizhnaya Letopis' No. 34. 20 August 1955

* For the Degree of Candidate in Physicomathematical Science

KITAYEVA, V.F.

Studying the shape and breadth of spectral lines in d.c. electric arcs. Izv. AN SSSR. Ser. fiz. 19 no.1:27-28 Ja-F '55. (MLRA 8:9)

1. Fizicheskiy institut imeni P.N.Lebedeva Akademii nauk SSSR (Spectrum analysis) (Spectrometer)



Kitayeva, V.F.

24(7) PHASE I BOOK EXPLOITATION SOV/1700

Lvov. Universitet

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

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

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

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

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

Card 2/31

[illegible]

Card 18/31

KITAYEVA, V.F.; SOBOLEV, N.N.

Broadening of spectrum lines in a d.c. arc. Fiz.sbor. no.4: 312-315 '58. (MIRA 12:5)

1. Fizicheskiy institut imeni P.N.Lebedeva AN SSSR.
(Electric arc) (Spectrum analysis)

AUTHORS: Sobolev, N. N., Potapov, A. V., Kitayeva, [illegible] 23/28
V. [illegible], Fayzullov, F. S., Alyamovskiy, [illegible], Antropov, Ye. T., Isayev, I. L.

TITLE: The Spectroscopical Investigation of the State of the Gas Behind the Shock-Wave (Spektroskopicheskoye issledovaniye sostoyaniya gaza za udarnoy volnoy)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 6, pp. 730-736 (USSR)

ABSTRACT: This paper describes a practical method of obtaining a high-temperature plasma for research work carried out in laboratories, viz. the method of the "shock tube" (Fig 1). The shock tube is divided by means of a diaphragm into two chambers (for high- and low pressure). As soon as high pressure develops in the high-pressure chamber the diaphragm is caused to burst, and at the same time a shock wave forms in the second chamber round the shock center - i. e. the rarefying wave. Between the fronts of the shock wave and the contacting surface a layer of gas of high temperature is formed which is here described as "lock" (probka). This "lock" moves with the velocity U_2, which is

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somewhat lower than that of the shock wave U_s. The temperature of the "lock" increases with a reduction of the molecular weight of the gas. If the velocity U_s is known, it is possible, by basing on the law of conservation of the mass, the impulse and the energy, as well as on the strength of the ratio of enthalpy, the degree of ionization, and the state of the gas, to determine the 6 unknown quantities: p_2, ϱ_2, U_2, H_2, T_2 and α_2 relating to the state of the monoatomic gas located in the "lock". A graphical illustration of 3 states of argon and 3 states in air behind the shock wave is given. The device is described on the basis of a schematical drawing. The chapter dealing with: The Method of Relative Intensities describes the use of the device mentioned for the purpose of obtaining the spectral lines for Li and Na for measuring the temperature by the method of relative intensities. Measurements were carried out photographically and photoelectrically, without as well as with full reabsorption of spectral lines. The chapter: The Generalized Method of Reversing the Spectral Lines is based upon a paper (Ref 7) in which the said method is explained with respect to its application for

the purpose of measuring temperature without observing a moment of reversal. In this case the optical scheme is used for carrying out the following measurements: The radiation intensity of the gas in the spectral line, the intensity of the radiation of a source employed for the purpose of comparison, and of temperature. For measuring temperature a device was used which is described by means of a schematical drawing (Fig 5). Finally, a graphical representation of the results obtained by measuring the temperatures of nitrogen and the air behind the impulse wave by means of the photoelectric method of the reversal of spectral lines is given. There are 6 figures and 7 references, 3 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev, AS USSR)

1. Electron gas--Spectra 2. Electron gas--Radiation 3. Spectroscopy 4. Shock tubes--Applications 5. Shock waves--Analysis

KITAYEVA, V.F.

Studying the form and width of spectral lines in a d.c. arc.
Trudy Fiz. inst. 11:3-64 '59. (MIRA 13:3)
(Spectroscopy)

SOBOLEV, N.N.; KITAYEVA, V.F.; RODIN, O.M.; FAYZULLOV, F.S.; FEDOROV, A.I.;

Temperature of the flame of a liquid-propellant rocket engine. Part 2. Zhur.tekh.fiz. 29 no.1:37-44 Ja '59. (MIRA 12:4)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR, Moskva. (Rockets (Aeronautics)) (Flame) (Temperature--Measurement)

10.2000
24.3400

68881
S/051/60/008/02/002/036
E201/E391

AUTHORS: Alyamovskiy, V.N. and Kitayeva, V.F.

TITLE: Contour of the H_β Hydrogen Line in Argon Behind a Shock Wave

PERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 2, pp 152 - 156 (USSR)

ABSTRACT: The present paper is part of the work carried out at the Fizicheskiy institut AN SSSR (Physics Institute of the Ac.Sc., USSR) on spectroscopic investigation of the state of gases behind shock waves. The authors studied the contour of the H_β hydrogen line behind a reflected shock wave (the intensity of hydrogen lines behind an incident shock wave was insufficient for photographic recording). This particular line was chosen because (in contrast to H_α, H_γ etc), it does not possess a central Stark component and therefore its theoretical Holtsmark contour can be calculated more reliably. Shock waves were produced in a shock tube (Figure 1) described earlier (Ref 1). In the high-pressure chamber hydrogen at 80-110 atm was used.

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4

68888
S/051/60/008/02/002/056
E201/E391

Contour of the H_β Hydrogen Line in Argon Behind a Shock Wave

The low-pressure chamber was filled with argon at ~ 0.3 - 3 mm Hg, to which 2-5% hydrogen was added. Velocity of the incident shock wave varied from 3.6 to 4.8 km/sec and the corresponding calculated values of temperature and pressure behind a reflected wave were ~ 12 000 - 13 000 °K and 0.5 - 1.5 atm. The H_β-line was recorded photographically (camera with f = 270 mm), using a spectrograph ISP-51 with 40 Å/mm dispersion in the H_β-line region. The spectral slit width was 0.8 Å.

Time-resolved spectra (resolution of ~25 μs) were obtained using a rotating disc (~ 1 500 rpm) in front of the spectrograph slit. A typical emission spectrum of the plasma[4] behind a reflected shock wave (Figure 2) consists of two clearly separate regions. The first region (up to ~100 μs) represents emission after the first reflection of the shock wave from the end of the tube and has a characteristic constant intensity; the second region represents emission after subsequent reflections.

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S/051/60/008/02/002/036
E201/E391

Contour of the H_β Hydrogen Line in Argon Behind a Shock Wave

The authors analysed the H_β-lines in the first region only; one of the contours obtained in this way is shown in Figure 3 (circles represent the experimental points). The observed H_β contours had considerable half-widths (40-60 Å), central dips due to the absence of the Stark component and a slight asymmetry (~6%) . These contours agreed quite well with Holtsmark's theoretical contours (one such theoretical contour is shown as a continuous curve in Figure 3). From the experimental contour and the half-width of the H_β-line the authors deduced concentration of charged particles in argon behind a reflected shock wave. The values obtained in this way (they were of the order of 10^{17} cm^{-3}) agreed quite well with the values calculated using Saha's equation, assuming that argon is an ideal gas and that it is in thermal equilibrium, (a table on p 155). Acknowledgment is made to N.N. Sobolev for his advice.

Card3/4

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S/051/60/008/02/002/036
E201/E391

Contour of the H_β Hydrogen Line in Argon Behind a Shock Wave

There are 4 figures, 1 table and 10 references, 2 of which are Soviet, 4 English and 4 German.

SUBMITTED: June 22, 1959

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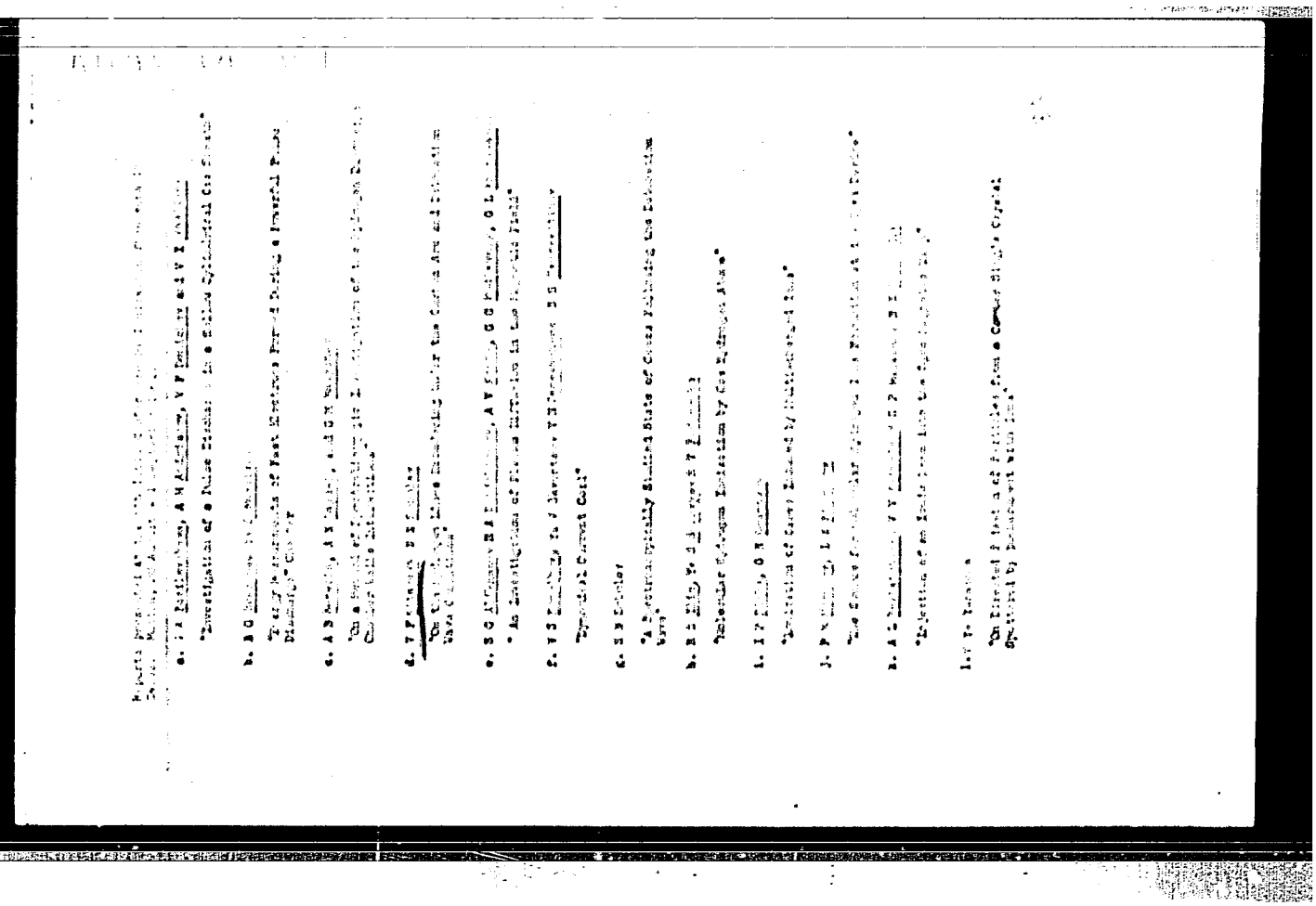

21970

24.2120 (1049,1482,1141)

AUTHORS: Mitryeva, V. K. and Orlov, N. N.

TITLE: Broadening of hydrogen lines in an arc plasma and a shock tube

PERIODICAL: Doklady Akademii nauk SSSR, v. 1[illegible], no. [illegible], 1961, 1091-1094

TEXT: The present paper gives a comparison between the contours of the H_α and H_β lines determined experimentally and those calculated by Griem et al. (Ref. 5: H. R. Griem, A. C. Kolb, K. J. Shen, Stark Broadening of Hydrogen Lines in Plasma, March 4, N. Report 5455, U.S.N.R.L. Washington, 1960; Phys. Rev., 116, 4, (1959); A. C. Kolb, H. Griem, Phys. Rev., 111, 514 (1958)). Fig. 1 shows the experimentally determined contours of the H lines emitted from a d.c. carbon arc in an atmosphere of argon with 5% H_2. The half-width of the apparatus function was 0.3 A. Fig. 2 shows the same lines determined on a shock wave. H_α was taken in krypton with 1% H_2, and H_β in argon with 2% H_2. There is a

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Broadening of hydrogen lines in ... 31.4/3.14

satisfactory agreement between theory and experiments as long as the apparatus function and Doppler effect, which are not considered in the theory of Griem et al., are negligible. The fact that the concentration of the charged particles determined from the contour of the H_α line and that determined from the half-width of the hydrogen lines agree with the values experimentally determined shows that the theory developed by Griem et al. is correct. It is therefore possible to determine the concentration of charged particles from the broadening of the hydrogen lines by means of this theory. For this purpose, Fig. 3 shows the different relations between the concentration of the charged particles and the broadening of H_β lines. For determining the concentration of the particles, the author recommends the H_β line for a range of concentration of from $2 \cdot 10^{15} - 10^{17}$, and the H_α line for concentrations above $5 \cdot 10^{16}$. The asymmetry of the H_β lines (Figs. 1 and 2) is explained as due to a quadratic Stark effect. Finally, the divergence between theory and experiment in the case of the dependence of the distance between the maxima of H_β lines on the half-width is dealt with and the results shown

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Broadening of hydrogen lines in ...

in Fig. 4 are discussed. There are 4 figures and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev, Academy of Sciences USSR)

PRESENTED: December 15, 1960, by L. A. Artsimovich, Academician

SUBMITTED: December 3, 1960

4

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L 15727-63 EPR/EPA(b)/EPF(c)/EWT(l)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3/AFWL Ps-4/Pd-4/Pr-4 WW/JD

ACCESSION NR: AR3002566 S/0124/63/000/005/B024/B025

SOURCE: Rzh. Mekhanika, Abs. 5B121

AUTHOR: Alyamovskiy, V.N.; Dronov, A. P.; Kitayeva, V. F.; Sviridov, A. G.; Sobolev, N. N.

TITLE: Experimental determination of the concentration of charged particles in argon and krypton behind a shock wave

CITED SOURCE: Sb. Vopr. magnitn. gidrodinamiki i dinamiki plazmy. v. 2. Riga, AN LatvSSR, 1962, 379-386

TOPIC TAGS: argon, krypton, shock wave, spectroscopy, contour line, electron temperature

TRANSLATION: Spectroscopic studies of the states of the inert gases argon and krypton behind shock waves were made. The contour lines of hydrogen in krypton were studied behind the incident wave; in argon, behind the reflected. The hydrogen admixture was about 1-5%. The initial pressure was of the order of 0.2-1 mm of mercury. In the argon behind the reflected wave, the calculated

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ACCESSION NR: AR3002656

temperature was of the order of 12000-13000° K. The concentration of electrons was determined by the method of comparison of the experimental contour lines with the theoretical ones, and the temperature was determined using the assumption of thermodynamic equilibrium. Yu.R.

DATE ACQ: 14Jun63 SUB CODE: PH ENCL: 00

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S/051/62/012/002/004/020
E032/E514

26.2311

AUTHORS: Kitayeva, V.F., Obukhov-Denisov, V.V. and Sobolev, N.N.

TITLE: Concentration of charged particles in the plasma of an arc burning in an argon-helium atmosphere

PERIODICAL: Optika i spektroskopiya, v.12, no.2, 1962, 178-185

TEXT: The authors report an experimental study of the profiles of the hydrogen lines H_α, H_β, H_γ and H_δ emitted by the plasma of an arc excited in an argon and helium atmosphere in the current range 1-200 A. The arc was produced in a special water-cooled chamber. Hydrogen was added to argon and helium in amounts corresponding to 0.2-5% by pressure. The central part of the arc was photographed with the grating spectrograph ДФС-4 (DFS-4) whose dispersion in the second order was 6.9 Å/mm. The spectrograph slit was 0.025 mm and the corresponding half-width of the instrumental function was 0.3 Å. This half-width was determined experimentally from narrow lines emitted by a Geisler hydrogen-filled discharge tube. The line profiles were compared with the theoretical profiles based on the work of H. R. Griem, A. C. Kolb, K. J. Shen (Ref.5: Stark broadening of

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hydrogen lines in plasma. March 4, 1960, N.R. Report 5455, U.S. N.R. L., Washington; Phys. Rev., 116, 1960; A.C. Kolb, H.R.Griem. Phys. Rev., III, 514, 1958). A satisfactory agreement between the theory and experiment was established. This comparison also yielded the charged-particle concentrations for arcs produced in argon and in helium in the current range 1-200 and 6-200 A, respectively. The results obtained are shown in Fig.5. There are 8 figures.

FIG.5 Legend. Concentration of charged particles N_i in the plasma of an arc as a function of the arc current.
a - neglecting the instrumental functions and Doppler broadening,
b - allowing for these two effects: I - argon, II - helium.
The experimental points are identified as follows: Argon: 1-5% H_2 flashed at 10 litres/min, electrode separation 12 mm; 2-5% H_2 at 10 litres/min, electrode separation 25 mm; 3-5% of H_2 at 3 litres/min, ℓ = 12 mm; 4-2% H_2 at 10 litres/min,

ℓ = 12, 25 mm. The numbers on the curve indicate the temperature in °K.

SUBMITTED: January 30, 1961

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41325

S/057/62/032/009/008/014
B125/B186

AUTHORS: Kitayeva, V. F., Kolesnikov, V. N., Obukhov-Denison, V. V., and Sobolev, N. N.

TITLE: Structure of the positive column of an arc discharge in argon. I. The local electrical characteristics of the column

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 9, 1962, 1084 - 1089

TEXT: The field strength and the radial distribution of the concentration of charged particles are determined from the contour of the hydrogen line H_β, and the radial distribution of temperature is measured for a non-equilibrium plasma (i = 4a) and for an equilibrium plasma (i = 10 - 200a) in an arc discharge in a hydrogen-argon mixture (Ar ≥ 94.0%, H_2 ~ 5%, N, O and C impurities). The volt-ampere characteristics (Fig. 2) are shifted if there is a change in the diameter and material of the cathode, the hydrogen concentration, or the velocity of the gas flow. The general shape of the characteristics is practically independent of these quantities.

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The dashed line shows the extrapolated sum of anode and cathode drops. The descending branch is due to the change in amperage of the column, and the ascending one to the increase of anode and cathode voltage drops. The field strength is practically constant at $i \gtrsim 50a$. The radial distributions of the concentration N_e of charged particles (Fig. 3) and of the current density $j(r) = \sigma(r)E$ (Fig. 4) in the column are calculated from the exact formulas of the kinetic theory for the plasma conductivity σ. The concentration of charged particles and the column radius increase with increasing amperage. There is no indication of a pinch effect in air at these amperages. The amperages calculated from $j(r)$ in a partially ionized equilibrium plasma agree well with the amperages measured. The formulas here given for σ in plasma hold as long as the Boltzmann equation is applicable to the plasma. The applicability of these formulas for concentrations of $N_{ion} \leq 10^{15}$ cm^{-3} cannot be established yet, from lack of experimental data. There are 4 figures and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva, Moskva (Physics Institute imeni P. N. Lebedev, Moscow)

SUBMITTED: July 27, 1961 (initially)
January 29, 1962 (after revision)

Fig. 2. Volt-ampere characteristics. (1) Diameter of the cathode 2 mm, of the anode 6 mm; (2) diameter of the cathode 6 mm, of the anode 12 mm.

Fig. 3. Radial distributions of the concentration of charged particles in the column of the arc. (1) 200a; (2) 40a; (3) 10a; (4) 4a.

Fig. 4. Radial distributions of the current density in the column of the arc. Designations as in Fig. 3.

Fig. 2

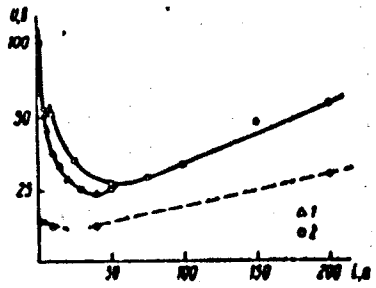


Fig. 3

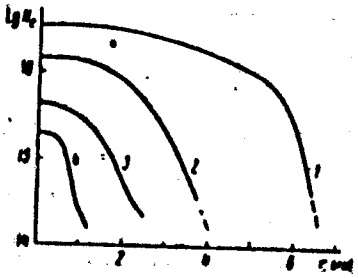
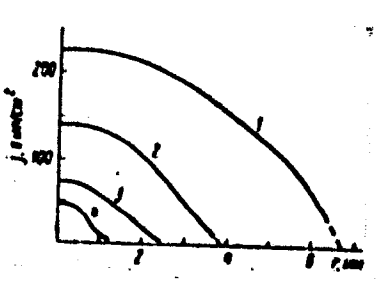


Fig. 4



L 14526-63 EWT(1)/EWG(k)/BDS/EEC(b)-2/ES(w)-2 AFFTC/ASD/ESD-3/
AFWL/SSD P1-4/Po-4/Pab-4/Pz-4 AT/IJP(C)
ACCESSION NR: AP3005515 S/0057/63/033/008/1011/1020

87
82

AUTHOR: Rayzer, M. D.; Frank, A. G.; Kitayeva, V. F.

TITLE: Localization of high-frequency induction discharge 21

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 8, 1963, 1011-1020

TOPIC TAGS: induction discharge, high-frequency discharge, high-frequency induction discharge, plasma, plasma discharge, hydrodynamic instability

ABSTRACT: A detailed investigation has been made of conditions for the localization of high-frequency induction discharge in H_2, He, Ar, and air at pressures of 1.0 to 30 mm Hg, discharge frequencies of 5 to 16 Mc, and discharge currents of 30 to 120 amp. It was found that during an hf induction discharge in a bell-shaped magnetic field at a gas pressure above 1.0 mm Hg, a plasma coil is generated which is separated from the walls of the vacuum chamber and which lasts during the whole hf pulse. The conductivity, temperature, and ionization rate of the plasma were measured, and the shape of the plasma coil was investigated by means of high-speed photography. A qualitative explanation of discharge localization is given on the basis of a hydrodynamic model of weakly ionized

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ACCESSION NR: AP3005515

plasma. "The authors thank P. A. Laty*pov and L. I. Shumskiy for help in performing the experiments and M. S. Rabinovich and A. A. Rukhadze for valuable suggestions." Orig. art. has: 4 figures and 15 formulas.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR, Moscow (Physics Institute, AN SSSR)

SUBMITTED: 12Jun62 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: PH NO REF SOV: 005 OTHER: 004

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