The Coefficients of the Internal Conversion of Some Nuclear Transitions in As^{75}

E1, E3, M1+E2, E1 (scheme is given in figure 5). The authors thank A. V. Zolotavin for the Se^{75} preparation. There are 5 figures, 3 tables, and 5 references, 3 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gos. universiteta im. A. A. Zhdanova (Scientific Research Institute of Physics of Leningrad State University imeni A. A. Zhdanov)

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SOV/48-23-2-6/20

21(7)

AUTHORS: Anton'yeva, N. A., Bashilov, A. A., Dzhelepov, B. S., Il'in, V. V., Preobrazhenskiy, B. K.

TITLE: Conversion Electrons of Eu^{149} (Konversionnyye elektrony Eu^{149})

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1959, Vol 23, Nr 2, pp 204-205 (USSR)

ABSTRACT: In investigating the electron spectra of Eu and Gd fractions the authors determined some lines with equal energy among the conversion lines of both fractions. The energy difference of the K - L and K - M lines indicates that the corresponding nuclear transitions take place in the samarium nucleus. The respective energies amount to 256, 279 and 330 kev. From the half-life periods determined by the lines K-279 and K-330 the authors concluded that they had found a long-lived Eu isotope which decays to the samarium nucleus. According to a comparison with data published on Eu isotopes also Eu^{149} is considered to be responsible for the above-mentioned phenomenon. The authors concluded that the transitions with the energies 256-330 kev belong to the types E2 or M1, yet no definite conclusion can be drawn from the results obtained.

Card 1/2

Conversion Electrons of Eu^{149} SOV/48-25-2-6/20

There are 2 figures, 2 tables and 3 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gos. universiteta im. A. A. Zhdanova
(Scientific Research Institute of Physics of Leningrad State University imeni A. A. Zhdanov)

Card 2/2

SOV/48-23-4-4/21

AUTHORS: Polivanov, V.V., Il'in, V.V. Iz"yurov, A.V., Pyatakov, N.I., Shumova, R.V.

TITLE: The Feeding Installation of Electron Microscopes UEMB-100 (Pitayushcheye ustroystvo elektronnogo mikroskopa UEMB-100)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1959, Vol 23, Nr 4, pp 450 - 453 (USSR)

ABSTRACT: First, mention is made of the investigation carried out by Leisegang (Ref 1), and it is pointed out that the requirement in electron microscopes with voltages as high as 100 kv of not allowing voltage and current fluctuations at the lenses to exceed 14.10^{-3} % can be met only by electronic stabilization of the current source. Figure 1 shows the block diagram of the apparatus. The electromagnetic stabilizer SNE-220-0,5 is made use of in the scheme. The lens current is electronically stabilized, its fluctuation amounting to 0.001%. The number of ampere turns of all lenses can be varied in a wide range. The selenium rectifiers for the high voltage of 100 kv allow a load of 120 μA, the electronic stabilization of this high voltage occurs through

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anode tubes of the type 6Kh6S. Here as well, voltage fluctuation amounts to 0.001%. A description follows of the current supply into the vacuum cell of the instrument. Figure 4 shows the scheme of the focusing electrode of the electron accelerator, in which a diode of the type 2D9S is used. Finally, the present paper deals with the mechanical construction of the current source, the insertion into the whole instrument, and its applicability. There are 6 figures and 3 references, 1 of which is Soviet.

AUTHORS: Polivanov, V. V., Iz"yurov, A. V., SOV/48-23-4-15/21
Il'in, V. V.

TITLE: Some Problems Concerning the Calculation and Construction of the Supply System of Electron Microscopes (Nekotoryye voprosy rascheta i konstruirovaniya pitayushchikh ustroystv elektronnykh mikroskopov)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 4, pp 501-505 (USSR)

ABSTRACT: The basic problem of the current supply of electron microscopes is the stabilization of the voltage fluctuations and the smoothing of the direct current. The voltage fluctuations and the hum voltage of direct current lead to a decrease in the resolving power. A table specifies the resolving power, the voltage fluctuations and the high-tension hum voltage, as well as the lens current fluctuations of four Russian electron microscopes. The theoretical values, as well as the best values of foreign makes are given for comparison. The experimental results which were obtained in developing the current supply system of the electron microscope UEMB-100 are then mentioned, and two

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circuit diagrams for the high-voltage stabilization are shown in figure 1a, 1b. In the case of the first one, the authors attempted to obtain stabilization by means of a voltage divider, and with a pentode in the second case. The direct current high voltage is doubled and rectified after having passed a 50 kv transformer by means of high-voltage rectifiers and condensers and the hum voltage is decreased by filter chains. The stabilization of the lens current is then discussed and explained by the aid of two circuit diagrams. A special problem is the heating of the lens coils. The diagram in figure 7a shows the effect of the structural variations by describing the temperature course, with respect to time, of the casing and the variation, with respect to time, of the lens winding resistance of the microscope UEM-100. The diagram in figure 7b shows the variation, with respect to time, of the temperature of the casing and of the lens winding resistance of the microscope UEMB-100; the result is a considerable improvement. So far, in all Russian electron microscopes, the electric system is sheltered in the support, with the exception of the high

Some Problems Concerning the Calculation and Construction of the Supply System of Electron Microscopes SOV/48-23-4-15/21

voltage. Owing to the fact that all the electric systems are becoming ever more complicated and larger and because they generate disturbing magnetic fields in the instrument, the necessity arises of developing new variants. There are 7 figures, 1 table, and 3 references, 2 of which are Soviet.

Card 3/3

POLIVANOV, V.V.; POGUDINA, R.V.; IL'IN, V.V.

Power source of microscope lenses having a resolving power of 5 Å. Izv.AN SSSR.Ser.fiz. 25 no.6:772-775 Je '61. (MIRA 14:6)
(Electric power) (Electron microscope)

S/056/62/043/005/010/058
B102/B104

AUTHORS: Berlovich, E. Ye., Gusev, Yu. K., Il'in, V. V., Nikitin, M. K.

TITLE: Lifetimes of the excited states of deformed Dy^{160}, Lu^{175}, Hf^{177}, and Ir^{191} nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 5(11), 1962, 1625-1635

TEXT: A time - pulse-height converter and a differential time analyzer with variable delay line were used to study the lifetimes of some excited states of deformed nuclei. For Dy^{160} the decay curves of

$$Zr^{160} \xrightarrow[\varepsilon]{30\ hr} Ho^{160} \xrightarrow[\beta^+,\varepsilon]{5\ hr} Dy^{160}$$

were used to calculate the lifetimes of the first excited states by the method of least squares. Results:

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B102/B104

Lifetimes of the excited states of ...

86.5 kev (2^+) : $T_{1/2} = (1.7 \pm 0.1) \cdot 10^{-9}$ sec; E2 transition to ground state(0^+);
283 kev (4^+) : $T_{1/2} = (7.1 \pm 0.9) \cdot 10^{-11}$ sec; E2 transition to first level;
966 kev (2^+) : $T_{1/2} \leq 7 \cdot 10^{-12}$ sec; E2 transition to the ground state.
The lifetimes of the first and third excited states of Hf^{177} were determined from the β^- decay of Lu^{177} (6.8 d). Results:
113 kev ($9/2^-$):$T_{1/2} = (4.2 \pm 0.3) \cdot 10^{-10}$sec; transition to ground state ($7/2^-$)
321 kev($9/2^+$):$T_{1/2} = (6.9 \pm 0.3) \cdot 10^{-10}$sec; transitions to ground state, first, and second (250 kev, $11/2^-$) excited states. The lifetimes of the first and third excited states of Lu^{175} were determined from the β^- decay of Yb^{175}(6.8 d). Results:
114 kev($9/2^+$): $T_{1/2} = (1.1 \pm 0.1) \cdot 10^{-10}$sec; (M1+E2) transition to ground state
396 kev($9/2^-$): $T_{1/2} = (3.25 \pm 0.10) \cdot 10^{-9}$sec; (E1+M2) transitions to ground

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state ($3/2^+$) and to the first excited level and E1 transition to the second level (251.5 kev, $11/2^+$). The lifetime of the first excited level of Ir^{191}, 129.6 kev ($5/2^+$), was determined in β-decay of Os^{191}(15 d), and found to equal $(8.1\pm1.6)\cdot10^{-11}$ sec. This value agrees with data from the Mössbauer effect. The results are compared with the predictions of the generalized nuclear model of Bohr-Mottelson and some nuclear parameters are calculated. For the internal quadrupole moment of the band, calculated from the lifetimes of the first and second rotational level of Dy^{160}, the values $(8.0\pm0.5)\cdot10^{-24}cm^2$ and $(8.5\pm1.1)\cdot10^{-24}cm^2$ were obtained which agree within the error limits. $B(E2;4\rightarrow2)/B(E2;2\rightarrow0) = 1.68\pm0.17$. The empirical transition probabilities for the Hf^{177} levels being

$W_{\gamma321} = 2{,}6\cdot10^7\ сек^{-1}$, $W_{\gamma208} = 8{,}5\cdot10^8\ сек^{-1}$, $W_{\gamma72} = 8{,}7\cdot10^7\ сек^{-1}$.

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and the theoretical values calculated with Nilssons formula (Kgl. Danske Vid. Selskab. Mat.-Fys. Medd., 29, 16, 1955) being

$$W_{H321} = 1{,}67\cdot10^{10}, \quad W_{H306} = 1{,}04\cdot10^{9}, \quad W_{H75} = 1{,}15\cdot10^{7}.$$

the retardation factors are obtained as

$$f_{H321} = 650, \quad f_{H306} = 1{,}13, \quad f_{H75} = 1{,}54.$$

The corresponding quantities for Lu^{175} are

$$W_{Y316} = 1{,}2\cdot10^{8}, \quad W_{Y306} = 5{,}7\cdot10^{8}, \quad W_{Y113} = 8\cdot10^{6},$$

$$W_{H316} = 1{,}18\cdot10^{10}, \quad W_{H202} = 9{,}76\cdot10^{8}, \quad W_{H113} = 1{,}32\cdot10^{7}.$$

$$f_{H316} = 105, \quad f_{H202} = 17, \quad f_{H113} = 1{,}6.$$

The table gives among others the g-factors of collective (g_R) and internal (g_K) motion, and μ in nuclear magnetons. There are 9 figures and 1 table.

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S/056/62/043/005/010/058
B102/B104

Lifetimes of the excited states of ...

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR)

SUBMITTED: June 9, 1962

Table

	E_γ, keV	$\delta^2 = \frac{E2}{M1}$	$Q_0 \cdot 10^{-24}$ cm^2	p. n. m.	$B(M1)$, $(eh/2Mc)^2$	α_K	$\Delta\alpha_K$
Hf^{177}	113	34	7,76	+0,61	$5,2 \cdot 10^{-4}$	0,20	+0,17
Lu^{176}	113,83	0,25	7,45	+2,0	$6,67 \cdot 10^{-4}$	0,29	+0,65
Ir^{191}	129,6	0,14	4,25	+0,17	$4,8 \cdot 10^{-4}$	0,46	—0,12

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S/056/62/042/004/007/037
B102/B104

AUTHORS: Berlovich, E. Ye., Gusev, Yu. K., Il'in, V. V., Nikitin, V. V., Nikitin, M. K.

TITLE: Contribution of collective motion to the lifting of the l-forbiddance

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 4, 1962, 967-972

TEXT: Continuing earlier studies (DAN SSSR, 133, 789, 1960; Nucl. Phys. 23, 481, 1961), the authors determined the lifetimes of the M1 transitions of the type $g_{7/2} \rightarrow d_{5/2}$ for the spherical nuclei $Eu^{147,149,151}$ just before the range of great deformations, where the collective motion is strongest. It can be assumed that collective motion affects the probability of l-forbidden transitions if the number of neutrons is below the critical (N = 89) and the nucleus is still spherical. The experiments were made with Gd fractions of Ta targets irradiated with 660-Mev protons in the synchrocyclotron of the OIYaI, a multi-channel time analyzer, a scintillation spectrometer with NaI-crystal and an ФЭУ-33 (FEU-33)

Card 1/2

S/048/62/026/002/010/032
B101/B102

AUTHORS: Berlovich, E. Ye., Gusev, Yu. K., Il'in, V. V., Nikitin, V. V., and Nikitin, M. K.

TITLE: Probabilities of transitions between the lower levels of the Sm^{147} nucleus

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 2, 1962, 221 - 226

TEXT: In order to clarify the quantum characteristics of the lower levels of Sm^{147}, the lifetimes of 121- and 198-kev excited states were measured with the multichannel time analyzer described in Ref. 5 (see below). The source was Eu^{147} ($T_{1/2}$ = 24 days) which was obtained by chromatographic separation from a tantalum target bombarded with 660-Mev protons in the synchrocyclotron of the OIYaI. Eu^{147} was separated chromatographically after the 35-hr Gd^{147} had decayed. A study was made of the coincidence between the 676-kev gamma quanta, the emission of

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Probabilities of transitions...

which excites the 121-kev level, with the gamma quanta resulting from th discharge of this level. The gamma spectrum of Eu^{147} was recorded by means of NaI(Tl) crystals and an ФЭУ-33 (FEU-33) photomultiplier. The gamma-gamma coincidences of Eu^{147} and a comparison with the gamma-gamma coincidences of the Co^{60} reference source ($Co^{60} \longrightarrow Ni^{60}$) transition were used to calculate the lifetime of the 121-kev level: $T_{1/2} = (3.3 \pm 0.3) \cdot 10^{-10}$ sec. The coincidence of 600-kev gamma quanta with the conversion electrons of the 198-kev transition was examined at the 198 kev level. The gamma quanta were recorded by means of a stylbene crystal. The right-hand branch of the coincidence curve had a pronounced exponential course. It was found that $T_{1/2} = (1.34 \pm 0.05) \cdot 10^{-9}$ sec. These results can be brought into agreement with the sequence 7/2 , 5/2 , 3/2 , for the ground state and for the first two excited states. Since the 198-kev transition is a pure E2 transition which excludes the sequence $f_{7/2}$, $h_{9/2}$, $f_{5/2}$ there must be a prohibition which suppresses

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S/048/60/024/012/010/011
B019/B056

AUTHORS: Berlovich, E. Ye., Il'in, V. V., Kislyakov, A. I., Nikitin, M. K., and Bedike, T.

TITLE: Study of the Probability of Rotational Transitions Between Rotational Levels of Er^{166} and Tu^{169} Nuclei

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 12, pp. 1492-1501

TEXT: The present paper was read at the 10th All-Union Conference on Nuclear Spectroscopy, which was held in Moscow from January 19 to January 27, 1960. The authors studied the lifetime of the first excited level (81 kev) of the Er^{166} nucleus and of the 118, 139, and 473 kev levels of the Tu^{169} nucleus. With a double magnetic coincidence spectrometer the coincidences e - e, β - e, Auger electron - e and Auger electron - Auger electron were measured. e denctes the internal conversion electrons and β the decay electrons. The double magnetic coincidence

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Study of the Probability of Rotational Transitions Between Rotational Levels of Er^{166} and Tu^{169}-Nuclei

S/048/60/024/012/010/011
B019/B056

spectrometer is a combination of two magnetic spectrometers with sectors having an improved focusing, in which the magnetic fields may be changed separately. The decay curve of an 81-kev state of the Er^{166}-nucleus shown in Fig. 1 was determined by measuring the coincidences of the K-electrons of the 184-kev transition and the M-electrons of the 81-kev conversion transition. The lifetime of the first excited state (2^+) was found to be $(2.0\pm0.2)\cdot10^{-9}$ sec. On the basis of the transmutation scheme $Yb^{169} \rightarrow Tu^{169}$, the transitions between the rotational bands of the ground state, the lifetime of the 473-kev level, and the transitions between the levels of the various rotational bands are thoroughly studied. The results of the investigations of lifetime and spin of the individual levels are given in Fig. 3. The characteristics of the transitions between the levels of various rotational bands of Tu^{169} are given in a table. M.Ye. Voykhanskiy is mentioned. There are 6 figures, 1 table, and 30 references: 17 Soviet, 10 US, 1 German, and 2 Danish.

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Study of the Probability of Rotational Transitions Between Rotational Levels of Er^{166} and Tu^{169}-Nuclei

S/048/60/024/012/010/011
B019/B056

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Institute of Physics and Technology of the Academy of Sciences USSR)

Text to this table: 1) Level energies. 2) Half-lives in seconds. 3) Transition energies. 4) Type of transition. 5) Relative intensity of the γ-lines. 6) α_{total}. 7) Experimental lifetime of γ-radiation, $\tau_{\gamma exp}$. 8) τ_{γ} calculated according to Weisskopf. 9) $\frac{\tau_{\gamma Weisskopf}}{\tau_{\gamma exp}}$.

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S/048/60/024/012/010/011
B019/B056

...ными для изотопов.

Характеристики переходов между уровнями разных ротационных полос Tu^{169}

1 Энергия уровня, kev	2 $T_{1/2}$ эксп., сек	3 Энергия перехода, kev	4 Тип перехода	5 Относительная интенсивность γ-линий	6 $\alpha_{полн.}$	7 $\tau_{эксп.}$, сек	8 $\tau_{Вайск.}$, сек	9 $F = \frac{\tau_{Вайск}}{\tau_{эксп}}$
316	$(6,7 \pm 0,2) \cdot 10^{-7}$	177	$E2$	5,6	0,54	$2,0 \cdot 10^{-6}$	$8,3 \cdot 10^{-6}$	$2,9 \cdot 10^{-3}$
		177	$M1$	25	0,87	$6,4 \cdot 10^{-6}$	$5,8 \cdot 10^{-12}$	$0,9 \cdot 10^{-6}$
		198	$E2$	4,6	0,45	$3,5 \cdot 10^{-6}$	$4,8 \cdot 10^{-9}$	$1,4 \cdot 10^{-3}$
		198	$M1$	46	0,83	$3,5 \cdot 10^{-6}$	$4,1 \cdot 10^{-12}$	$1,2 \cdot 10^{-6}$
		308	$E2$	18	0,05	$9,0 \cdot 10^{-6}$	$5,2 \cdot 10^{-9}$	$0,58 \cdot 10^{-3}$
379	$(3,6 \pm 0,1) \cdot 10^{-6}$	63	$E1$	65	0,9	$1,1 \cdot 10^{-7}$	$1,2 \cdot 10^{-12}$	$1,1 \cdot 10^{-5}$
		240	$E1$	1	0,03	$6,4 \cdot 10^{-6}$	$2,2 \cdot 10^{-11}$	$0,34 \cdot 10^{-6}$
		260	$E1$	8	0,03	$7,8 \cdot 10^{-7}$	$1,8 \cdot 10^{-11}$	$2,3 \cdot 10^{-5}$

Величина замедленности на границе запрета для переходов 240 к

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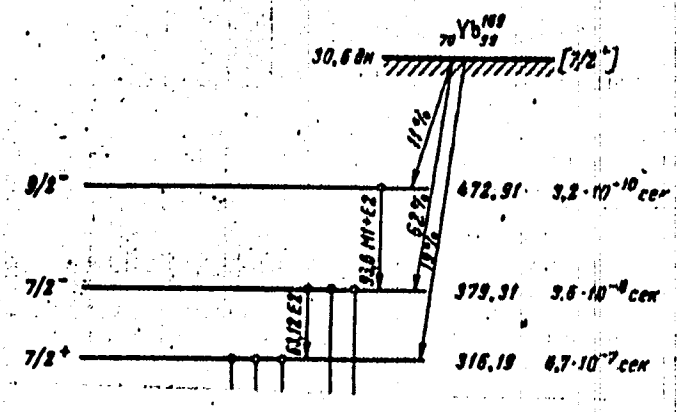
S/048/60/024/012/010/011
B019/B056



Card 5/6

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B019/B056

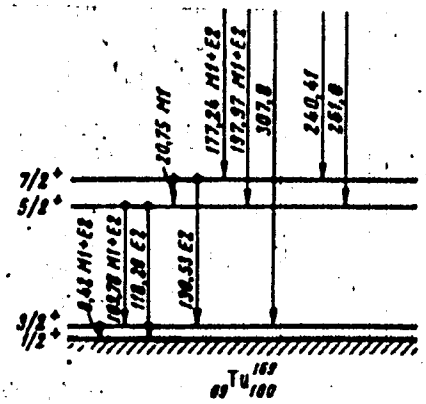

Рис. 3. Схема превращения $Yb^{169} \rightarrow Tu^{169}$. (Время жизни уровня 472,01 keV не $3{,}2 \cdot 10^{-10}$ сек, как ошибочно указано на рисунке, а $1{,}4 \cdot 10^{-10}$ сек)

Card 6/6

S/120/60/000/005/048/051
E192/E382

AUTHORS: Polivanov, V.V., Il'in, V.V., Izbyurov, A.V., Pogudina, R.V. and Pyatakov, N.I.

TITLE: Power-supply Equipment for the Electron Microscope, Type УЭМВ-100 (UEMV-100)

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No. 5, pp. 147 - 151

TEXT: The new electron microscope, type UEMV-100 (Ref. 3), and its power supplies can be regarded as a further development of the microscope type УЭМБ-100 (UEMB-100). In particular, the high voltage supplies have the same three stages, i.e. 50, 75 and 100 kV and the lenses operate with the same number of ampere-turns. However, the new microscope is provided with improved power supplies. All the five lenses of the microscope are supplied from current stabilisers which are based on a single-stage circuit in which the anodes of the amplifier tubes are fed from a stabilised source. In this way, an increased stability of the lens currents was achieved. A further increase in the stability was secured by employing new tubes, types 6Н13С (6N13S) and 6С18С (6S18S). The use of the new

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Power-supply Equipment for the Electron Microscope, Type UEMV-100

tubes permitted the successful solution of a number of problems such as achieving a wide control of the lens currents, which is necessary for various operating conditions of the microscope. The mains voltage (220 V) is first stabilised by means of two series-connected ferroresonant stabilisers (Fig. 2). Small batteries, type 10-AMTsG-Y-1,3 (10-AMTsG-U-1,3) having a useful life of 15 months, are employed in the rectified stabilised supply sources. The supply sources for the lenses are provided with stepwise voltage control, which is achieved by means of multiple switches. Constructionally, the switches are assembled in blocks, each consisting of 3 wafers. Each wafer is provided with 23 contacts and has an independent control knob. The problem of providing the supply to the stigmators was solved in a novel manner (Fig. 3). Instead of using a number of rectifiers, a common rectifier, giving 300 mA, is used for all the stigmators. 5 potentiometers corresponding to the number

Power-supply Equipment for the Electron Microscope, Type UEMV-100

of the stigmator coils are connected in series across the stabiliser output. The voltage necessary for the stigmators is taken from these potentiometers. Since the resistance of the stigmators is very low, the change of current in one stigmator does not cause any variation of the current in the stabiliser network and so the current control of the stigmators is independent. The stabilisation of the high voltage in the new microscope is done in the same way as in the old one, except that instead of the four control tubes, type 6H5C (6N5S), only two new tubes, type 6S18S, are employed, while the cathode follower is based on the tube type 6H8C (6N8S), instead of 6Ж3С (6P3S). There are two versions of the high-voltage stabiliser. One of these uses a battery as the voltage reference source, while the other employs a gas-discharge tube, type СГ-201С (SG-201S), as the reference source. The circuit for connecting a gas-discharge stabiliser is shown in Fig. 5. It was found that the latter type of stabiliser was quite satisfactory. It was found experimentally

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Power-supply Equipment for the Electron Microscope, Type UEMV-100

that the new microscope, fitted with the newly developed stabilised supply sources, has a resolution of 10 Å. There are 4 figures and 3 Soviet references.

SUBMITTED: July 4, 1959

Card 4/4

20131

S/181/61/003/002/029/050
B102/B212

9,4300 (and 1035, 1143)

AUTHORS: Il'in, V. Ye. and Gorbacheva, I. Ye.

TITLE: Effect of heat treatment on electric and galvanomagnetic properties of indium antimonide

PERIODICAL: Fizika tverdogo tela, v. 3, no. 2, 1961, 535-544

TEXT: This paper reports on experimental investigations which have been done to study the effect of heat on electric and galvanomagnetic properties of polycrystalline n and p-type InSb (carrier concentration $3 - 4 \cdot 10^{15}$ cm^{-3}). The cubic samples have not only been etched with CP-4 (SR-4) when made but also after each heat treatment. All samples have been heated up to 300-500°C (60hr) and then slowly cooled off to room temperature. The heating was done in quartz ampoules filled with spectroscopically pure argon. The temperature dependence of the Hall constant R has been measured at H = 5000 oe over a temperature range of 90 - 400°K. Fig. 1 shows R(1/T) curves for p-type InSb and Fig. 2

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Effect of heat treatment... S/181/61/003/002/029/050
B102/B212

those for n-type InSb. It has been found that the electric conductivity as a function of the inverse temperature was less dependent on the type of conductivity than the Hall constant. The p-type samples showed, before and after heat treatment at 350 and 400°C, with increasing 1/T a rapidly dropping σ, and a flat minimum which was followed by a slow increase; a sample which had been heated to 500°C first showed a steep and then a weaker drop (no minimum). The n-type specimens showed only a minimum when not heated, and those heated showed a more or less distinct break instead of a minimum. R, σ, and the resistance variation $\Delta\varrho_H/\varrho_o$ have also been studied in a magnetic field as a function of H at room temperature and liquid-O_2 temperature, H ranging from 500-11,000 oe and in some cases also to 20,000 oe. The results are shown in Figs. 5-9. Furthermore, the effect of magnetic fields with 320, 2600, 5000, and 8000oe on the curves R(1/T), σ(1/T), and $\Delta\varrho_H/\varrho_o = f(1/T)$ has been studied for temperatures ranging from 90 to 400°K. For the majority of the n-type InSb specimens the R(1/T) curves were the same for all fields which had been applied before and after heat treatment. The effects of H on various curves of the p-type specimens have been more than once

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described in the literature. The heat treatment did not show a real effect on the shape of the curves. However, $\sigma(1/T)$ and $\Delta\varrho_H/\varrho_o = f(1/T)$ of n-type InSb showed a distinct field dependence, especially the latter curves (s. Figs. 12 and 13). The following data have been obtained for Rσ and the mobility ratio:

temperature of heat treatment	n-type 0.85 Rσ $cm^2/v \cdot sec$	p-type μ_n/μ_p
no heat treatment	100,000	130
350°C	54,000	11
400	-	6
450	19,000	-
500	9,500	5

Unusual high activation energies of impurities of 0.011 and 0.06 ev have been found for n-type InSb. They may be calculated with the formula $\Delta E = m^* e^4/2\varepsilon^2 h^2$, where m^* is the effective carrier mass, e the electron

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charge, ε the dielectric constant, and the values calculated are 0.009 and 0.062 ev. If n-type InSb is heated to about 500°C it will approach the p-type and it is possible that under certain conditions a junction will take place. There are 14 figures, 3 tables, and 7 references: 4 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S. I. Vavilova Leningrad
(State Optical Institute imeni S. I. Vavilov, Leningrad)

SUBMITTED: June 7, 1960

S/181/61/003/002/029/050
B102/B212

Effect of heat treatment...

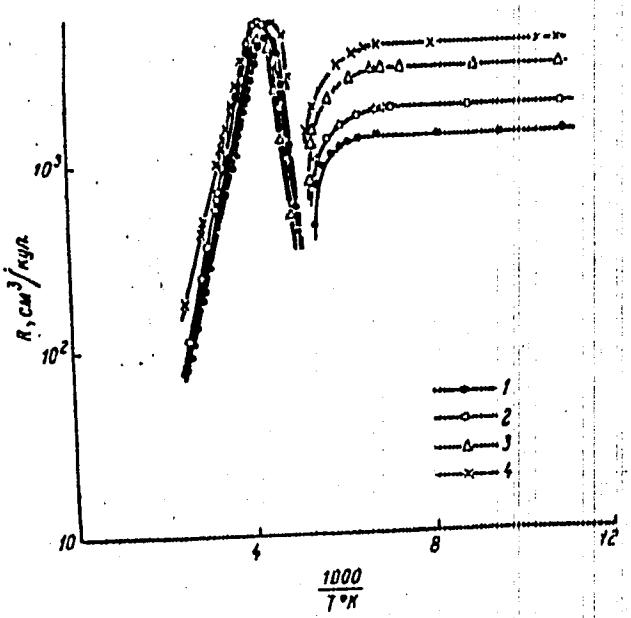

Рис. 1.

Card 5/10

20133

S/181/61/003/002/029/050
B102/B212

Effect of heat treatment...

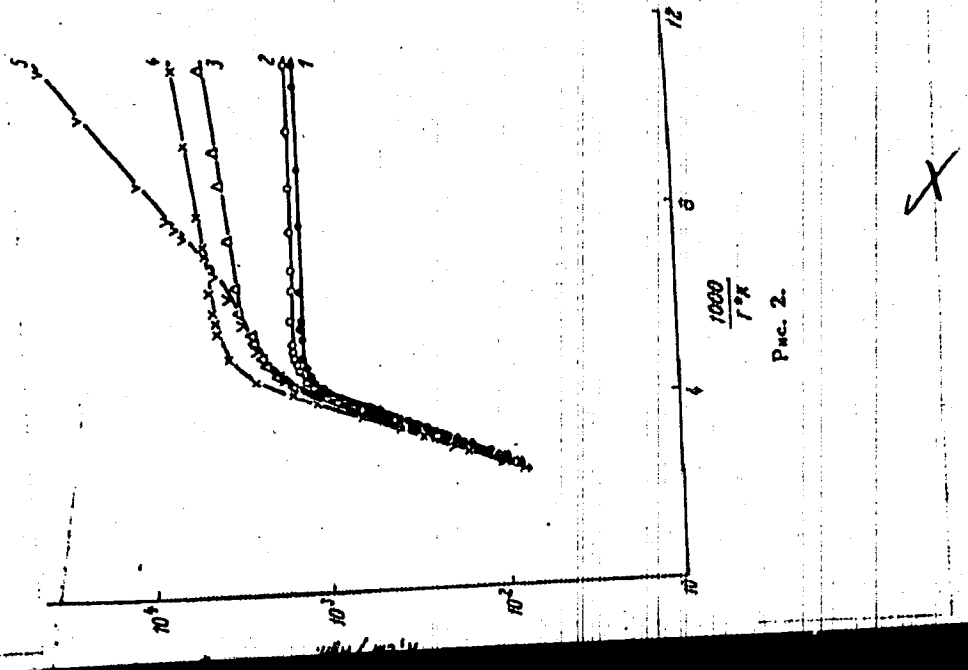

Рис. 2.

Card 6/ 10

Effect of heat treatment...

S/181/61/003/002/029/050
B102/B212

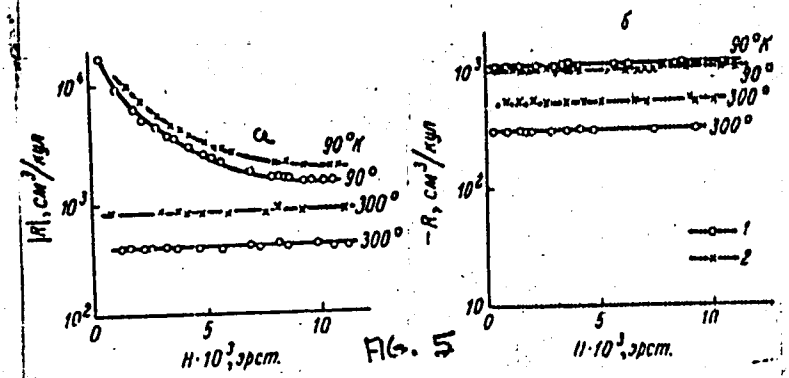

FIG. 5

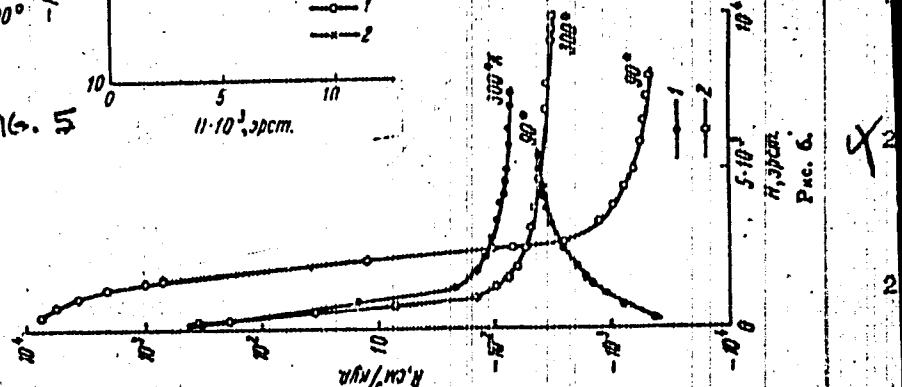

Рис. 6.

Card 7/ 10

Effect of heat treatment...

S/181/61/003/002/029/050
B102/B212

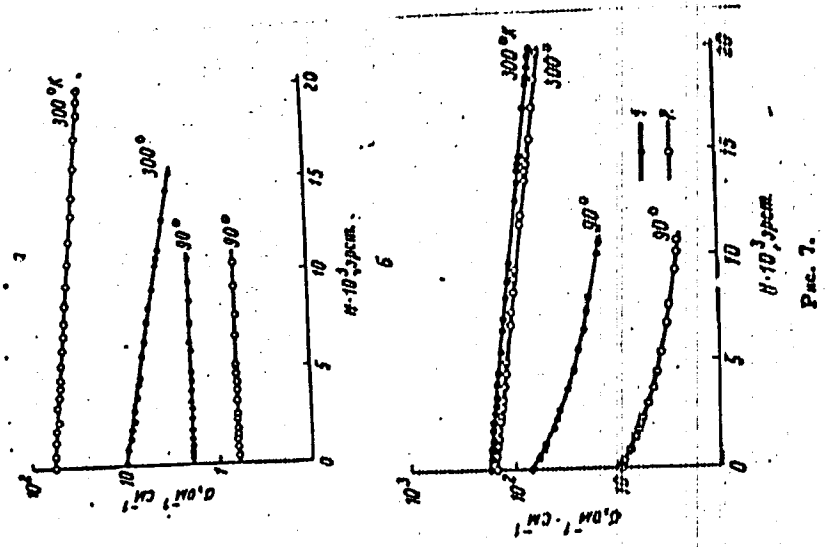

Рис. 7.

Card 8/10

Effect of heat treatment...

S/181/61/003/002/029/050
B102/B212

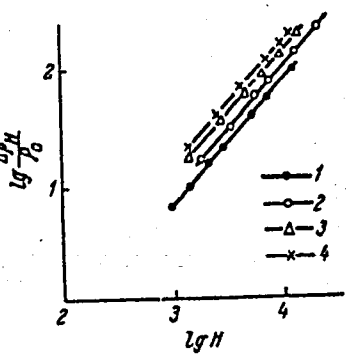

Рис. 8.

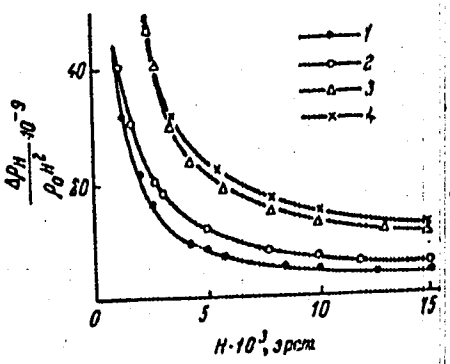

Рис. 9.

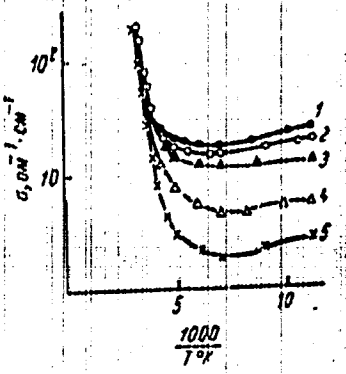

Рис. 12.

Card 9/10

S/181/61/003/002/029/050
B102/B212

Effect of heat treatment...

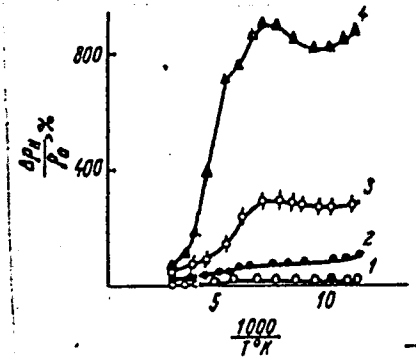

Рис. 13.

Таблица 1

4 Температура отжига, °C	2 Концентрация носителей тока, $см^{-3}$	
	4 р-тип	5 n-тип
До отжига	$4.1 \cdot 10^{15}$	$4.1 \cdot 10^{15}$
300	—	$3.8 \cdot 10^{15}$
350	$2.9 \cdot 10^{15}$	—
400	$1.9 \cdot 10^{15}$	$1.3 \cdot 10^{15}$
450	—	$8.8 \cdot 10^{14}$
500	$1.4 \cdot 10^{15}$	$1.7 \cdot 10^{14}$

Таблица 2

1 Температура отжига, °C	3 Удельная электропроводность, $ом^{-1} \cdot см^{-1}$	
	4 р-тип	5 n-тип
До отжига	4.8	65
300	—	43
350	3.1	9.2
400	2.6	—
450	—	3.6
500	0.64	0.35

Card 10/10

36880
S/181/62/004/004/024/042
B102/B104

24.7500
26.2420

AUTHOR: Il'in, V. Ye.

TITLE: Dislocation etch patterns in InSb

PERIODICAL: Fizika tverdogo tela, v. 4, no. 4, 1962, 999-1002

TEXT: The author studied the effect of annealing on the dislocation density and the influence of the dislocations upon the electrical and photoelectrical properties of coarse-crystalline InSb. The experiments were made with n- and p-type specimens (carrier concentration $(3-4)\cdot10^{15}$ cm^{-3}, dislocation density 10^5-10^6 cm^{-2}) which were heat-treated between 300 and 500°C during 60 hr. During heat treatment they were enclosed in argon-filled quartz ampoules. The cooling down to room temperature also took 60 hr. After grinding and etching the dislocation density was determined by an МИМ-7 (MIM-7) metallographic microscope. Up to 10^4 cm^{-2} the dislocations were counted, at higher densities they were determined from microphotographs. The etching agent was СР-4А (SR-4A). The dislocation density has a distinct minimum at an annealing

Card 1/2

Dislocation etch patterns in InSb

S/181/62/004/004/024/042
B102/B104

temperature of 400°C where it is by about two orders of magnitude lower than at 300 or 500°C. At the same temperature the photo-emf has a peak, exceeding the values at 300 and 500°C by about one order. Also the temperature dependence of conductivity σ and Hall constant R was measured for n-type InSb. The curves $\log \sigma = f(1/T)$ and $\log R = f(1/T)$ consist of two almost straight parts, whose slopes depend on the annealing temperature. With $N_D \geq 10^5$ cm^{-2} annealing causes a considerable change in σ and R which is due to the annealing effect on the dislocation density. For samples annealed at 450 and 500°C the activation energies of n-type InSb were 0.011 and 0.06 ev, relatively high values which would correspond to $m^* = 0.18\ m_o$ and $m^* = 1.2\ m_o$. These effective masses are attributed to holes. So the levels with the upper activation energies can be assumed as acceptor-type recombination levels connected with dislocations. There are 5 figures.

SUBMITTED: December 12, 1961

Card 2/2

authors can be described approximately. An erosion model based on the Joulean heating of the electrodes which takes account of the metal behavior at high current densities is discussed and it is shown that electrode erosion can be explained qualitatively. There are 4 tables.

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

SUBMITTED: February 27, 1961 (initially)
November 10, 1961 (after revision)

Elasticity Theory

Applied Mechanics Review

IL'IN, Ya.K.

1053. Ya. K. Il'in, Determination of stresses in a circular disk rotating about an eccentric axis (in Russian), Doklady Akad. Nauk SSSR 67, 443 (1949).

This note contains an outline of solution of the following problem: Determine the stresses in a thin elastic circular disk rotating with constant angular velocity about the axis normal to the plane of the disk, at a distance δ from its center. The problem is reduced to the solution of a plane problem of elasticity in the manner of Muschelishvili. The solution deduced by the author specialized to known results when $\delta = 0$.

I. S. Sokolnikoff, USA

1950

ACC NR: AT6036526 SOURCE CODE: UR/0000/66/000/000/0111/0112

AUTHOR: Gazalyan, L. S.; Il'in, Ye. A.; Razumeyev, A. N.

ORG: none

TITLE: Bioelectric reactions and oxygen tension in several parts of the brain during hypoxic hypoxia /Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966./

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 111-112

TOPIC TAGS: hypoxia, electroencephalography, central nervous system

ABSTRACT: The sequence, functional significance, and physiological mechanisms of phase changes in the EEG's of various parts of the brain during hypoxic hypoxia were studied in rabbits with electrodes implanted in the sensorimotor region of the cortex, the hippocampus, the posterior hypothalamus, and the midbrain reticular formation. The rabbits breathed nitrogen through a mask. Functional state of these centers was evaluated by assimilation of rhythmic light flashes on the EEG. In 6 animals pO_2 in the cortex and reticular formation was polarographically recorded. As hypoxic hypoxia developed,

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ACC NR: AT6036526

the well-known 3 characteristic phases of EEG changes appeared: 1) the arousal reaction phase; 2) the dominant slow wave phase; and 3) the phase of electrical activity extinction. It was found, however, that the phase 2 slow waves alternated with periods of rapid oscillations, and that recurrent slow waves could be observed in the activity extinction phase in addition to periods of bioelectric "silence". During the first (amplitude gain) stage of the slow wave phase EEG's of all studied brain structures showed assimilation of light flash rhythms. Simultaneous decrease in pO_2 shows this to be a persistence reaction masking the development of CNS inhibition. Restoration of the light flash rhythm assimilation following hypoxic hypoxia usually occurred first in the cerebral cortex.

Changes in cerebral cortex and reticular formation EEG's during hypoxic hypoxia were correlated and analyzed by computer, and the results compared with changes in pO_2 in the cortex (59.25 ± 10.25 from initial levels) and reticular formation (79.75 ± 3.33% from initial levels). [W. A. No. 22; ATD Report 66-1167]

SUB CODE: 06 / SUBM DATE: 00May66

Card 2/2

L 10951-01
ACC NR: AT6036570

intracranial pressure of 1360 mm H_2O, pO_2 was 41.6% (σ = 17.22; m = 3.38; c = 41.4; n = 26; $p < 0.01$). These disturbances of the brain's oxygen regime caused changes in the pulse, respiration frequency, blood pressure, and EEG.

Oxygen breathing restored the impaired functions of the organism despite impaired cerebral circulation. The amount of increase in cortical pO_2 under these conditions was a function of the degree of excess intracranial pressure: at an intracranial pressure of 540 mm H_2O, oxygen breathing not only normalized cortical pO_2, but raised it above initial levels. Normalized EEGs and improved cardiac activity were simultaneously observed. With intracranial pressures of 1360 mm H_2O and above, oxygen breathing only slightly increased cortical pO_2 and had no beneficial effect on cardiac activity and brain bioelectric activity. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 3/3

NIKOL'SKIY, I.P.; IL'IN, Ye.A.

Introducing an automatic system for dust removal from mine surface. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. 18 no.9:8-10 S '65. (MIRA 18:10)

IL'IN, Ye.A.

Description of genetic types of glacial relief on the Wurmian stage in northwestern White Russia. Dokl.AN BSSR 5 no.4:168-172 Ap '61. (MIRA 14:5)

1. Predstavleno akad. AN BSSR K.I.Lukashevym.
(White Russia—Glacial epoch)

IL'IN, Ye.A. [Il'in, IA.A.]

Some petrologic characteristics of moraines in the northwest of White Russia. Vestsi AN BSSR.Ser.fiz.-tekh.nav. no.1:95-107 '62. (MIRA 16:9)

(White Russia--Moraines)

ACCESSION NR: AT4042680 S/0000/63/000/000/0182/0185

AUTHOR: Zharov, S. G.; Il'in, Ye. A.; Kovalenko, Ye. A.; Kalinichenko, I. R.; Karpova, L. I.; Mikerova, N. S.; Osipova, M. M.; Simonov, Ye. Ye.

TITLE: The study of the prolonged effects on man of an atmosphere with an increased CO_2 content

SOURCE: Konferentsiya po aviatsionnoy i kosmicheskoy meditsine, 1963. Aviatsionnaya i kosmicheskaya meditsina (Aviation and space medicine); materialy konferentsii. Moscow, 1963, 182-185

TOPIC TAGS: carbon dioxide effect, man, pressure chamber, acidosis, hypodynamia, fatigue

ABSTRACT: Two experiments were performed in which human subjects were kept in pressure chambers with a capacity of 7 cubic meters at an air temperature of 20± 2°C and a relative humidity of 40 to 60%. Oxygen content varied from 19 to 22%. In the first experiment, the CO_2 level was maintained at 1% and in the second experiment at 2%. Two subjects were used in each experiment; each experiment lasted thirty days. Examination of the physiological indices indicates that the

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ACCESSION NR: AT4042680

presence of men in an atmosphere of limited capacity with an increased CO_2 content leads to acidosis, hypodynamia, and fatigue. The intensity of acidosis increases with an increase of CO_2 content from 1% to 2% and increases with the duration of time spent in the chamber. Subjects who remained in the test chamber for thirty days with a CO_2 content equal to 1% maintained their work capacity on a sufficiently high level. When exposed to physical loads, subjects who had spent thirty days in an atmosphere of 2%CO_2 manifested a sharp decrease in work capacity and a significant strain on the functions of the organism. However, the functional changes observed were completely reversible.

ASSOCIATION: none

SUBMITTED: 27Sep63 ENCL: 00 SUB CODE: LS

NO REF SOV: 000 OTHER: 000

Card 2/2

ACCESSION NR: AT4042689 S/0000/63/000/000/0255/0258

AUTHOR: Kovalenko, Ye. A.; Korol'kov, V. I.; Il'in, Ye. A.

TITLE: The effect of hypothermia on the course of oxygen starvation under conditions of high altitude

SOURCE: Konferentsiya po aviatsionnoy i kosmicheskoy meditsine, 1963. Aviatsionnaya i kosmicheskaya meditsina (Aviation and space medicine); materialy* konferentsii. Moscow, 1963, 255-258

TOPIC TAGS: high altitude, hypothermia, artificial hibernation, oxygen starvation, oxygen lack, cerebral oxygenation

ABSTRACT: The authors recorded the EKG, pneumogram, electrocorticogram and electrothalamogram during oxygen deficiency in dogs in which platinum electrodes had been implanted into the cerebral tissue. In order to study the deoxygenation of the brain, a constant record of the pO_2 was made polarographically and the dogs were subjected to various degrees of hypothermia. The cooling was carried out in special thermochambers, and the animals were given barbamyl (50 mg/kg), hexonium and dimedrol (5 mg/kg) one hour before cooling. The experiments involved a rapid "ascent" in a pressure chamber from 4000 to 15000 m in 0.5 seconds, during respiration of pure oxygen, and from 12000 to 27000 m in the same time, with exclusion of

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ACCESSION NR: AT4042689

oxygen and respiration of only the surrounding air. In control animals, rapid elevation to 15000 m caused falling after 17-25 seconds, followed by convulsions after 23-25 seconds. The pO_2 in the cerebral cortex and subcortical thalamo-hypothalamic area decreased to 14-20% of the original level. Tachycardia of 226 beats/minute was also observed, changing into a bradycardia of 50 beats/minute. There were also changes in the EKG, and depression of bioelectric activity. Complete cessation of respiration occurred after 45-90 seconds and after 2-3 minutes the animals could not be revived. Experimental animals with a body temperature of 30-32C could not be maintained at the height of 15000 m for longer than 2 minutes without artificial respiration. The pO_2 decreased to 26% of the original level in the cortex and to 40% in the subcortex. The pulse rate increased to 141 beats/minute, followed by a bradycardia of 80 beats/minute. Convulsions were not observed. In another group of dogs cooled to 22-24C, respiration at a height of 15000 m continued for 2-5 minutes and cardiac activity continued for 3-7 minutes, but with marked changes in the EKG. However, the pO_2 in the brain decreased to 18-30% of the original level in the cortex and 10-52% in the subcortex. There were also initial increases in bioelectric activity, followed in a few minutes by complete cessation of bioelectric activity. At an altitude of 27,000 m, the pO_2 in the cerebral cortex of controls already fell to 16% of normal after 10 seconds and to 10-13% in 40-50 seconds. Cessation of respiration occurred after 15-40 seconds, and tissue emphysema was noted. Cooling of the animals to 22-30C post-

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ACCESSION NR: AT4042689

poned the cessation of respiration only slightly at this altitude, and after 2 minutes the animals could not be revived. Most of the symptoms were the same as at 15000 m, although the emphysema was slightly less pronounced.

ASSOCIATION: none

SUBMITTED: 27Sep63 ENCL: 00 SUB CODE: LS

NO REF SOV: 000 OTHER: 000

Card 3/3

AGADZHANYAN, N.A.; BIZIN, Yu.P.; DORONIN, G.P.; ILYIN, Ye.A.; KUZNETSOV, A.G.; YEZEPCHUK, N.I.

Effect of the human organism of a prolonged stay in a closed chamber of small size. Probl. kosm. biol. 4:31-43 '65. (MIRA 18:9)

L 14271-66 EWT(1)/FS(v)-3 SCTB DD/RD

ACC NR: AT6003838 SOURCE CODE: UR/2865/65/004/000/0031/0043

AUTHOR: Agadzhanya, N. A.; Bizin, Yu. P.; Doronin, G. P.; Il'in, Ye. A.; Kuznetsov, A. G.; Yezepchuk, N. I. 55 B+1

ORG: none

TITLE: Effect on the human organism of a prolonged sojourn in a closed chamber of small volume

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 31-43

TOPIC TAGS: man, respiration, life support system, space chamber test, space physiology, central nervous system, cardiovascular system, space psychology

ABSTRACT: Experiments were performed in order to study the nature of changes in the basic functions of the organism during a prolonged stay by 2 subjects in a specially equipped pressure chamber with a 7-m^3 capacity. Air composition, temperature, and humidity were automatically maintained at a constant level by means of a special life-support system developed by G. I. Badikov, B. A. Miloslavov, and G. I. Solov'yev. The automatic system

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maintained a partial oxygen pressure of 155—165 mm Hg, the CO_2 content below 2 mm Hg, the air temperature at 19.5 to 23.5° C, and the relative humidity at 40—70%. Telephone communications with the subjects were kept to a minimum.

Higher nervous activity, the bioelectrical activity of the cerebral cortex, standard EKG, arterial pressure, gas exchange, functions of external respiration, and oxygen saturation of the blood were studied during the course of the experiment. Daily tests of blood and urine were made. Detailed medical examinations were made before and after the experiment.

As the experiment progressed, the time required for performance of conditioned motor acts increased from 15—20 sec at the beginning of the experiment to 25—28 sec 30 days later, and to 35—37 sec by the end of the experiment. The quality of coordination did not show any substantial changes. There were no changes in the time required for solving arithmetical problems. Indications were obtained that prolonged isolation in a small chamber leads to the development of protective inhibition and a lowering of the flexibility of the nervous processes. The second half of the experiment was characterized by a loss of interest, the appearance of irritability, and in-

creased emotional instability. The lowering of the tonus of the cerebral cortex was evident from the EEG, which toward the end of the experiment showed a sharp decrease in the alpha index, accompanied by a dominance of slow waves (4—6 cps) and the appearance of waves with a frequency of 0.5—2 cps.

Experimental data showed that by the end of 60 days, the pulse frequency tended to drop by 8—10 strokes (20%), systolic pressure by 10—16%, and diastolic pressure by 7—8%, indicating a drop in the vascular tone and a weakening of the functional ability of the cardiovascular system. An increase in the stroke and minute volume of the heart, a drop in the peripheral resistance of the circulatory system, and an increase in the latent period of vascular reactions were observed.

Tests performed after the experiment showed a depression in the adaptative mechanisms of the body and a sharp increase in the excitability of the circulatory system. X-ray studies showed that prolonged hypokinesia and isolation caused a significant decrease in the size of the hearts of both subjects. This is considered to be the result of detraining.

L 14271-66
ACC NR: AT6003838

During the course of the experiment, oxygen consumption dropped on the average by 32%, while CO_2 production diminished by 26%. Pulmonary ventilation dropped by 2— 2.5 liters/min. These results indicate a drop in energy expenditures from 30.15 to 20.85 kcal/kg per diem.

During the course of the experiment there was a short-term increase in the number of erythrocytes and reticulocytes. Occasionally, there was also an increase in the number of lymphocytes. Beginning with the second half of the experiment, the absolute number of eosinophils increased by a factor of 1.5— 2. An investigation of the phagocytic activity of neutrophils showed an increase of this activity toward the end of the experiment.

The reactions of individuals to a prolonged stay in a small chamber differ considerably, and this factor should be taken into account in the selection of cosmonauts for flights of long duration. At the same time, it is necessary not only to increase afferentation but also to properly work out a schedule for work and rest. This means that the assigned tasks have to be more varied, more creative, and require a greater variety of physical skills. Entertainment will also have to be carefully worked out and should include music, radio, and television in order to create a phycho-

Card 4/5

L 14271-66

ACC NR: AT6003838

logically stimulating environment. Orig. art. has: 3 figures and 1 table.
[ATD PRESS: 4091-F]

SUB CODE: 06, 05 / SUBM DATE: none / ORIG REF: 010 / OTH REF: 006

Card 5/5

KUROCHKIN, G.D., kand. geol.-mineral. nauk (Moskva); DEMENT'YEV, G.P., doktor biolog. nauk (Moskva); PETROV, Yu.A., kand. filosof. nauk; FEDOROV, A.S. (Moskva); IL'IN, Ye.I. (Moskva); GALYUK, V.A. (Moskva); NOVIK, I.B. (Moskva); SIUTSKIY, M.S. (Moskva); SHAFRANOVSKIY, I.I., prof.; FRANK-KAMENETSKIY, V.A., prof.

Book reviews. Priroda 54 no.9:60, 103, 111-116 S '65.
(MIRA 18:9)

1. Moskovskiy gosudarstvennyy universitet (for Petrov).
2. Leningradskiy gornyy institut im. Plekhanova (for Shafranovskiy).
3. Leningradskiy gosudarstvennyy universitet (for Frank-Kamenetskiy).

IL'IN, Ye.M.; SERYAYEV, V.A.

[redacted]"- system honing and lapping heads. Stan.i instr. 28 no.4: 26-29 Ap '57. (MLRA 10:5)

(Grinding machines)

IL'IN, Ye.M., kand.tekhn.nauk

Determination of maximum speed for winding wires on round frames.
Vest. elektroprom. '33 no.7:74-76 Jl '62. (MIRA 15:11)
(Electric wire)
(Wire industry—Equipment and supplies)

6938 0

SOV/123-59-20-83562

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, Nr 20, p 156 (USSR)

1.2000

AUTHOR: Il'in, Ye.M.

TITLE: On the Problem of Standardization of Spacing of Riveted Joints Used in Aircraft

PERIODICAL: Tr. Kazansk. aviats[illegible]-ta, 1958, Nre 33 - 34, pp 417 - 437

ABSTRACT: The author states the results of theoretical and experimental investigations in connection with the standardization of spacings of riveted joints used in aircraft. In order to select the most efficient ways of standardization, he investigated the effects of the rivet diameter on the efficiency of the joint, on the deformation of connected machine parts in joints of equal strength, on the operation and production time of joints of equal strength and on their weight. The author is of the opinion that the main reason of the great variety of spacings in present riveted aircraft constructions is the insufficiently elaborated calculation method for riveted joints. With the aid of calculations and graphs the possibility of standardising the joints is proved. The author suggests a method and the sequence of calculations of riveted joints with standardized spacing. The investigation

Card 1/2

1.0000 1521 2806 ONLY

S/123/61/000/020/015/035
A004/A101

AUTHOR: Il'in, Ye. M.

TITLE: The effect of paneling riveted fuselages on the labor consumption of the assembling and mounting process of their manufacture

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 20, 1961, 22, abstract 20B98 ("Tr. Kazansk. aviats. in-ta", 1960, no. 52, 43-58)

TEXT: To simplify the assembly process, extend the working front and provide the conditions for mechanization of assembly work of modern aircraft, the paneling of aircraft structures is becoming more and more widespread. The author presents generalized formulae for the labor consumption of the assembly and mounting processes during the manufacture of circular cylindrical fuselage sections of riveted construction. Analytical relationships are derived taking into account the effect of the cross-section dimensions of the fuselage and the number of its members comprised on the labor consumption of assembly and mounting operations. It is proved that the paneling effect depends on the section diameter, the number of panels contained and the mechanization level of the assembly operations, namely a) the greater the section diameter, the lower is

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The effect of paneling riveted fuselages ...

the paneling effect; b) the greater the section diameter, the greater number of panels is necessary to assure the maximum value of the paneling effect for the given diameter; c) the higher the mechanization level of the assembly process, the higher is the paneling effect. If the assembly operations are mechanized, paneling permits the reduction of the aggregate labor consumption of assembly and mounting works by a factor of 2. The calculations presented show that the higher the mechanization level of the assembly process, the lower the number of panels into which the section should be divided to achieve the maximum reduction in labor consumption during its manufacture. The panel dimensions obtained with such a breaking down permit the use of the equipment employed in Soviet aircraft construction. There are 13 figures and 6 references.

B. Polstayev

[Abstracter's note: Complete translation]

Card 2/2

L 10214-66 EWT(m)/EWP(w)/EWA(d)/T EWP(t)/EWP(k)/EWP(z)/EWP(b) WW/RD/AM

ACC NR: AP5028963 SOURCE CODE: UR/0114/64/000/009/0025/0027

AUTHOR: Alekseyeva, Ye. A. (Engineer); Gruzdov, A. P. (Engineer); Il'in, Ye. P. (Engineer); Konovalova, I. N. (Engineer); Maksimova, O. V. (Engineer); Shtremel', M. A. (Engineer)

ORG: none

TITLE: Effect of temperature on elastic properties of thin-sheet spring alloys

SOURCE: Priborostroyeniye, no. 9, 1964, 25-27

TOPIC TAGS: spring, measuring instrument, industrial instrument

ABSTRACT: The results are reported of measurements of the elastic limit σ_r (with residual strains of 0.01 and 0.005%) and elasticity modulus E in bending of 35-120-micron thick specimens (10 x 100 mm) of BrOF6, 5-0, 15, BrKMTs 3-1, Br32, BrBNT 1, 9 bronzes, 60S2, EI814 steels, and N36KhTYuMB alloy at temperatures that ranged from -70C to +150 or +500C. Also, the ultimate strength σ_s and the yield point $\sigma_{0.1}$ of 0.1 x 10-mm 57-mm long specimens were determined. All specimens were thermally treated according to specifications normally used in the

Card 1/2

UDC: 620.172.22:62-415:536.49

L 15284-66
ACC NR: AP5028963

instrument-making industry. The numerical findings are reported in the form of curves. It is noted that many specimens suffered brittle fractures partly due to their thickness nonuniformity and high width-to-thickness ratio. Orig. art. has: 7 figures and 1 table.

SUB CODE: 11, 13 / SUBM DATE: none / ORIG REF: 004

Card 2/2

IL'IN, Ye.P.

Asymmetry in manifestations of muscular sense. Fiziol.zhur. 50 no.6:736-740 Je '64. (MIRA 18:2)

1. Laboratoriya fiziologii truda Fiziologicheskogo instituta imeni Ukhtomskogo, Leningrad.

IL'IN, Ye.P.

Relation of functional asymmetry in the motor analyzer to functional asymmetry in the visual analyzer. Fiziol.zhur. 50 no.1:26-31 Ja '64. (MIRA 18:1)

1. Nauchno-issledovatel'skiy institut fizicheskoy kul'tury, Leningrad.

IL'IN, Ye.P.

Changes with age in the strenght of both hands. Trudy LSMGI 45:135-145 '58 (MIRA 11:11)

1. Kafedra normal'noy fiziologii Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta (zav. kafedroy - prof. Yu.M. Uflyand).
(HAND)
(PHYSICAL FITNESS)

IL'IN, Ye.P.

Transfer of tonic conditioned reflexes from one side of the human body to the other. Zhur. vys. nerv. deiat. 11 no.4:623-629 Jl-Ag '61. (MIRA 15:2)

1. Research Institute of Physical Culture, Leningrad.
(CONDITIONED RESPONSE)

IL'IN, Ye.P.

Influence of the rate of movements on their exactness. Fiziol. zhur. 47 no.9:1178-1181 S '61. (MIRA 14:9)

1. From the Research Institute of Physical Culture, Leningrad.
(MOVEMENT (PHYSIOLOGY))

IL'IN, Ye. P.

Age-related changes in the tonus of the muscles of both hands. Trudy LSGMI 64:212-221 '61. (MIRA 15:7)

1. Kafedra fiziologii Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta. Zav. kafedroy - prof. Yu. M. Uflyand.

(HAND) (MUSCLES—AGING)

IL'IN, Ye.P.

Functional asymmetry (right-handedness) in an evolutionary aspect. Vest. LGU 19 no.21:88-94 '64 (MIRA 18:1)

IL'IN, Ye.V.; MAL'GINA, Ye.V.; BADYL'KES, I.S., professor, doktor tekhnicheskikh nauk, redaktor; USTINOV, M.T., redaktor; MEDRISH, D.M., tekhnicheskiy redaktor.

[Refrigerating machines and apparatus] Kholodil'nye mashiny i apparaty. Pod red. I.S. Badyl'kesa. Moskva, Gos. izd-vo torgovoi lit-ry, 1954. 368 p. (MLRA 7:12)
(Refrigeration and refrigerating machinery)

IL'IN, Ye.V.; MAL'GINA, Ye.V.

"Refrigerating machinery." E.V.Il'in, E.V.Mal'gina. Khol.tekh. 31 no.4:77 O-D '54. (MLRA 8:1)
(Refrigeration and refrigerating machinery) (Il'in, E.V.)
(Mal'gina, E.V.)

IL'IN,Ye.V.; ISHKOVA,A.K., redaktor; MEDRISH,D.M., tekhnicheskiy redaktor

[Small refrigerators for trading establishments] Melkie kholodil'nye ustroistva v torgovle. Moskva, Gos.izd-vo torgovoi lit-ry, 1955. 98 p. (MLRA 9:2)

(Refrigerators)

IL'IN, Yevgeniy Vasil'yevich; FEDOTOV, Vasiliy Andreyevich; MAKSIMOVICH, A.G., redaktor; SUDAK, D.M., tekhnicheskiy redaktor

Beverages and wines; a reference manual] Napitki i vina; spravochnoe posobie. Moskva, Gos.izd-vo torg.lit-ry, 1957. 150 p. (MLRA 10:8)
(Beverages) (Wine and wine making)

IL'IN, Yevgeniy Vasil'yevich; MAL'GINA, Yevgeniya Viktorovna; CHICHKOV, M.V., red.; SUDAK, D.M., tekhn.red.; BABICHEVA, V.V., tekhn.red.

[Refrigerating machines and cold storage] Kholodil'nye mashiny i ustanovki. Moskva, Gos.izd-vo torg.lit-ry, 1960. 400 p. (MIRA 13:5)

(Refrigeration and refrigerating machinery)

VYSHELESSKIY, Aleksandr Nikolayevich; prof.; GORDON, L.K., dotsent, kand.tekhn.nauk, retsenzent; IL'IN, Ye.V., prepodavatel', retsenzent; RYABOV, V.I., prepodavatel', retsenzent; CHERVYAKOVA, L.S., red.; MENDRISH, D.M., tekhn.red.

[Heat equipment for food processing in public eating establishments] Teplovoe oborudovanie predpriiatii obshchestvennogo pitaniia. Moskva, Gos.izd-vo torg.lit-ry, 1960. 380 p. (MIRA 14:3)

1. Leningradskiy tekhnikum obshchestvennogo pitaniya (for Il'in).
2. Moskovskiy tekhnikum obshchestvennogo pitaniya (for Ryabov).
(Restaurants, lunchrooms, etc.--Equipment and supplies)

ZYUZIN, A.F.; IL'IN, Ye.V.; LAZAREV, N.I.; SOKOLOV, D.V., inzh., nauchnyy red.; SHIROKOVA, G.M., red. izd-va; BORONNEV, N.K., tekhn. red.

[Installing electrical equipment in industrial enterprises and installations] Montazh elektrooborudovaniia promyshlennykh predpriiatii i ustanovok. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 283 p. (MIRA 15:2)
(Electric power distribution--Equipment and supplies)

IL'IN, Yerofey Vasil'yevich; KAMINSKIY, Ye.A., red.; GUL'DYAYEV, N.A., tekhn. red.

[Installation of the electrical equipment of bridge cranes] Montazh elektrooborudovaniia mostovykh kranov. Moskva, Gosenergoizdat, 1962. 53 p. (Biblioteka elektromontera, no.83) (MIRA 16:6)

(Cranes, derricks, etc.--Electric equipment)

IL'IN, Yerofey Vasil'yevich; SOKOLOV, D.V., nauchn. red.
ZHURAVLEV, B.A., red.

[Installation of storage batteries and charging devices]
Montazh akkumuliatornykh batarei i zariadnykh ustroistv.
Moskva, Stroiizdat, 1964. 113 p. (MIRA 17:6)

IL'IN, Ye.V.; MAL'GINA, Yevgeniya Viktorovna; ARSHANSKIY, Yakov Naumovich. Prinimali uchastiye SURENKOV, S.M.; KAPLAN, L.G.; LIKHAREVA, N.V., kand. tekhn. nauk, retsenzent; RUDOMETKIN, F.I., retsenzent; KANTOROVICH, V.L., retsenzent; KREST'YANINOVA, Ye.M., red.

[Refrigerating machinery and plants] Kholodil'nye mashiny i ustanovki. Moskva, Pishchevaia promyshlennost', 1964. 551 p. (MIRA 18:1)

IL'IN, Yerofey Vasil'yevich; ZHURAVKOV, M.V., nauchn. red.

[Assembly of mercury-arc rectifiers] Montazh rtutnykh vypriamitelei. Moskva, Stroiizdat, 1965. 110 p.
(MIRA 18:12)

SAZHIN, B.I.; SKURIKHINA, V.S.; IL'IN, Yu.A.

Dielectric losses and ultrasonic wave absorption in polypropylene.
Vysokom. soed. 1 no.9:1383-1389 S '59. (MIRA 13:3)

1.Nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass.
(Propene)

0064

TUMANOV, V.I.; FUNKE, V.F.; PAVLOVA, Z.I.; IL'IN, Yu.F.

Determination of the tensile strength of solid alloys. Zav.lab. 29 no.8:981-983 '63. (MIRA 16:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov.
(Alloys—Testing)

32405
S/056/60/038/03/02/033
B006/B014

21.1100

AUTHORS: Vasil'yev, Yu. A., Zamyatnin, Yu. S., Ilʹin, Yu. I., Sirotinin, Ye. I., Toropov, P. V., Pomushkin, E. F.

TITLE: Measurement of Spectra and the Average Neutron Number $\bar{\nu}$ in the Fission of U^{235} and U^{238} by 14.3-Mev Neutrons

PERIODICAL: Zhurnal eksperimentalʹnoy i teoreticheskoy fiziki, 1960, Vol. 38, No. 3, pp. 671-684

TEXT: The present article deals in detail with the experimental investigations made in the energy range 0.4 - 5 Mev by means of the time-of-flight technique and a pulsed neutron source. The experimental arrangement is schematically shown in Fig. 1. The reaction $T(d,n)He^4$ served as primary neutron source in the target of an accelerator. The target was bombarded with 150-kev deuterons. The time-of-flight determination was carried out electronically by measuring the time integrals between the pulses in the detector. The deuteron impulses were obtained by modulation; i.e., by means of a sinusoidal

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Measurement of Spectra and the Average Neutron Number in the Fission of U^{235} and U^{238} by 14.3-Mev Neutrons

electric field (f = 2Mc/sec); the pulses of the 14.3-Mev neutrons lasted 3μsec and had a frequency of 4 Mc/sec. On the average, 4 neutrons were obtained per pulse. Two fission chambers were used (with U^{235} (90 per cent) and U^{238} (natural isotope composition)); the chambers were filled with a mixture of argon and CO_2-gas (10 per cent) at 760 torr. A tolan crystal (diameter 80 mm, thickness 25 mm) with a photomultiplier of the type FEU-33 served as neutron detector. The efficiency of the detector was determined according to Hardy. Fig. 2 shows the efficiency as a function of the energy of three threshold energies: 0.2, 0.25, and 0.3 Mev. The electronic apparatus used to measure the pulse distribution in the detector with respect to time is described in detail. Fig. 3 illustrates a block scheme, Fig. 4 a recorded pulse versus time diagram. Fig. 5 shows the time distribution of the pulses recorded with the measurement of the neutron spectrum of the U^{238} fission. Besides neutrons and γ-rays of the fission the following were also recorded: 14-Mev primary neutrons, neutrons, and γ-quanta due to interaction between primary neutrons and parts of the apparatus, radiations of the activated

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Measurement of Spectra and the Average Neutron Number in the Fission of U^{235} and U^{238} by 14.3-Mev Neutrons

substances, neutrons, and γ-quanta due to primary neutron scattering, and 2.5-Mev neutrons from the accelerator. Details and accuracy of the "separation" of the measured values from the background are discussed. The neutron spectra of U^{235} and U^{238} fission are shown in Figs. 7a and 7b. All curves show a similar course: a steep ascent, a peak, and an even descent. Figs. 8a and 8b show the diagrams made for the analysis of the spectra in the coordinates ln (F(E)/E) and E_p. The spectra may be satisfactorily represented by

$$F(E) = \alpha \frac{E}{T^2} \exp(-E/T) + (1-\alpha) \frac{\exp(-w/T_f)}{\sqrt{\pi w T_f}} \exp(-E/T_f) \operatorname{sh} \frac{2\sqrt{wE}}{T_f} .$$

The analytical results are listed in Table 1. The following parameter values are indicated: for U^{235}, T_f = (1.06 ± [illegible]) Mev; T = (0.37 ± 0.04) Mev; α (fraction of evaporated neutrons) = (0.16 ± 0.02)%; for U^{238}, T_f = (1.16 ± 0.03) Mev; T = (0.40 ± 0.04) Mev; α = (0.21 ± 0.02)%. The average number of neutrons emitted in the fission $\bar{\nu}$: 4.17 ± 0.30 (U^{235}) and

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Measurement of Spectra and the Average Neutron Number in the Fission of U^{235} and U^{238} by 14.3-Mev Neutrons

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4.28 ± 0.30 (U^{238}), the ratio $\bar{\nu}(U^{238})/\bar{\nu}(U^{235}) = 1.03 \pm 0.03$. The following data were obtained: U^{235}; $d\bar{\nu}/dE_n = 0.112 \pm 0.011$ and U^{238}; $d\bar{\nu}/dE_n = 0.115 \pm 0.011$; ($E_n$ - neutron energy). In conclusion, the authors thank Yu. Ya. Glazunov, A. N. Maslov, N. I. Nemudrov, V. A. Pirshina, A. I. Reshetov, V. S. Khorkhordin, and V. N. Shikin for having participated in the measurements and for their assistance, V. A. Komarova for computer calculations. Mention is also made of the group of V. A. Ivanov, Yu. S. Zamyatnin, G. A. Bat', and L. P. Kudrin. There are 9 figures, 2 tables, and 21 references, 12 of which are Soviet.

SUBMITTED: August 5, 1959

Card 4/4

25378
S/089/61/011/001/007/010
B102/B214

21.6000

AUTHORS: Rostovtsev, A. A., Il'in, Yu. I., Beregovskiy, A. S., Tishin, V. G., Zezyulin, V. Ye., Yermakov, B. A.

TITLE: A two-dimensional 1024 channel pulse-height analyzer of the type ДМА-1024 (DMA-1024)

PERIODICAL: Atomnaya energiya, v. 11, no. 1, 1961, 58 - 59

TEXT: The two-dimensional amplitude analyzers developed in the west suffer from certain shortcomings. For example, the one described in Ref. 1 allows only for a qualitative study of the spectrum; those described in Refs. 2 and 3, though allowing for quantitative study, have two-stage recording and the results can not be observed during the experiment. These have some other disadvantages, too. The authors of this "Letter to the Editor" have developed and constructed a two-dimensional pulse-height analyzer with 1024 channels; it wears the designation DMA-1024. It consists of a recorder block and two equal sorting instruments "X" and "Y" into which the pulses of the detectors are fed; these are recorded and processed only under certain given conditions of coincidence. The anlyzer

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A two-dimensional 1024 channel ...

channels are arranged in the form of a matrix (32·32 = 1024). The channels of the magnetic storage system (with ferrite nuclei) have each a capacity of 16,000 pulses. The informations are made visible on the screens of two cathode-ray tubes of the type 13LO37 (13LO37). The information is represented on the screen of one of the tubes in a linear system with ~10% accuracy, and on that of the other in a two-decadic system in the form of an optically modulated point screen. The analyzer works with vacuum tubes and semiconductor diodes; in all it contains 360 tubes. The apparatus operates on a.c. mains (220 v, 50 cps) and consumes 2.5 kw. Its size is 2000·900·800 mm. The apparatus is easy to control, and has a reliable uninterrupted working for 8 hours. The temporal distribution of two correlated processes can also be studied with its help. T. . figure shows a two-dimensional spectrum of the Co^{60} -γ- radiation taken by means of this apparatus. The spectrum shows three groups of possible coincidences. The group of coincidences for complete absorption of the γ-rays with the energies 1.17 and 1.33 Mev in both crystals (photopeak) is represented by two vertices: 1.17; 1.33 Mev, and 1.33; 1.17 Mev. The group coincidences for complete absorption in the one, and partial absorption in the other crystal (Compton scattering) is represented by four "ridges" (photopeaks -

L 2225-66 EWT(m)/EWA(h) DM

ACCESSION NR: AP5023763 UR/0089/65/019/003/0244/0250
539.173.8

AUTHOR: Nasyrov, F.; Rostovtsev, A. A.; Il'in, Yu. I.; Linev, S. V.

TITLE: Track distribution of specific ionization as a function of the initial energy of fission fragments of U super 235

SOURCE: Atomnaya energiya, v. 19, no. 3, 1965, 244-250

TOPIC TAGS: thermal neutron, nuclear fission, uranium, ionization

ABSTRACT: Using a telescope consisting of 11 pulse ionization chambers and a two-dimensional pulse-height analyzer, the authors measured the distribution of specific energy loss by ionization in Ar + CH_4 (5%) over the track as a function of the initial energy of the fission fragments. Fission fragments of U^{235} produced by thermal neutrons were studied in the 78 - 115.5 MEV range (light fragments) and 34 - 88 MEV (heavy fragments). The data obtained served to formulate relations between the specific ionization and the velocity of the fission fragments. These relations indicate certain differences in the nature of the ionization energy losses of the light and heavy fragments. Orig. art. has: 7 figures.

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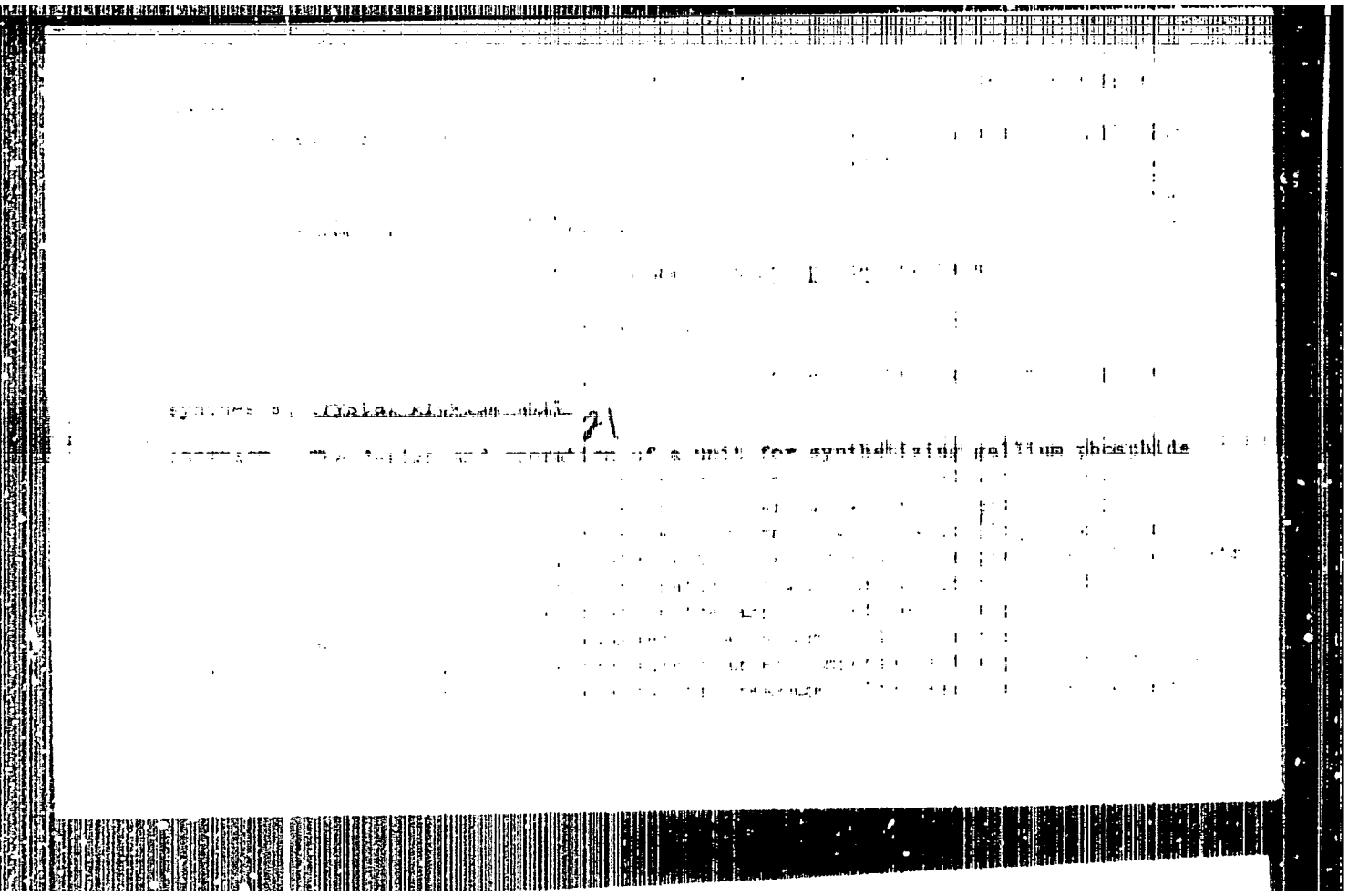
L 2225-66
ACCESSION NR: AP5023763

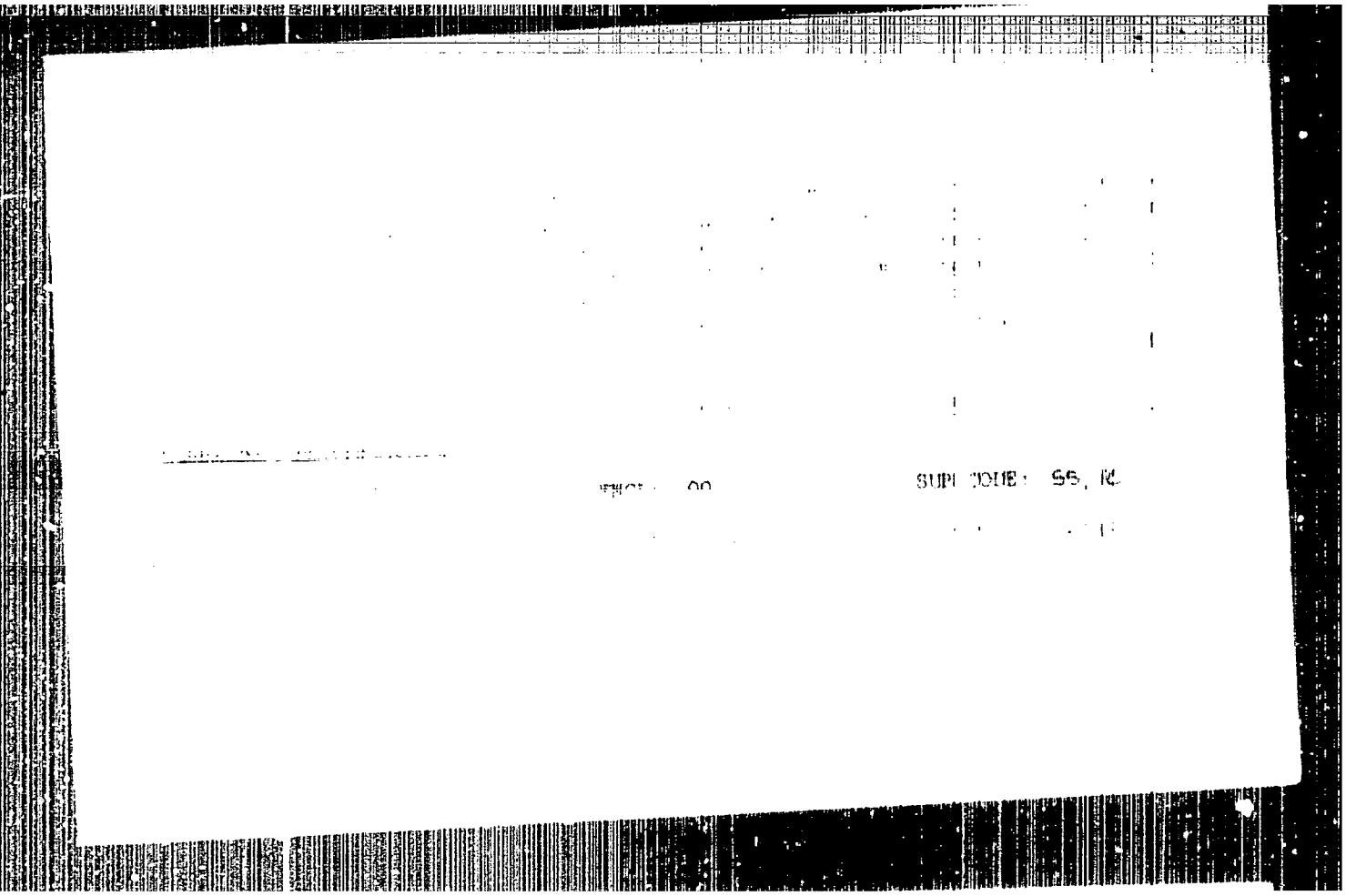
ASSOCIATION: None

SUBMITTED: 21Sep64 ENCL: 00 SUB CODE: NP

NO REF SOV: 005 OTHER: 007

CARD 2/2





L 15947-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG

ACC NR: AT6002255 (N) SOURCE CODE: UR/2564/65/000/000/0234/0238

AUTHOR: Il'in, Yu. L.; Yas'kov, D. A.

ORG: None

TITLE: Methods of preparation of gallium phosphide crystals [Paper presented at the Third Conference on Crystal Growing held in Moscow from 16 to 26 November, 1963]

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v. 6, 1965, 234-238

TOPIC TAGS: crystal growing, gallium compound, phosphide

ABSTRACT: Gallium phosphide crystals were grown from a solution-melt containing gallium metal as the solvent, and also from the gas phase. In the solution-melt method, the crystal growth was found to be substantially affected by the temperature conditions. The optimum temperature of the reaction zone is 1150C, and the corresponding temperature of evaporation of phosphorus is 410C. In experiments with the gas phase, the crystals were obtained by a chemical reaction between phosphorus and gallium suboxide vapors. The crystal growth process was found to be substantially dependent on the evaporation temperature of the phosphorus and gallium suboxide, and on the degree of cooling. The temperature in the phosphorus evaporation zone should be 410C, in the

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L 15947-66

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gallium suboxide evaporation zone, 1050C, and in the center of the reaction zone, 1100C. The crystals prepared by both methods were small in size, and reached 5 mm in width in only a few rare cases. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: none/ OTH REF: 005

FW

Card 2/2

ACC NR: AP6036784 SOURCE CODE: UR/0363/66/002/011/1939/1943

AUTHOR: Il'in, Yu. L.; Sorokin, V. S.; Yas'kov, D. A.

ORG: Leningrad Electrotechnical Institute im. V. I. Ul'yanov (Lenin) (Leningradskiy elektrotekhnicheskiy institut)

TITLE: The effect of some factors on the process of formation and growth of gallium phosphide ingots

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materially, v. 2, no. 11, 1966, 1939-1943

TOPIC TAGS: gallium compound, phosphide, semiconductor crystal

ABSTRACT: In the production of gallium phosphide by the method of horizontal zone melting, the controlling parameters are the temperature of the zone of high frequency heating, the vapor pressure of phosphorus in the working ampoule, and the rate of its displacement through the high temperature zone. In the experiments, the temperature of the zone of high frequency heating was varied from 1400-1600°C, in steps of 30° each. At each value of the temperature, the vapor pressure of phosphorus in the working ampoule was varied from 0.1 to 20 atm. In turn, for each value of the temperature and phosphorus vapor pressure, the rate of displacement of the working ampoule through the high temperature zone was varied from 0.1 to 2.6 mm/min. The

Card 1/2 UDC: 546.681'181.1:621.9-421

NEMIROVSKIY, I.A.; NEYSHTADT, D.M.; SEDOKOV, L.M., kand. tekhn. nauk; IL'IN, Yu.M.; ZHDANOVICH, V.F., inzh., retsenzent; KUZNETSOV, Yu.I., inzh., retsenzent; KOSILOVA, A.G., kand. tekhn. nauk, red.

[Increasing the productivity of heavy-duty machine tools] Povyshenie proizvoditel'nosti krupnykh metallorezhushchikh stankov. [By] I.A.Nemirovskii i dr. Moskva, Mashinostroenie, 1965. 201 p. (MIRA 18:5)