24(0),17(10) SOV/20-124-4-55/67

AUTHORS: Bel'govskiy, M. L., Abeleva, E. A., Potekhina, N. A.

TITLE: The Nature of Dependence of the Frequency of Lethals Arising at Various Stages of Spermatogenesis on the Dose of X-Rays (Kharakter zavisimosti chastoty letaley, voznikayushchikh na raznykh stadiyakh spermatogeneza, ot dozy rentgenovskikh luchey)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 4, pp 922-924 (USSR)

ABSTRACT: The concept of the mutagenic effect of ionizing radiation was formed primarily according to the nature of dependence of the frequency of various mutational types on the kind of radiation, their dose and distribution in time. Already in the thirties it was observed that the frequency of recessive lethal mutations in the case of Drosophila is independent within very wide limits (γ-rays up to X-rays with 2.2 Å) of wave-length and distribution of the dose in time. It is proportional to the amount of dose. Therefrom it was concluded that "either the individual ionizations or activations, or their individual bundles are used to play a mutagenic part" and "these mutagenic agents do not interact with one another on the formation of point mutations (tochkovyye mutatsii)." Thus, the conclusions drawn on the mechanism of the mutagenic effect

Card 1/4

were based on the above mentioned nature of dependence on the dose as one of the most important facts. However, the correctness of these conclusions was doubted later since the genetic changes (of the recessive lethal mutations) are irregular. Scientists have disagreed in this respect up till now (Refs 1-3,5), and there are some additional complications in the corresponding interpretation. At the beginning of the fifties it was found that various stages of the development of Drosophila sperms differ in their sensitivity to radiation; furthermore it was observed that the increase of mutational frequency is not linear in this case (Refs 6-9). In order to clarify the above mentioned dependence separately in mature sperms, spermatids and spermatogonia the authors irradiated hybrid F_1-males with 1000 and 4000 r X-rays, which were not older than 24 hours and had been crossed from 2 in-breeding lines (Algerische and Ebrero). They were immediately brought together with unimpregnated females of the "y-Meller-5" line with two inversions and recessive yellow and apricot genes. They were kept here for 48 hours and were copulated with other unimpregnated females every 2-3 days. The offspring F_1 from eggs of these females which were impregnated

The Nature of Dependence of the Frequency of Lethals Arising at Various Stages of Spermatogenesis on the Dose of X-Rays

during the 1st-2nd, 7-8th, and 15-16th day after irradiation, was preserved. The females were individually crossed with their brothers. If a lethal was produced in an irradiated chromosome, no males of the wild type appeared in the F_2 culture. The frequency of lethal formation was calculated according to the percentage of such cultures. 3 portions of F_1 offspring originated from sperms during the above mentioned stage of development. It follows from the results (Table 1) that the age-conditioned irregularity of sperms does not play an important part in the study of the total mutability of sperms. The data obtained by this irradiation virtually characterize only the mutability of mature sperms. The conclusions drawn from the experiments carried out without exact age examination of the irradiated sex cells must not be regarded as being useless because of lack of such an examination, provided these data refer only to mature sperms. In conclusion, the authors discuss some suppositions which are to explain the above mentioned phenomena, but reject them. Thus, the causes of lacking linear dependence of the frequency of recessive lethals in the spermatids require another explanation. There are

No illustrations

S/560/61/000/010/009/016
D298/D302

27 1220

AUTHORS: Glembotskiy, Ya. L., Abelyeva, E. A., Lapkin, Yu. A., and Parfenov, G. P.

TITLE: The effect of cosmic flight factors on the occurrence frequency in Drosophila Melanogaster of recessive lethal mutations in the X-chromosome

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no. 10. Moscow, 1961, 61-68

TEXT: Reference is made to early studies of mutagenic changes under the effects of ionizing radiation. Experiments on yeast and drosophila pointed out the minimal effect of cosmic radiation on the natural mutation process. Further studies on drosophila confirmed the insignificance of cosmic radiation in spontaneous mutation. More recent studies have been undertaken by the authors on two strains of Drosophila Melanogaster--the Л-32

Card 1/4

The effect of cosmic...

(D-32) and [illegible]18 (D-18)--to determine the mutagenic effect after a cosmic flight on the organism. The flight of the 2nd Sputnik, lasting about 24 hr. and conducted at a height of 300 km, was used to study the effects of cosmic radiation on the heredity of the drosophila. Two types of tests were carried out: (1) to determine the occurrence frequency of recessive lethal mutations in the X-chromosome (sex-linked), and (2) to determine the occurrence frequency of dominant lethal mutations causing death in the early developmental stage of heterozygous organisms in these mutations. The mutability of the two spermatogenic stages was compared--that of the spermatid and that of the mature sperms. The frequency of induced mutations was studied, depending on the frequency of spontaneous mutations. Cross-breeding of the flies which underwent cosmic flight was performed in August 1961 to determine the sex-linked recessive lethals. The Muller-5 method was used for this purpose. The F_2 (second generation)culture percentage with no grey-red-eyed females was taken

Card 2/4

The effect of cosmic...

as index of the occurrence frequency of recessive lethal mutations in the X-chromosomes of the females which had been in cosmic flight. In both strains (D-32 and D-18), it was found that the mutagenic effect is characterized by a statistically valid increased frequency of sex-linked recessive lethal mutations, whereby the D-18 strain (with a higher spontaneous mutability) appeared to be the more sensitive to mutagenic effect. The dotted nature of the induced mutations (20 tested cytologically) and the elevated frequency of mutation of the spermatid, as compared to the sperms, indicates their possible stipulation by cosmic radiation. It is emphasized that an accurate determination cannot be made of the role played by cosmic radiation in the mutagenic effect noted during relatively short cosmic flights. Further experiments to clarify the mutagenic effect of vibrations, acceleration, and weightlessness should be carried out. There are 1 figure, 1 table and 11 references: 2 Soviet-bloc and 9 non-Soviet-bloc. The references to the English-language publications read as follows: O. G. Fahmy,

Card 3/4

33311
D/560/61/000/010/009/016
D298/D302

The effect of cosmic...

M. I. Fahmy, Genet. Res., 1, 173, 1960; P. T. Ives, Proc. Nat. Acad. Sci. USA, 45, N 2, 1959.

SUBMITTED: May 3, 1961

Card 4/4

GLEMBOTSKIY, Ya.L.; ABELEVA, E.A.; LAPKIN, Yu.A.

Effect of fractionation of the gamma-ray dose on mutation frequency in spermatids of Drosophila melanogaster. Radiobiologiia 1 no.1: 119-122 '61. (MIRA 14:7)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(GAMMA RAYS—PHYSIOLOGICAL EFFECT)
(ZOOLOGY—VARIATION)

ABELEVA, E.A.; BEL'GOVSKIY, M.L. [deceased]; POTEKHINA, N.A.

Mutations in unirradiated chromosomes of egg cells fertilized by irradiated male gametophytes. Radiobiologiia 1 no.1:123-127 '61. (MIRA 14:7)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(X RAYS—PHYSIOLOGICAL EFFECT)
(ZOOLOGY—VARIATION)

L2696

S/747/62/000/000/020/025
D243/D307

27 1220

AUTHORS: Glembotskiy, Ya. L., Abeleva, E. A. and Lapkin, Yu. A.

TITLE: The effect of small doses of ionizing radiation on the frequency of occurrence of sex-linked, recessive, lethal mutations in Drosophila

SOURCE: Radiatsionnaya genetika; sbornik rabot. Otd. biol. nauk AN SSSR. Moscow, Izd-vo AN SSSR, 1962, 300-311

TEXT: The preliminary results are given of experiments carried out from 1959 to March 1961, to study the effect of 20 r doses of radiation on the frequency of sex-linked, recessive lethals, in relation to a) type of radiation - γ rays or high speed neutrons; b) radiation intensity - single or repeated doses; c) gamete development - mature sperm or spermatids; d) interstrain differences in spontaneous mutation rate. It is stated that little work has been done on the effects of sub-25 r doses, especially as regards the existence of a threshold and accumulative effects. The experiments were carried out on Д-18 and Д-32 (D-18 and D-32) Drosophila lines, dif-

Card 1/ 2

S/747/62/000/000/020/025
D243/D307

fering considerably in the spontaneous rate of mutation. Spontaneous and induced lethals were detected by the Muller-5 method. Co^{60} γ rays were delivered at 0.93 r/min. Experiments with high-speed neutrons began in May 1960, using a 1000 kv reactor, the dose intensity being 115 r/hr. The results refer only to experiments with D-32 line. The authors found that 5-r doses of γ radiation increased the frequency of recessive lethals in sperm and spermatids and repeated radiation produced a cumulative, mutagenic effect. The relative frequency of recessive lethals per radiation induced by repeated 5 r γ radiation agrees with the data of other authors using higher single doses. The mutagenic effect of high-speed neutrons is 1 1/2 - 2 times greater than that of γ rays. Spermatids had a higher mutation rate than sperm, with both types of radiation. No threshold effect was demonstrated and it is suggested that, should a threshold be detected, it will be specific to the type of radiation, type of mutation, stage of gametogenesis, and the organism. The danger to human germinal cells of low doses of γ rays, and especially, high-speed neutrons is stressed. There are 3 tables.

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

Card 2/2

42697

27/220

S/747/62/000/000/021/025
D243/D307

AUTHORS: Abeleva, E. A. and Potekhina, N. A.

TITLE: The radiation sensitivity of various stages of spermatogenesis in Drosophila melanogaster

SOURCE: Radiatsionnaya genetika; sbornik rabot. Otd. biol. nauk AN SSSR. Moscow, Izd-vo AN SSSR, 1962, 312-318

TEXT: The frequency of dominant lethals on repeated irradiation of Drosophila sperm and spermatids was studied to elucidate the reversibility of physiological damage and the mutagenic effects of repeated low dose radiation. Male F_1 hybrids of Algerian and Erebro strains (24 hours old) received (1) 2400 r in one dose or 3 x 800 r at 1 1/2 hour intervals, and (2) 400 r and 1200 r in a single dose or 3 x 400 r at 3 hour intervals. In (1), since no difference was discerned between single and repeated doses, the interdose interval was increased to 3 hours and the doses were changed to 1200 r maximum and 400 r minimum. As anticipated, repeated radiation did not affect the frequency of dominant lethals in the sperm. In

Card 1/2

spermatids the rate fell by 4.55%, suggesting recovery of the damaged chromosomes. The absence of effect after repeated radiation is not considered a decisive refutation of Russell's hypothesis. A linear relationship between dose and the frequency of dominant lethals is shown to exist up to 1000 r, and the similarity in the frequency pattern of dominant and recessive lethals is pointed out. The spermatid-sperm mutation rate ratio increases with dose reduction, changing from 3:4 at 1000 r to 4:5 at 400 r and to 5 at 20 r. Small doses exert, therefore; a large effect on spermatids. These effects are discussed in relation to man and the length of the various stages of spermatogenesis. The danger of damage during very short, but highly radiosensitive stages is emphasized. There are 2 tables.

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

GLEMBOTSKIY, Ya.L.; ABELEVA, E.A.; LAPKIN, Yu.A.; PARFENOV, G.P.

Effect of space flight factors on the frequency of the appearance of recessive lethal mutations in the x-chromosome of Drosophila melanogaster. Probl.kosm.biol. 1:219-231 '62. (MIRA 15:12)
(SPACE FLIGHT—PHYSIOLOGICAL EFFECT)
(VARIATION (BIOLOGY))

ABELEVA, E.A.; PARFENOV, G.P.; LAPKIN, Yu.A.

Crossing-over of Drosophila Melanogaster males caused by the space flight factors. Isk.sput.Zem. no.13:119-122 '62.
(MIRA 15:7)

(Space biology)

ABELEVA, E.A.; LAPKIN, Yu.A.

Interdependence of the frequency of dominant lethal mutation and the dosage of radiation by fast neutrons in the spermatids of Drosophila. Radiobiologiia 2 no.2:293-297 '62. (MIRA 15:4)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(RADIATION--DOSAGE) (FRUIT FLIES)

L 11243-63 EWT(1)/EWT(m)/BDS--AFFTC/AMD/ASD--AR/K
ACCESSION NR: AP3001087 S/0205/63/003/003/0420/0421 54 55

AUTHOR: Abeleva, E. A.; Lapkin, Yu. A.

TITLE: Frequency dependence of emergence of recessive sex-linked lethal mutations in spermatogenesis of Drosophila on fast neutron dose 19

SOURCE: Radiobiologiya, v. 3, no. 3, 1963, 420-421

TOPIC TAGS: mutations, fast neutron dose

ABSTRACT: Earlier investigations conducted to determine the frequency dependence of the emergence of dominant lethal mutations on fast neutron dose as compared with gamma rays did not offer conclusive results. Therefore, recessive sex-linked mutations were used in this study. Male Drosophila were irradiated with an IRT-1000 reactor in doses of 1000 and 2000 rad. Absorbed fast neutron doses were measured by an ionization method with a dose power of 725 rad/min. Comparison of data with earlier studies indicates that the relationship of mutation frequencies in spermatids and sperms with neutron irradiation of 1000 rad dose is approximately the same as for gamma radiation of 1000 r. Fast neutron radiation for sex-linked lethal mutations is approximately one and a half times more effective than gamma radiation but the general nature of regularity is entirely analogous. Orig. art. has: 1

Card 1/2

L 11243-63
ACCESSION NR: AP3001067

table.

ASSOCIATION: Institut biologicheskoy fiziki AN SSSR, Moscow. (Institute of Biological Physics, AN SSSR)

SUBMITTED: 06Feb63	DATE ACQD: 01Jul63	ENCL: 00
SUB CODE: 00	NO REF SOV: 002	OTHER: 002

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Card 2/2

ABELEVA, E.A.

Change of the nature of radiation-induced mutation in spermatids of Drosophila under the influence of arginine. Radiobiologiia 4 no.3:426-431 '64. (MIRA 17:11)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.

[illegible], [illegible]; [illegible], [illegible]

Appearance of the deletion of x-chromosomes under the influence of ionizing radiations during spermatogenesis in Drosophila melanogaster. Radiobiologiia 4 no.3:[illegible] [illegible]

([illegible])

L 16624-65 EWG(j)/EWT(m) Pa-4/Pb-4 SSD/BSD/AFWL/ASD(a)-5/AMD
ACCESSION NR: AP4043215 S/0205/64/004/004/0569/0574

AUTHOR: Abeleva, E. A.

TITLE: An analysis of the anomalous dependence of mutation frequencies on radiation dose in Drosophila spermatids 19

SOURCE: Radiobiologiya, v. 4, no. 4, 1964, 569-574

TOPIC TAGS: Drosophila, radiation effect, mutation, fertility, chromosomal aberration, sperm

ABSTRACT: Groups of male Drosophila were gamma-irradiated with single 1 and [illegible] kr doses to compare the effects of radiation doses on [illegible] frequency and fertility. Also, crossing-over in the second [illegible] was investigated in male [illegible] [illegible] [illegible] curves [illegible] [illegible] ons, number of offspring, and [illegible] served as indices. [illegible] crossing-over show that up to the [illegible]th day after [illegible] uses up the gametes which had a haploid number at time of irradiation,

L 16624-65
ACCESSION NR: AP4043215

thus, spermiogenesis embraces a period of 4 to 7 days after irradiation and the 8th day corresponds to meiotic divisions. The mutability of mature spermatozoa 1 to 3 days after irradiation [illegible] and of [illegible] spermatogonia which have not entered [illegible] is the same for all [illegible] dose. Daily mutation frequency distribution curves are similar to corresponding fertility curves for both doses. The mutation frequency [illegible] curve has a [illegible] and a sharp peak [illegible] maximum mutation [illegible] ponds to a significant reduction in fertility. [illegible] sterility in males, mutation frequencies are low, apparently, because the surviving cells are genetically highly radioresistant. Genetic [illegible] correlates with [illegible] are dependent on radiation dose and [illegible] degree of spermatid maturation. [illegible] figures.

ASSOCIATION: Institut biologicheskoy [illegible] hysics institute [illegible]

Card 2/3

03

ACCESSION NR: AP4043215

SUBMITTED: 07Mar63 ENCL: 00 SUB CODE: [illegible]

[illegible] OTHER: [illegible]

Card 3/3

ABELEVA, E.A.

Effect of arginine on the radiation injury of spermatids and spermatocytes in Drosophila. Genetika no. 6:115-119 D '65
(MIRA 19:1)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.

ABELEVICH, A.A.; ARTEM'YEV, Yu.N.; VLASOV, A.P.; GAL'PERIN, A.S.; YEVSIKOV, A.V.; IVANOV, G.P.; KOROLEV, N.A.; LEVITSKIY, I.S.; LIVSHITS, L.G.; MELKOV, M.P.; NAZAROV, N.I.; NOVIKOV, M.P.; POPOV, V.Ya.; TEPLOV, A.G.; BAKHAREV, A.P., inzh., retsenzent; SAVEL'YEV, Ye.Ya., red. izd-va; MODEL', B.I., tekhn. red.; EL'KIND, V.D., tekhn. red.

[Technological aspects of the repair of crauler vehicles] Tekhnologiia remonta gusenichnykh mashin. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry 1960. 466 p. (MIRA 14:7)
(Crauler vehicles--Maintenance and repair)

ABELEVICH, L.; GERONIMUS, B.

New ideas in designing automobile repair plants. Avt.transp. 35 no.3:23-25 Mr '57. (MLRA 10:5)

1.Giproavtotrans.
(Automobiles--Repairing)

ABELEVICH, L., inzh.

Design of a standard automobile repair shop making up to 1000 overhauls per annum. Avt.transp. 35 no.11:18-19 N '57.
(MIRA 10:12)

(Automobiles--Repairing)

ABELEVICH, L.; KATS, A.

Continuous overhauling of motorbuses. Avt. transp. 36 no.10:56-57 O '58. (MIRA 13:1)
(Motorbuses--Maintenance and repair)

ABELEVICH, L., inzh.

Requirements of hoisting and checking equipment. Avt. transp. 36 no.11: 27-28 N '58.
(Service stations--Equipment and supplies)

ABELEVICH, Lev Abramovich.; DIVAKOV, N.V., red.; MAL'KOVA, N.V., tekhn. red.

[Equipment for testing motor vehicle parts in repair shops] Oborudovanie dlia ispytaniia agregatov na avtoremontnykh zavodakh. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry, 1958. 157 p. (MIRA 11:12)

(Automobiles--Apparatus and supplies--Testing)

ABELEVICH, L.; SHAKHNES, M.

Designs of automobile service stations. Avt. transp. 37 no.5:20-21 My '59. (MIRA 12:8)
(Service stations)

ABELEVICH, L.A.; YEFR[redacted]OV, V.V., prof., doktor tekhn. nauk, red.;
KOMAROVA, M.V., red.; TUPITSYNA, L.A., red.izd-va;
YASHUKOVA, N.V., tekhn. red.

[Running-in and testing motor-vehicle units in overhauling] Prirabotka i ispytanie agregatov avtomobilei pri kapital'nom remonte. Pod red. V.V.Efremova. Rosvuzizdat, 1963. 42 p. (MIRA 16:12)
(Motor vehicles—Maintenance and repair)

ACC NR: AM6029195 (A) Monograph UR/

Vereshchak, Fedor Polikarpovich; Abelevich, Lev Abramovich

Handbook for a mechanical engineer; design of automobile repair shops (Spravochnik inzhenera-mekhanika; proyektirovaniye avtoremontnykh predpriyatiy) Moscow, Izd-vo "Transport," 1966. 333 p. illus., biblio., tables, 1 fold. chart (insert) 10,000 copies printed.

TOPIC TAGS: automotive industry, mechanical engineering

PURPOSE AND COVERAGE: This handbook is intended for engineering personnel of automobile reconditioning plants and design organizations. It may also be useful to students of secondary schools and of schools of higher education specializing in automobile repair. The material contained in this handbook is based on an analysis of methods used in designing automobile equipment and also on scientific research and experience gained in modern automobile reconditioning enterprises. Chapters 1, 2, 3 and 6 were written by candidate of technical sciences F. P. Vereshchak and Chapters 4, 5, 7, 8 and 9, by Engineer L. A. Abelevich.

Card 1/3 UDC: 629.113.004.67:658.2.001.12(083.75)

ACC NR: AM6029195

TABLE OF CONTENTS [abridged]

Card 2/3

ACC NR: AM6029195

4. Standard special equipment for repairing automobiles -- 324
5. Production implements -- 330

References -- 332

SUB CODE: 13/ SUBM DATE: 05Mar66/ ORIG REF: 022

Card 3/3

ABELIN, T.

British Abst.
A III
Aug. 1953
Ductless Glands, Excluding Gonads

Antithyreotoxic processes in experimental hyperthyreosis. T. Abelin (*Biochem. Z.*, 1953, **323**, 446–454). Animal cells possess the power to render certain amounts of thyroxine inactive; this property is particularly marked in herbivores, and in birds, but less so in omni- and carni-vores. By introducing short intervals during the hyperthyreoidising of rats the thyroxine-inactivating power of the body may be maintained and increased. As a result the animals can be kept alive in practically normal condition with only a slightly increased basal metabolism and actually increase in wt. The resistance to thyroxine is discussed. P. Haas.

ABELIOVICH, Yu.I., inzh.

Use of turbine condensers in the capacity of principal boilers.
Elek. sta. 33 no.10:80-81 O '62. (MIRA 16:1)
(Steam turbines)

1. ABELISHVILI G.V. Eng., VARAZASHVILI G.S., KAZAKOV V.A.

2. USSR (600)

4. Soil Percolation

7. Field method of determining the filtration coefficient of cohesiv soils, Gidr.stroi. 21 no.12, 1952.

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

ABELASHVILI, G. V.= "Some problems of increasing the density of structural adhesive soils in order to develop filtration screens." Min Inter Economy, Georgian S.S.R. Georgian Sci Res. Inst of Hydraulic Engineering and Soil Improvement. (Gruzniigi). Tbilisi, 1956. (Dissertations for the Degree of Candidate in Technical Sciences).

SO: Knizhnaya Letopis' No. 22, 1956

15-57-8-11605

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 8, p 221 (USSR)

AUTHOR: Abelishvili, G. V.

TITLE: Consolidation of Cohesive Structural Soils Used as Impervious Seepage Barriers (Nekotoryye voprosy uplotneniya svyaznykh strukturnykh gruntov v tselyakh sozdaniya protivofil'tratsionnykh ekranov)

PERIODICAL: Tr. Gruz. n.-i. in-ta gidrotekhn. i melior. 1956, Nr 4(17), pp 218-233

ABSTRACT: The author presents the results of laboratory investigations of moisture content, water permeability, and stability of consolidated soils used for the purpose of constructing impervious walls along the sides of canals and reservoirs. Two types of undisturbed soil were used: a heavy structural argillaceous soil, and a macroporous, carbonate medium-argillaceous soil. The

Card 1/3

Consolidation of Cohesive Structural Soils (Cont.)

soils were consolidated under laboratory conditions by means of being rammed. The impacts were produced by a drop hammer with a weight of 7 kg to 16 kg, falling freely from a height of 40 cm to 50 cm, depending on the impact impulse used. The number of impacts varied from two to 14. The article describes the methods used for testing density, moisture content, water permeability, stability in water, and aggregate composition. The structure produced as a result of consolidation was evaluated by means of conventional criteria. 1) the degree of consolidation was determined by the equation:

$$a_1 = \frac{\text{fraction(\%) 5mm after consol.} - \text{fraction(\%) 5mm before consol.}}{\text{fraction(\%) 5mm before consol.}}$$

The increase of a_1 indicated the formation of compacted lumps made of the fine aggregates. 2) Stability of the compacted lumps in water was evaluated by the equation:

$$a_2 = \frac{\text{fraction(\%) 5mm in wet screening}}{\text{fraction(\%) 5mm in dry screening}}$$

Consolidation of Cohesive Structural Soils (Cont.)

The increase of a_2 indicated an increase in stability (in water) of the compacted lumps formed from the aggregates. 3) The stability of the structure in water was evaluated by the relation:

$$a_3 = \frac{\text{number of specimens not disintegrating}}{\text{number of tested specimens}}$$

The increase in the absolute value of a_3 indicated an increase in the stability (in water) of the structure formed. The author concluded from the tests that creation of a proper soil structure in the impervious wall by impact consolidation is insured by proper selection of the moisture content of the soil at the time of consolidation. This moisture content should be equal: a) for heavy structural argillaceous soil, to $W_0 = \frac{W_m+W_p}{2}$, b) for macroporous medium-argillaceous soil, to $W_0 = W_m$. Here W_m represents the maximum molecular moisture capacity, and W_p represents the lower limit of plasticity.

Card 3/3

E. G. Borisova

ABELISHVILI, G.V.

Technical and economical evaluation of seepage preventing measures. Trudy GruzNIIGiM no.20:98-103 '58. (MIRA 15:5)
(Seepage) (Irrigation canals and flumes)

ABELISHVILI, G.V.

Factors in the impermeability of soils. Trudy Gruz NIIGiM no.21:113-120 '60. (MIRA 16:1)
(Soil percolation)

ABELISHVILI, G.V.; VASIL'YEV, V.V.; KERNER, N.A.

Underwater antiseepage screening in reservoirs. Trudy Gruz NIIGiM no.21:309-316 '60. (MIRA 16:1)
(Reservoirs) (Seepage)

ABKLISHVILI, L.G.

Empirical equation of the electromechanical characteristics of the running speed of D.C. traction motors. Soob.AN Gruz.SSR 8 no.4:223-226 '47. (MIRA 9:7)

1.Akademiya nauk Gruzinskoy SSR, Energeticheskiy sektor, Tbilisi. Predstavleno deystvitel'nym chlenom Akademii A.I.Didebulidze.
(Electric motors, Direct current)

ABELISHVILI, L. G.

Abelishvili, L. Gr "Empirical equation of the electromechanical performance speed of direct-current traction engines," Trudy Energet. in-t (Akad. nauk Gruz. SSR), Vol. IV, 1948, p. 99-105. (In Georgian, resume in Russian)

SO: U-4934, 29 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 18, 1949).

ABELISHVILI L. G.

Abelishvili, L. G.- "The calculation of the torque-resistance phases of direct current electric locomotives," Trudy Energet. in-ta (Akad. nauk Gruz SSR), Vol. IV, 1948, p. 107-14, (In Georgian, resume in Russian)

SO: U-4938, 29 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 1., 1949).

ABELISHVILI, L. G.

Abelishvili, L. G.- "The equivalence of the system of mobile loads of electric railways with a constant distribution load," Trudy Ener et. in-ta (Akad. nauk Gruz. SSR), Vol. IV, 1948, P. 115-20, - (In Georgian, resume in Russian).

SO: U-4034, 29 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 16, 1949).

ABELISHVILI, L. G.

20039 ABELISHVILI, L. G. Padeniye napryazheniya, opredepyayusheneye eksploatatsionnyye izmeriteli elektrifitsipovannogo uchastka /zheleznoy dorogi/. — V opl i A. G. Abelishvili. Sooschch. Akad. nauk Gruz. SSR. 1949, No. 1, s. 41-42.

SO: LETOPIS ZHURNAL STATEY, Vol. 27, Moskva, 1949.

ABELISHVILI, L. G.

2/210 ABELISHVILI, L. G. Opredeleniye vremeni kholodnoy pogody pri bol'shikh i izmenyayushchikhsya paleniyakh napryazheniya. Soobshch. Akad. nauk Gruz. SSR, 1949, No. 3, S. 159-66.

SO: Letopis, No. 32, 1949.

ABELISHVILI, L.G., kandidat tekhnicheskikh nauk, dotsent.

Calculating the elements of internal power supply for electric railroads by means of average load curves. Trudy TbIIZHT no.22: 337-386 '50. (MLRA 9:11)

(Electric railroads)

ABELISHVILI, L.G.

Calculating the weight of electric trains by the heating of their traction motors. Trudy Energ. inst. AN Gruz. SSR 8:129-136 '53. (Electric railroads) (MIRA 11:10)

ABELISHVILI, Levan Grigor'yevich

Tbilisi Inst of Engineers of Railroad Transport imeni Lenin, Academic degree of Doctor of Technical Sciences, based on his defense, 28 May 1954, in the Council of the Moscow Order of Lenin Power Engineering Inst imeni Molotov, of his dissertation entitled: "Method of Diagrams of Medium Traction Loadings and Its Application".

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 9, 16 April 55, Byulleten' MVO SSSR, No. 14, Jul 56, Moscow, pp 4-22, Uncl. JPRS/NY-429

ABELISHVILI, L.G.; TRAPAIDZE, L.T.

Magnitudes of the preparatory time and braking force in the braking of freight trains. Soob. AN Gruz. SSR 21 no.1:77-82 Jl '58. (MIRA 11:10)

1. Tbilisskiy institut inzhenerov zheleznodorozhnogo transporta im. V.I. Lenina. Predstavleno akademikom K.S. Zavriyevym.
(Railroads--Brakes)

ABELISHVILI, L.G., prof., doktor tekhn.nauk (Tbilisi)

Time in which investments in railroad electrification pay for themselves. Zhel.dor.transp. 40 no.4:42-43 Ap '58.
(MIRA 13:4)

(Railroads--Electrification)
(Railroads--Finance)

32(3)

AUTHOR: Abelishvili, L. G., Professor, Doctor of Technical Sciences SOV/105-59-6-7/28

TITLE: The Dependence of the Indirect Expenses of Electrical Railways Upon the Parameters of the Electric Supply System (Zavisimost' uslovnykh ekspluatatsionnykh raskhodov elektricheskikh zheleznykh dorog ot parametrov sistemy elektrosnabzheniya)

PERIODICAL: Elektrichestvo, 1959, Nr 6, pp 28-30 (USSR)

ABSTRACT: The economical calculation of the tractive system of electrical railways is basically dependent upon two variables: the overhead wire cross-section and the distance between the substations. For ordinary transmission lines such a calculation has already been carried out by V. M. Khrushchov (Ref 6). The indirect expenses, which should become a minimum, gather the costs for the following items: a) construction of overhead wire system. b) power loss in the overhead wire and in the rail circuit. c) reduction of train speed due to voltage drop. d) expenses for the construction and the operation of substations. The relation combining all these terms is differentiated with respect to q (cross section) and l (distance between substations). Under consideration of the fact, that the optimum values cannot always be realized (viz., because of

Card 1/2

standardized conductor sizes), a formula is derived, which describes the increase of costs above their minimum as a function of the deviations of the variables from their optimum values. By neglect, the formula due to V. M. Khrushchov can be derived from it. If the two formulas are compared, it appears that according to the new formula the increase of costs as a function of the deviation from the optimum is smaller by a factor of 2.5-3. Hence the determination of the most economical design of electric traction systems makes sense only if the cross section and the distance between the substations are taken into account simultaneously. There are 2 figures, 3 tables, and 8 Soviet references.

ASSOCIATION: Institut energetiki AN Gruzinskoy SSR (Institute of Power Engineering AS Gruzinskaya SSR)

SUBMITTED: January 12, 1959

ABELISHVILI, L.G.

Operational expenditures of electric railroads as a function of the electric power supply system. Soob.AN Gruz.SSR 23 no.2:181-185 Ag '59. (MIRA 13:2)

1. Institut energetiki im. A.I.Didebulidze AN GruzSSR, Tbilisi. Predstavlena akademikom K.S.Zavriyevym.
(Electric railroads--Current supply)

ARMLISHVILI, L.G., doktor tekhnicheskikh nauk; ROYNISHVILI, N.M., doktor tekhnicheskikh nauk

Accuracy of calculations for determining the weight of trains. Zhel.dor.transp. 41 no.12:44-46 D '59. (MIRA 13:4)

(Railroads--Trains)

ABELISHVILI, L.G.; TRAPAIDZE, L. T.; PICHKHADZE, I.P.

Study of the carrying capcity of electric railroads taking into account traction current supply systems. Soob. AN Gruz. SSR 31 no. 3:661-668 S '63. (MIRA 17:7)

1. Gruzinskiy politekhnicheskiy institut imeni Lenina.
2. Chlen-korrespondent AN GruzSSR (for Abelishvili).

ABELISHVILI, L.G., prof., doktor tekhn. nauk (Tbilisi)

Comparison of locomotives by the specific capacity. Zhel. dor. transp. 47 no.6:64-65 Je '65. (MIRA 18:6)

ABELISHVILI, L.G.; GABASHVILI, N.V.; KAKABADZE, D.R.; KARUMIDZE, I.G.; KOTIYA, A.K.; KURDIANI, I.S.; LOGUA, Sh.S.; MACHAVARIANI, I.V.; MESKHI, N.S.; MIKABERIDZE, A.S.; SEKHNIASHVILI, G.M.; TOIDZE, M.Z.; TOPCHISHVILI, I.A.; KHEVSURIANI, M.A.

In memory of Stepan Petrovich Kirkesali, 1890-1937. Elektrichestvo no.5:90-91 My '65. (MIRA 18:6)

0924 1664

ACC NR: AP7008868 SOURCE CODE: UR/0105/66/000/008/0095/0095

AUTHOR: Abelishvili, L. G.; Al'tgauzen, A. P.; Baycher, M. Yu.; Gabashvili, N. V.; Dididze, M. S.; Yefroymovich, Yu. Ye.; Kotiya, A. K.; Kupradze, G. D.; Kurdiani, I. S.; Netushil, A. V.; Nikol'skiy, L. Ye.; Razmadze, Sh. M.; Svenchanskiy, A. D.; Smelyanskiy, M. Ya.; Tkeshelashvili, G. K.

ORG: none

TITLE: Professor Grigoriy Artemyevich Sisoyan (on his 70th birthday)

SOURCE: Elektrichestvo, no. 8, 1966, 95

TOPIC TAGS: electric engineering personnel, electric furnace, academic personnel

SUB CODE: 09

ABSTRACT: G. A. Sisoyan graduated from the Moscow Power Engineering Institute in 1931. In 1932 he went to work at the Georgian Polytechnical Institute in the theoretical and general electrical engineering department. Sisoyan has worked and published many works in the area of electric furnaces. He has also worked in the area of investigation of electric spark action. He has published over 50 scientific works. He has also been active in university level teaching. Orig. art. has: 1 figure. [JPRS: 38,330]

UDC: 621.36

ABELISHVILI, L.T.

Calculating the elements of electric-railroad power supply systems by means of average load diagrams. Soob.AN Gruz.SSR 9:53-60 '48. (MLRA 9:7)

1.Akademiya nauk Gruzinskoy SSR, Energeticheskiy institut, Tbilisi. Predstavleno daystvitel'nym chlenom Akademii A.I.Didebulidze.

(Electric railroads)

ABELISHVILI, T.L.; GACHECHILADZE, T.G.; MDIVANI, O.M.

Angular distribution of neutrons in the reaction C^{13} (d, n)N^{14}. Zhur. eksp.i teor.fiz. 38 no.2:631-633 F '60. (MIRA 14:5)

1. Tbilisskiy gosudarstvennyy universitet i Institut elektroniki, avtomatiki i telemekhaniki Akademii nauk Gruzinskoy SSR.
(Neutrons) (Nuclear reactions)

ABELISHVILI, T.L.; SITENKO, A.G. [Sytenko, O. H.]

Electric polarization of deuterons due to scattering by a Colulomb field. Ukr. fiz. zhur. 6 no.1:3-11 Ja-F '61. (MIRA 14:6)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M. Gor'kogo.
(Deuterons)
(Polarization (Electricity))

24715
S/056/61/040/005/015/019
B109/B212

24.6500

AUTHOR: Abelishvili, T. L.

TITLE: Neutron transfer in nuclear collisions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 5, 1961, 1440-1445

TEXT: The calculation of neutron transfer in nuclear collisions is based on papers of A. I. Akhiyezer and I. Ya. Pomeranchuk (J.Phys.USSR, 9, 471,1945); here, a calculation is done for the case where the effect of the Coulomb field is considerable. According to Ref. 11 (K.A. Ter-Martirosyan. ZhETF, 29, 713, 1955), the amplitude of the neutron transfer reaction is described by

$$f = -\frac{\mu}{4\pi\hbar^2}\int \Phi^*_{l'}(\rho')\,\psi^{(-)*}_{k_f}(r')\,V(\rho)\,\psi^{(+)}_{k_i}(r)\,\varphi_l(\rho)\,dr\,d\rho. \qquad (1)$$

where $\vec{\rho}$ denotes the radius vector of the neutron referred to the residual nucleus $A_1 - 1$; the radius vector of the neutron referred to the residual nucleus A_2 in the nucleus $A_2 + 1$; $\vec{r}$ and $\vec{r}'$ the radius vector of

Card 1/5

Neutron transfer in nuclear collisions

the center of mass of the nucleus A_1 and of the residual nucleus $A_1 - 1$ referred to the center of mass of A_2; μ the reduced mass of the colliding nuclei; $V(\vec{\rho})$ the interaction potential existing between the neutron and the residual nucleus $A_1 - 1$; $\psi_{l1}(\vec{\rho})$ the wave function of the neutron having momentum l in the nucleus A_1; $\psi^{(+)}_{\vec{k}_i}(\vec{r})$ the Coulomb wave function of the relative motion of A_1 and A_2 (wave vector - $\vec{k}_i$); $\psi^{(-)}_{\vec{k}_f}(\vec{r}')$ the Coulomb wave function of the relative motion of $A_1 - 1$ and $A_2 + 1$ (wave vector $\vec{k}_f$):

$$\left.\begin{aligned}\psi^{(+)}_{k_l}(r) &= \exp\left(-\tfrac{1}{2}\pi\eta_l + ik_l r\right)\Gamma(1 + i\eta_l)\,F(-i\eta_l,\ 1;\ i(k_l r - k_l r)),\\ \psi^{(-)}_{k_l}(r') &= \exp\left(-\tfrac{1}{2}\pi\eta_l + ik_l r'\right)\Gamma(1 - i\eta_l)\,F(i\eta_l,\ 1;\ -i(k_l r' + k_l r')).\end{aligned}\right| \quad (2)$$

$$\eta_i = Z_1 Z_2 e^2/\hbar v_i \gg 1,\quad \eta_f = Z_1 Z_2 e^2/\hbar v_f \gg 1.$$

Assuming that $M \ll A_1 - 1$ (M - neutron mass), $\vec{r}' \approx \vec{r}$, $\vec{\rho}' \approx \vec{r} + \vec{\rho}$, $V(\vec{\rho})$ $= -V_0$ ($\rho < R$), $V(\vec{\rho}) = 0$ ($\rho > R$)(R - radius of A_1), [illegible], the following expression is obtained from (1):

Card 2/5

Neutron transfer in nuclear collisions

$$f = N_l N_{l'}^{*} \frac{\pi\mu V_0 B_l}{2\hbar^2 \sqrt{\alpha\chi}} (-1)^l \int \psi_{k_f}^{(-)*}(r)\, k_l(\alpha r)\, \psi_{k_i}^{(+)}(r)\, Y_{l'm'}(\vartheta, \varphi)\, Y_{lm}(\vartheta, \varphi)\, dr, \quad (8)$$

$$B_l = \frac{R}{\chi^2 + \alpha^2} \left\{ J_{l+1/2}(\chi R) \frac{d}{dR} I_{l+1/2}(\alpha R) - I_{l+1/2}(\alpha R) \frac{d}{dR} J_{l+1/2}(\chi R) \right\}.$$

where $\chi = \sqrt{2M(V_0 - \varepsilon)/\hbar^2}$; ε denotes the binding energy of the neutron captured by A_1, $I_{\lambda+\frac{1}{2}}(\chi)$ the modified Bessel function, $k_l(x)$ the MacDonald spherical harmonic, $\alpha = \sqrt{2M\varepsilon'/\hbar}$, ε' the binding energy of the neutron captured by $A_2 + 1$. The integral occurring in (8) is calculated by using the approximation

$$ar_{\Phi\Phi} \approx \frac{2}{3}(\sqrt[3]{A_1} + \sqrt[3]{A_2}).$$

which is commonly applied for energies having the order of magnitude of the Coulomb barrier. Neglecting the thermal effect, which is small compared to the kinetic energy of the colliding nuclei and setting $q = \varepsilon' - \varepsilon$ and $2\eta = \eta_i + \eta_f \gg 1$, $\eta_f - \eta_i \ll 1$ the following expression is obtained:

Card 3/5

S/056/61/040/005/015/019
B109/B212

Neutron transfer in nuclear collisions

$$f(\theta) = i\sqrt{\frac{\pi^3}{2\chi a}\frac{N_i N_{i'} V_0 \mu}{k\hbar^4 a^3}} B_l (-1)^{l'} Y_{lm}(\vartheta_0, \varphi_0) \times$$

$$\times Y^*_{l'm'}(\vartheta_0, \varphi_0)\sqrt{\sin\frac{\theta}{2}}\, f_0^{l'}(\theta) \exp\left(-\alpha a\left(1 + \sin^{-1}(\theta/2)\right)\right). \qquad (16)$$

where $f_0(\theta) = \sum_l \frac{1}{2ik}(2l+1)\exp[2i\delta_l(\eta)]P_l(\cos\theta)$. (17)

$k = (k_i + k_f)/2$, $\delta_l(\eta) = \arg\Gamma(l + 1 + i\eta)$ (Coulomb phase shift), $a = Z_1 Z_2 e^2/\mu v^2$; θ denotes the angle between $\vec{k}_i$ and $\vec{k}_f$. From (16) it can be seen that the angular dependence of the differential cross section is given by $\sin^{-3}(\theta/2)\exp\left[-2\alpha a/\sin(\theta/2)\right]$. With an increase in θ this expression increases up to a certain maximum and then it drops according to $\sin^{-3}(\theta/2)$. This maximum is shifted toward small angles as the energy increases. If the energies are large compared to the Coulomb barrier, it is possible to consider the forming of a compound nucleus, and the angular dependence of the cross section for the neutron transfer may be determined from

$$\frac{d\sigma}{d\Omega}(\theta) \sim \Big|\sin^{-1/2}\frac{\theta}{2}\exp\left(-i\eta\ln\sin^2\frac{\theta}{2} + 2i\delta_0 - \alpha a/\sin\frac{\theta}{2}\right) +$$

$$+ \frac{1}{i\eta}\sin^{1/2}\frac{\theta}{2}\exp\left(-\alpha a/\sin\frac{\theta}{2}\right)\sum_{l=0}^{l=l_{max}}(2l+1)\exp(2i\delta_l)P_l(\cos\theta)\Big|^2. \qquad (20)$$

Card 4/5

S/056/61/040/005/015/019
B109/B212

Neutron transfer in nuclear collisions

The energy dependence may be estimated from

$$\sigma(E) \sim \frac{1}{E} \exp\left[-\frac{\alpha Z_1 Z_2 e^2}{E}\left(1+\sin^{-1}\frac{\vartheta_0}{2}\right)\right]. \qquad (25)$$

The author thanks A. G. Sitenko for assistance. There are 15 references: 7 Soviet-bloc and 8 non-Soviet-bloc.

ASSOCIATION: Institut elektroniki, avtomatiki i telemekhaniki Akademii nauk Gruzinskoy SSR (Institute of Electronics, Automation, and Telemechanics of the Academy of Sciences Gruzinskaya SSR)

SUBMITTED: December 16, 1960

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000100120016-0"

39662

S/056/62/043/001/012/056
B125/B102

AUTHOR: Abelishvili, T. L.

TITLE: Theory of neutron transfer in nuclear collisions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 81-83

TEXT: The energy dependence of the cross section for neutron transfer in nuclear collisions was considered for arbitrary values Q of the energy effect of the reaction. At energies below the Coulomb barrier, the course of the cross section, which depends on $|I(\theta)|^2$, exponentially increases with increasing scattering angle θ. At energies above the Coulomb barrier, the effects associated with the possible formation of a compound nucleus play a significant role. The rapid decrease in the angular distribution of the neutron transfer beyond the scattering angle θ_0, which was proved experimentally, is not sufficiently explained by the classical theory of diffraction. The optical nuclear model will probably furnish such an explanation. The energy dependence of the neutron transfer cross section is approximately

Card 1/4

Theory of neutron transfer ...

$$\sigma(E_i) \sim [4E_i - (\sqrt{E_i(E_i+Q)} - E_i)\zeta']^{-1} \exp\{-2\Phi(E_i, Q)\},$$

$$\Phi(E_i, Q) = \eta_i\{(\varphi_i - \psi_i) - \rho(\varphi_f - \psi_f)\}, \qquad (4)$$

$$\varphi_i = \operatorname{arctg}\frac{2\sqrt{E_i\varepsilon' A}}{-AQ-\varepsilon'} \quad (0 \leqslant \varphi_i \leqslant \pi);$$

$$\varphi_f = \operatorname{arc\,tg}\frac{2\sqrt{(E_i+Q)\varepsilon' A}}{-AQ+\varepsilon'} \quad (0 \leqslant \varphi_f \leqslant \pi),$$

$$\psi_i = \operatorname{arc\,cos}\frac{(1-\rho)\zeta'+2}{2\sqrt{1+\zeta'}} \quad (0 \leqslant \psi_i \leqslant \pi);$$

$$\psi_f = \operatorname{arc\,cos}\frac{(1-\rho)\zeta'-2\rho}{2\rho\sqrt{1+\zeta'}} \quad (0 \leqslant \psi_f \leqslant \pi), \qquad (4')$$

$$\rho = \frac{\eta_f}{\eta_i} = \sqrt{\frac{E_i}{E_i+Q}}, \qquad \zeta' = \frac{4\sqrt{E_i(E_i+Q)}}{(\sqrt{E_i}-\sqrt{E_i+Q})^2+\varepsilon'/A}\sin^2\frac{\theta_0}{2},$$

$$A = A_1A_2/(A_1+A_2), \qquad Q = E_f - E_i = \varepsilon' - \varepsilon.$$

E_i is the energy of the colliding nuclei in the c.m.s., ε and ε' are the binding energies of the neutron, transferred in the nuclear collision, in the incident and in the final nucleus. In sub-barrier neutron transfer

Card 2/4

Theory of neutron transfer ...

($\theta_o = \pi$) one has

$$\sigma(E_l) \sim [4E_l - (\sqrt{E_l(E_l+Q)} - E_l)\zeta'|^{-1} \exp\left\{-2Z_1Z_2e^2\hbar^{-1}\sqrt{2MA} \times \right. \quad (5).$$

$$\left. \times \left[\frac{1}{\sqrt{E_l}} \operatorname{arc\,tg} \frac{AQ+\varepsilon'}{2\sqrt{A\varepsilon' E_l}} - \frac{1}{\sqrt{E_l+Q}} \operatorname{arc\,tg} \frac{AQ-\varepsilon'}{2\sqrt{A\varepsilon'(E_l+Q)}}\right]\right\}.$$

$\sigma(E_i) \sim E_i^{-1} \exp(-2\alpha Z_1 Z_2 e^2/E_i)$ in the case of low energy transfer during tunneling (when $Q/E_i \ll 1$, $\varepsilon'/AE_i \ll 1$, $\theta_o = \pi$). The transfer cross section in neutron capture with low energy transfer at super-barrier energies of the colliding ions ($Q/E_i \ll 1$, $\varepsilon'/AE_i \ll 1$) is

$$\overline{\sigma(E_l)} \sim \frac{1}{E_l} \exp\left\{-\frac{\alpha Z_1 Z_2 e^2}{E_l}\left(1 + \sin^{-1}\frac{\theta_o}{2}\right)\right\} = \frac{\text{const}}{E_l}. \quad (7).$$

The neutron transfer cross section of the N^{14} nucleus at super-barrier energies increases more and more slowly with increasing energy. In

Card 3/4

Theory of neutron transfer ...

neutron transfer to B^{10}, N^{14} and Au^{197}, the cross section is no longer dependent on energy. The cross section of the $B^{10}(N^{14},N^{13})B^{11}$ reaction decreases when energy increases further. The cross section of reactions for which Q is small as compared with the kinetic energy of the colliding nuclei will probably behave in a similar manner.

ASSOCIATION: Tbilisskiy gosudarstvennyy universitet (Tbilisi State University)

SUBMITTED: June 24, 1961 (initially),
January 25, 1962 (after revision)

Card 4/4

ABELISHVILI, T.L.; GACHECHILADZE, T.G.; TSILOSANI, T.I

Angular distribution in the reactions $N^{14}(N^{14},1')N^{15}$ and $Mg^{25}(N^{14},N^{13})Mg^{26}$. Soob. AN Gruz. SSR 29 no. 3:283-287 S '62 (MIRA 19:1)

1. Tbilisskiy gosudarstvennyy universitet. Submitted October 20, 1961.

BIKAS,E.Yu., arkhitektor; ABELITE,Z.M., arkhitektor

Plan for a dormitory building accomodating 40 persons designed by Design Office of the Riga Woodworking Combine. Rats. i izobr. predl. v stroi. no.102:29-32 '55. (MIRA 8:10)
(Dormitories)

ABEL'KHANOVA, A.S.

Dynamics of nucleic acid metabolism in infectious hepatitis and in chronic hepatitis. Trudy Sar. gos. med. inst. 26:160-166 '59. (MIRA 14:2)

1. Saratovskiy meditsinskiy institut, klinika fakul'tetskoy terapii lechfaka (direktor - prof. L.A. Varshamov).
(NUCLEIC ACIDS) (LIVER—DISEASES)

ABELLA, M.

ABELLA, M. Some data on the development of settlements in Godollo District from 1720 to the present. p. 331.

Vol. 4, no. 3, 1955
FOLDRAJZI ERTESITO
GEOGRAPHY & GEOLOGY
Budapest, Hungary

So: East Europeon Accessions, Vol. 5, no. 5, May 1956

ABELLA, M.

My economic-geographical study trip in Czechoslovakia.

P. 240, (Foldrajzi Ertesito) Vol. 6, no. 2, 1957, Budapest, Hungary

SO: Monthly Index of East European Acessions (EEAI) Vol. 6, No. 11 November 1957

Abella, M.

GEOGRAPHY & GEOLOGY

Foldrajzi Ertesito. Recurrent feature: Documentation
Vol. 7, no. 3, 1958

Study tour in Bulgaria p. 360

Monthly List of East European Accessions (EEAI), LC, Vol 8, No. 2,
February 1959, Unclass.

ABELLA, Miklos

"Larousse universal geography." Reviewed by Miklos Abella. Foldr koz. 9 no.4:363-364 '61.

ABELLA, Miklos

Conference on the situation and tasks of settlement geography. Foldrajzi ert 10 no.1:121-127 '61.

ABELLA, Miklos

The Adriatic Riviera. Foldrajzi ert 11 no.1:160-166 '62.

ABELLA, Miklos

"Present-day problems of geography" by J. Roglic. Reviewed by Miklos Abella. Foldrajzi ert 12 no.1:140-142 '63.

ABELLA, Miklos, dr.

Territorial distribution of the occupation of the population in the Northern Industrial Region. Foldrajzi ert 13 no.3:375-388 '64.

ABEL'MANOV, A.

Defense work is improving. Voen. znan. 35 no.12:6 D '59 (MIRA 13:3)

1. Predsedatel' komiteta pervichnoy organizatsii Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu mefteperera-batyvayushchego zavoda.
(Military education)

AKELOV, G.I.; AVENIROVA, Z.A.; ENGEL'GARDT, N.V.; BAYDAKOVA, Z.L.; STEPANCHENOK-RUDNIK, G.I.

Organ specific antigen of the liver absent in hepatoma.
Dokl. AN SSSR 124 no.6:1328-1330 F '59. (MIRA 12:3)

1. Predstavleno akademikom V.A. Engel'gardtom.
(ANTIGENS AND ANTIBODIES) (LIVER--CANCER)

AHELOV, Yu.M., prof.; KRUTOV, V.I., inzh.

Scheme for classifying fills considering them as bases of structures. Prom. stroi. 36 no.11:28-32 N '58. (MIRA 12:1)

1.Institut osnovaniy i podzemnykh sooruzheniy Akademii stroitel'stva i arkhitektury SSSR.
(Soils--Classification) (Foundations)

ABEL'S, R. G. Engineer

"Zamechaniya k stst'ye 'o tekhnicheskikh trebovaniyakh na mang aninovyye provoda'," Elektrichestvo, No.1, 1952

Sverdlovsk Filial VNIIM

24(0); 5(4); 6(2) PHASE I BOOK EXPLOITATION SOV/2215

Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni D.I. Mendeleyeva

Referaty nauchno-issledovatel'skikh rabot; sbornik No.2 (Scientific Research Abstracts; Collection of Articles, Nr 2) Moscow, Standartgiz, 1958. 139 p. 1,000 copies printed.

Additional Sponsoring Agency: USSR. Komitet standartov, mer i izmeritel'nykh priborov.

Ed.: S. V. Reshetina; Tech. Ed.: M. A. Kondrat'yeva.

PURPOSE: These reports are intended for scientists, researchers, and engineers engaged in developing standards, measures, and gages for the various industries.

COVERAGE: The volume contains 128 reports on standards of measurement and control. The reports were prepared by scientists of institutes of the Komitet standartov, mer i izmeritel'nykh priborov pri Sovete Ministrov SSSR (Commission on Standards, Measures, and Measuring Instruments under the USSR Council of Ministers). The participating institutes are: VNIIM - Vsesoyuznyy nauchno-issledovatel'skiy metrologii imeni D.I. Mendeleyeva (All-Union Scientific Research Institute of Metrology Imeni D.I. Mendeleyev) in Leningrad; Sverdlovsk branch of this institute; VNIIK - Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of the Commission on Standards, Measures, and Measuring Instruments), created from MGIMIP - Moskovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Moscow State Institute of Measures and Measuring Instruments) October 1, 1955; VNIIFTRI - Vsesoyuznyy nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (All-Union Scientific Research Institute of Physicotechnical and Radio-engineering Measurements) in Moscow; KhGIMIP - Khar'kovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments); and NGIMIP - Novosibirskiy gosudarstvenyy institut mer i izmeritel'nykh priborov (Novosibirsk State Institute of Measures and Measuring Instruments). No personalities are mentioned. There are no references.

Electric and Magnetic Measurements (Shramkov, Ye.D., Editor, Professor)

Bykov, M.A. (MGIMIP). Apparatus for Checking Standard Inductance Coils and Capacitors and for Measuring the Time Constant of Nonreactive Resistors for 400-500 Ohm 91

Bykov, M.A. (MGIMIP). Apparatus for Measuring the Time Constant of Four-terminal Nonreactive Resistors for 0.001 to Several Ohms 93

Grokhol'skiy, A.L. (NGIMIP). Developing a Standard Measuring Unit, a Set of Standard Capacitance Measures, and a Method for Checking Working Measures of Capacitance From 1 to 50 pf at Frequencies up to 100 Megacycles, and up to 450 pf at Frequencies up to 50 Megacycles 9

Rudnyy, N.M., A.Z. Yakolev, A.A. Chukhlantsev, and R.G. Abel'g (VNIIM). Using a Single Bridge for Checking Shunts and Low-resistance Gages 96

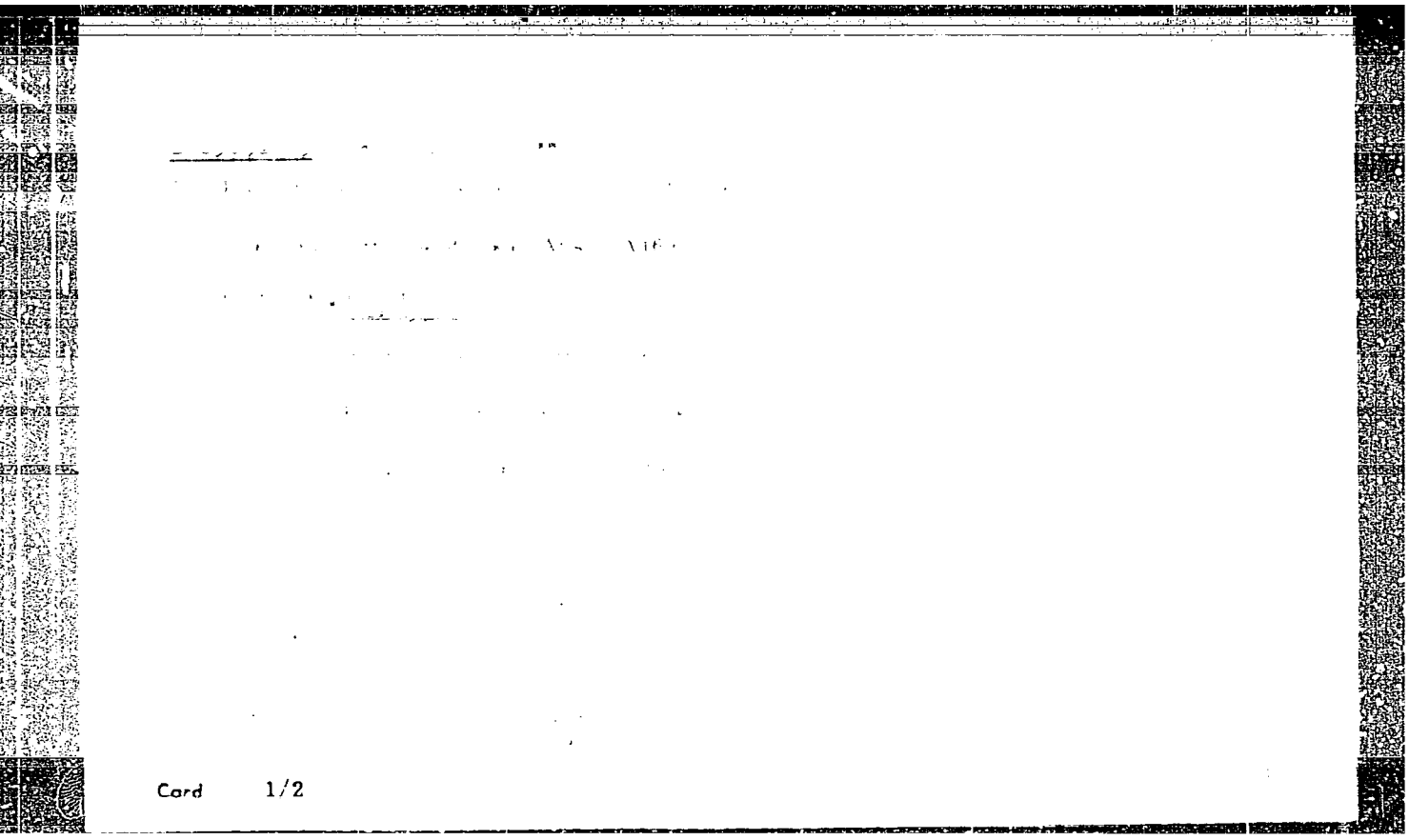
Kapnik, M.Sh. (MGIMIP). Apparatus for Checking Standard Ammeters and Voltmeters at High Frequencies

Card 19/27

ABEL'S, R.G.; VEKSLER, A.Z.; PRONICHEVA, T.A.

Use of a tapered measure with series connected sections for matching resistance coils. Trudy inst. Kom. stand. mer i izm. prib. no.67:12-16 '62. (MIRA 17:11)

1. Sverdlovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta metrologii imeni Mendeleyeva.



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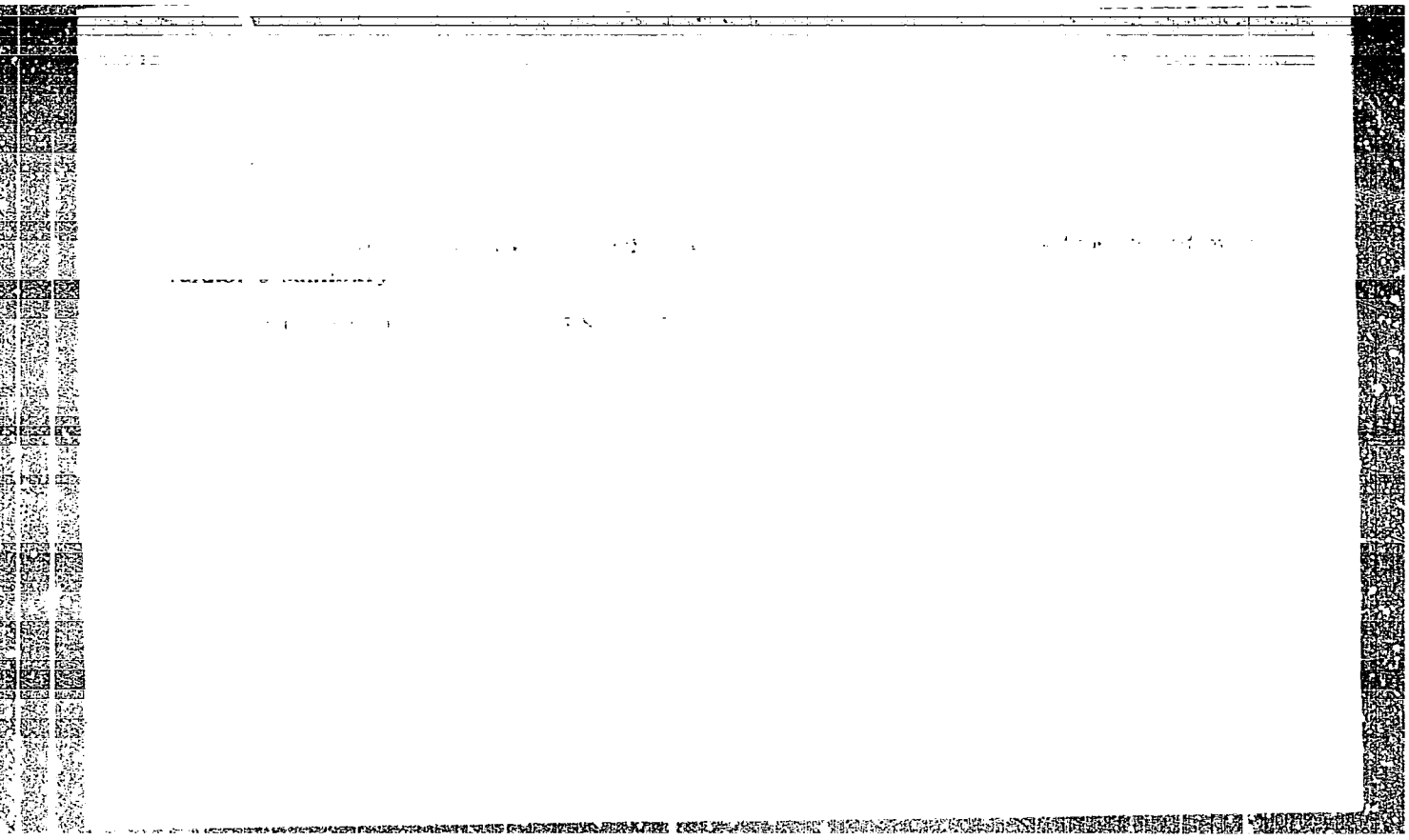

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000100120016-0"

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Abel's, R. I. "Magnetic Observations in Sverdlovsk (Ekaterinburg)." In the book: Sverdlovskaia Magnitnaia i Meteorologicheskaia Observatoriia, 1934-1936, Sverdlovsk, 1936, pp. 97-136.

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Abels K. I. "On the Accuracy of the Results of Magnetic Observations at Repeat Stations. Informatsionnii Sbornik po Zemnomu Magnetizmu i Elektrichestvu, Leningrad-Moscow, No. 4, 1937, pp. 37-40.

1. PARFENOV, V. V., BELS, V. R.

2. USSR (600)

4. Iron

7. Investigation of the temperature dependence of the Hall effect in electrolytic iron. Izv. AN SSSR Ser. fiz. 16 no. 5, 1952

9. Monthly List of Russian Accessions, Library of Congress, June 1953, Unclassified.

ABEL'S, V.R.
CA

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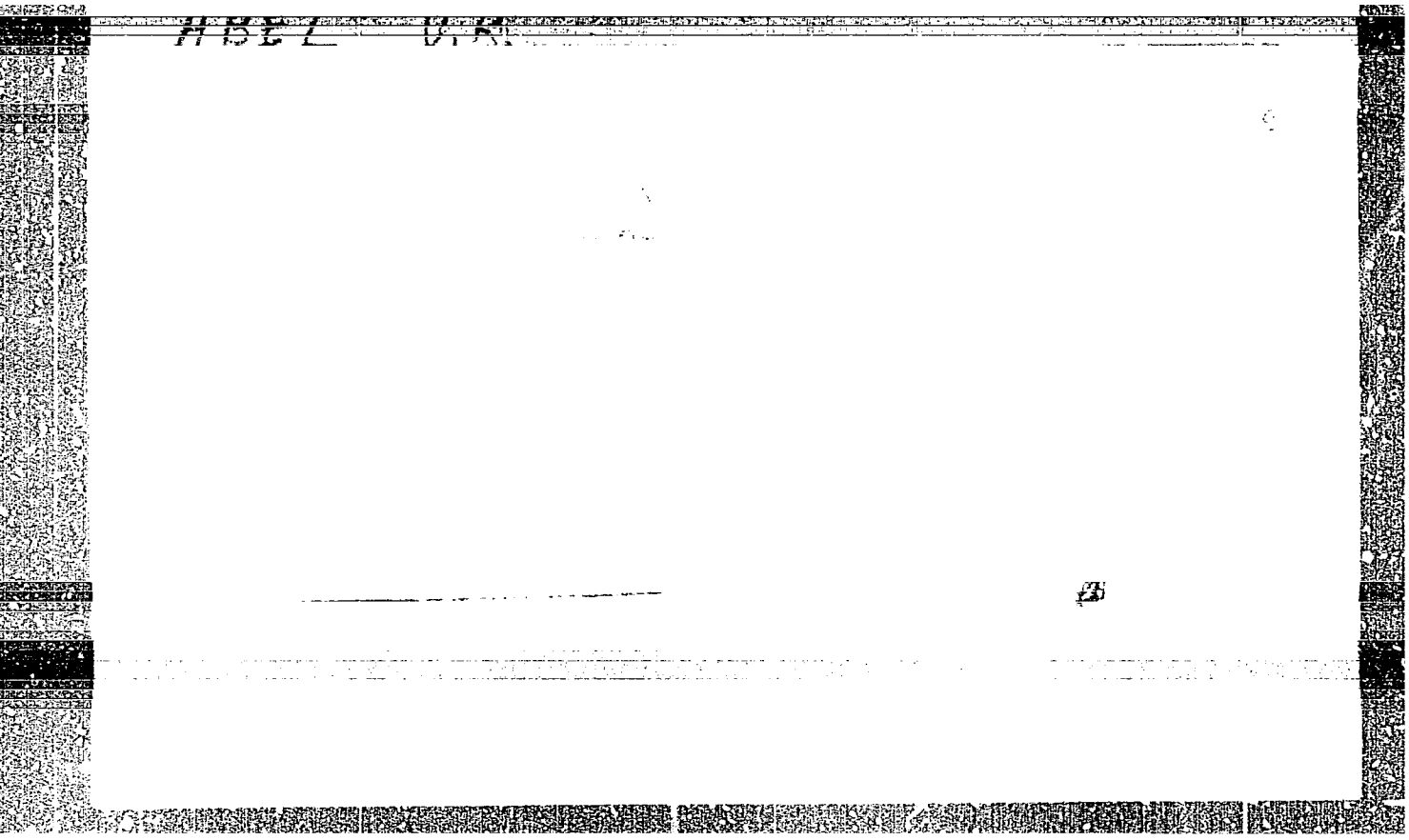
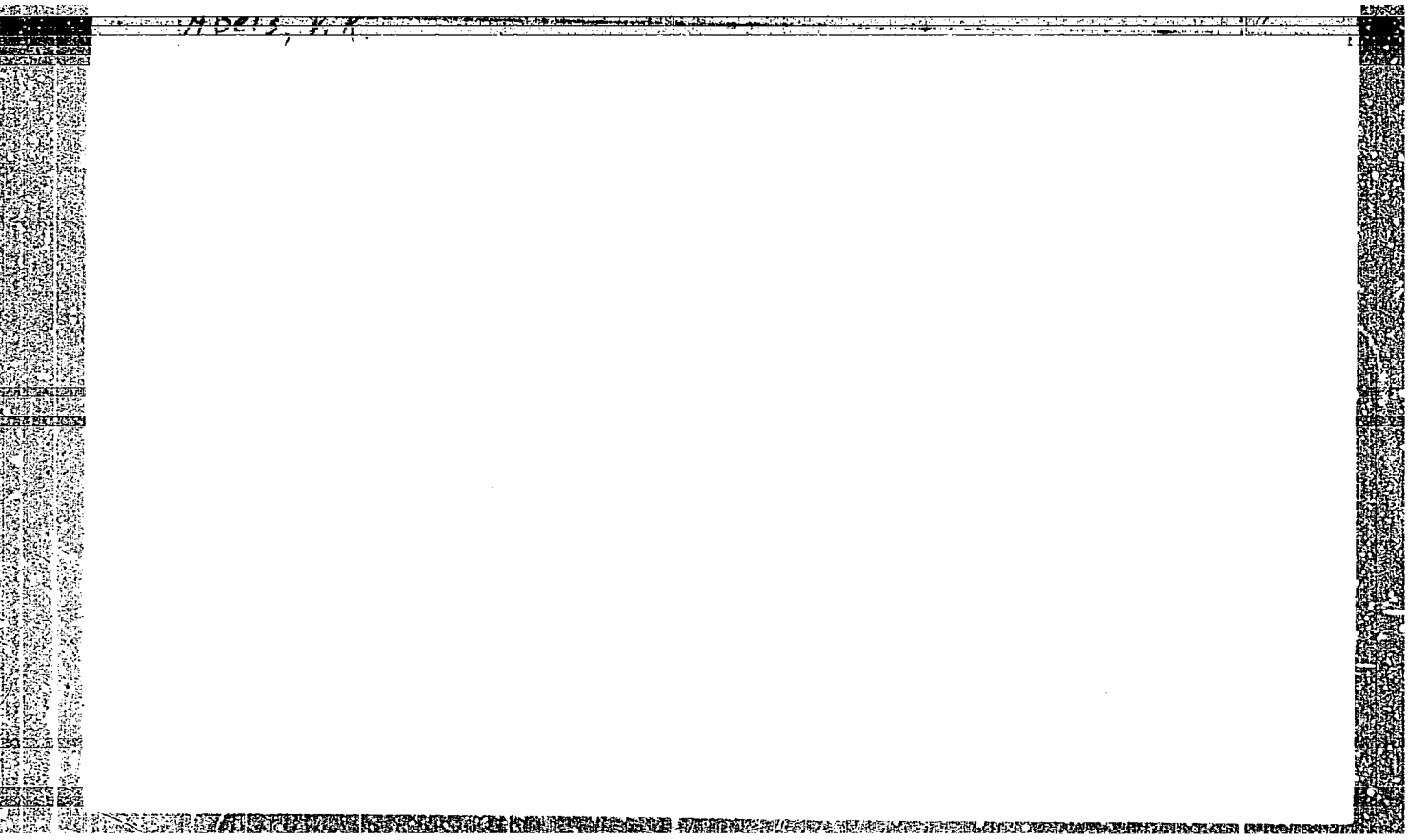
Temperature dependence of the Hall effect in electrolytic iron V. V. Parfenov and V. R. Abel's. *Doklady Akad. Nauk S.S.S.R.* **82**, 877-9(1952).—The dependence of the Hall e.m.f. E on the magnetization J, characteristic of ferromagnetic materials, $E = R_I J i b$, where i = c.d., b = distance between the electrodes, and R_I = ferromagnetic Hall const., was tested on electrolytic Fe in the temp. range from 77 to 1053°K. At each temp., the dependency of E on J was found to be linear. In terms of the temp., E passes through a max. near the Curie point θ, and then falls sharply with further increasing T. The ferromagnetic R_I can be split, according to Kikoin (C.A. **31**, 6970; **35**, 5301) into a const. part R_0 (depending on the external magnetic field) which is only very slightly temp.-dependent, and a strongly temp.-dependent part R_J due to magnetization. R_0 is eliminated in the difference $\Delta R = R_{IT} - R_{I\theta}$, between the temps. T and θ. By combination with detns. of the satn. magnetization J_s at different temps., one finds the relation $\Delta R = C(J_s^2 - J_{s\theta}^2)$, i.e. R_I is a function of J_s^2. This is in agreement with the quantum theory of the Hall effect in ferromagnetics. N. Thon





Abel's V. R.

USSR/ Physics - Crystallography

Card 1/1 Pub. 22 - 21/62

Authors : Shur, Ya. S., and Abel's V. R.

Title : Study of the "sub-regions" by the method of powdered figures applied to ferrosilicon crystals

Periodical : Dok. AN SSSR 102/3, 499 - 501, May 21, 1955

Abstract : The results of experiments conducted for the purpose of studying the conditions under which the so-called "sub-regions" formed in ferrosilicon crystals and their (sub-regions) effect on the process of technical magnetization are described. Six references: 2 USSR, 1 French, 3 USA (1938-1953). Illustrations.

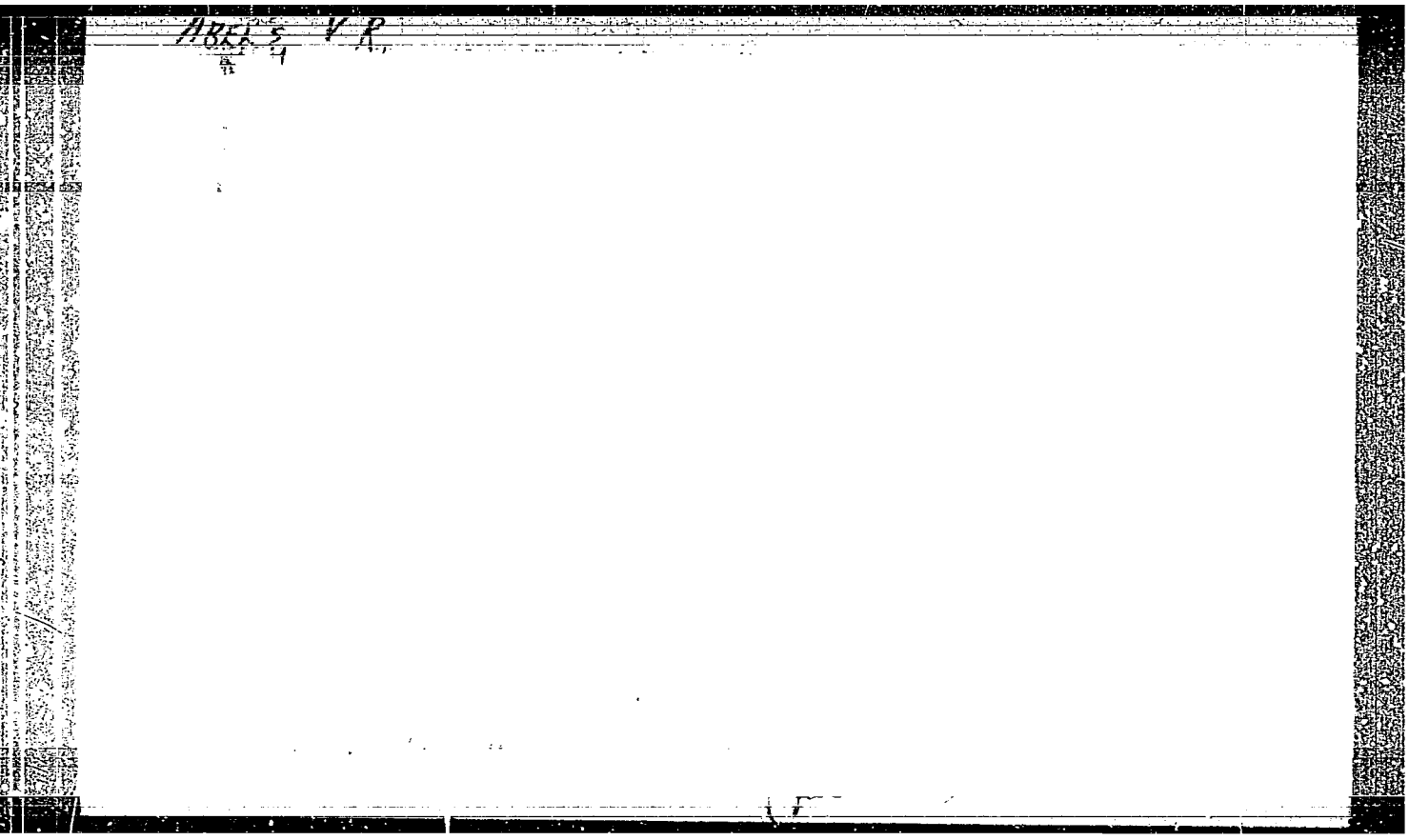
Institution : The Acad. of Sc., Ural Branch, Institute of the Physics of Metals

Presented by: Academician A. I. Kikoin, February 5, 1955

SHUR, Ya.S.; ABEL'S, V.H.

Powder pattern technique for the magnetic structure of iron silicide crystals. Dokl.AN SSSR 104 no.2:209-210 S '55. (MLRA 9:2)

1.Institut fiziki metallov Ural'skogo filiala Akademii nauk SSSR i Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo. Predstavleno akademikom I.P.Bardinym.
(Ferrosilicon--Magnetic properties) (Iron silicides--Metallography)



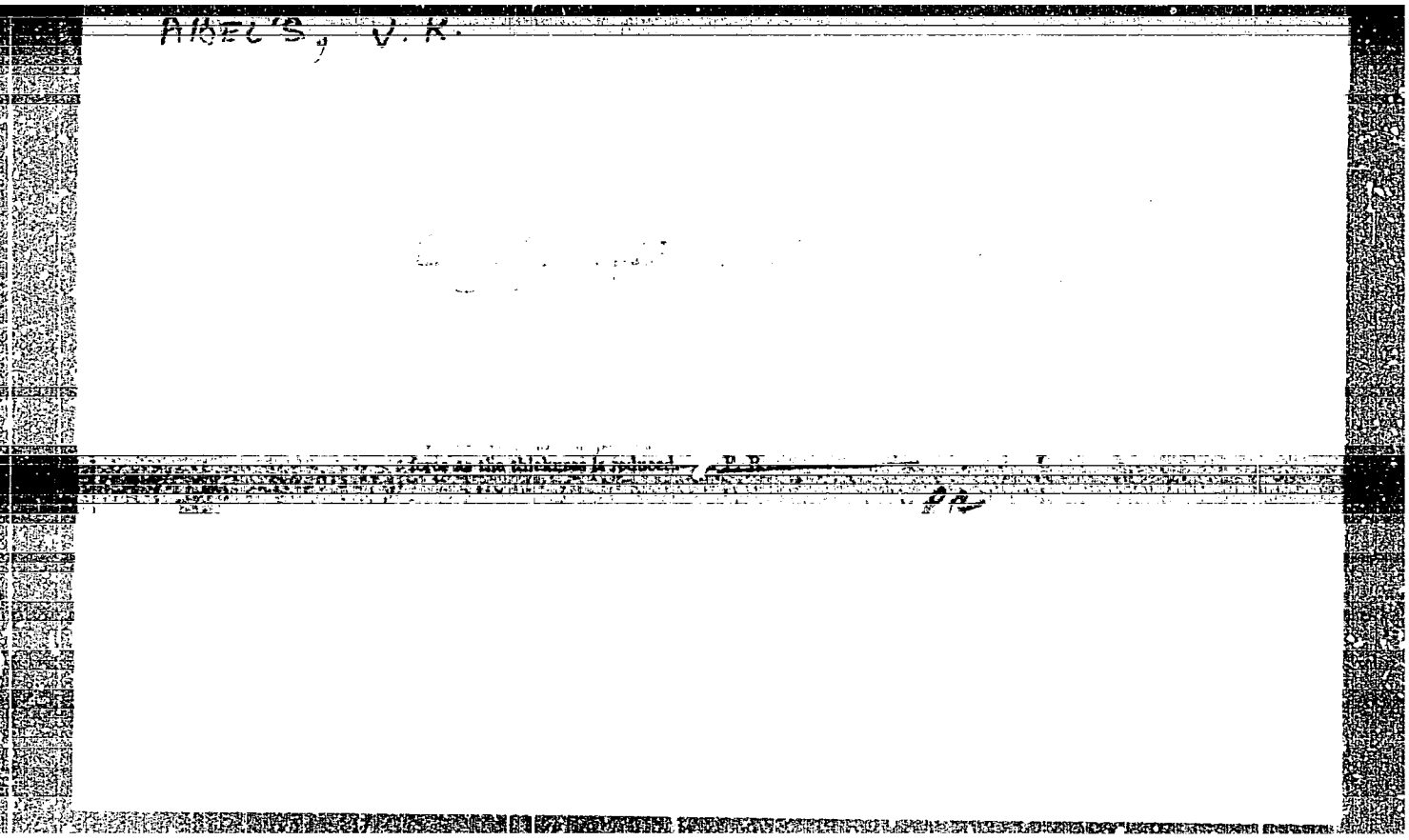
ABELS, V. R., and SHUR, Y. S., (Sverdlovsk)

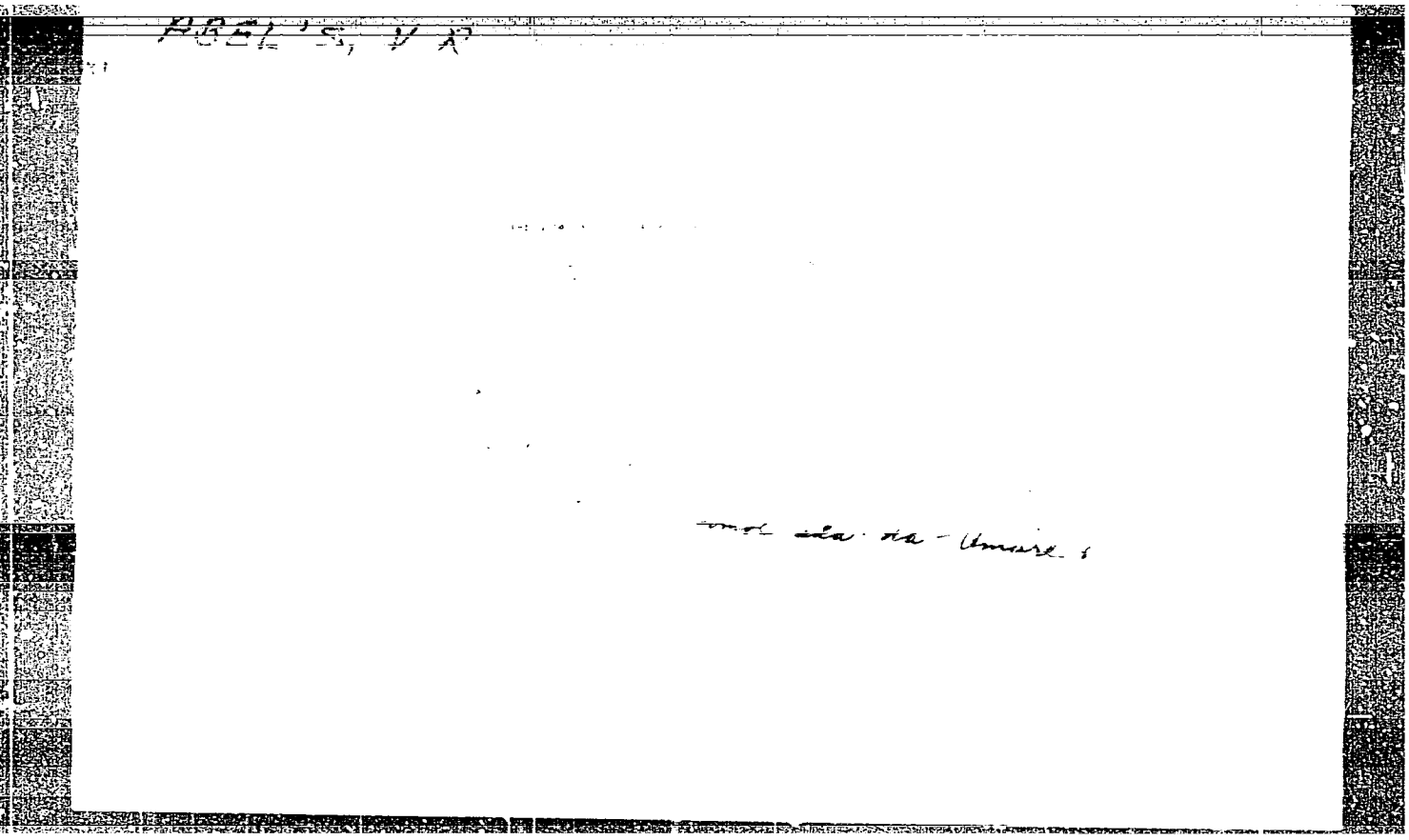
"Investigation of the Magnetic Structure of Silicon-Iron Crystals by Means of Powder Patterns," a paper submitted at the International Conference on Physics of Magnetic Phenomena, Sverdlovsk, 23-31 May 56.

ABEL'S, V. R.

ABEL'S, V. R. -- "The Investigation of the Magnetic Structure of Ferrosilicon Crystals by the Method of Powder Figures." Min Higher Education USSR, Ural State Institute imeni A. M. Gor'kiy, Sverdlovsk, 1956. (Dissertation for the Degree of Candidate of Physicomathematical Sciences)

SO: Knizhnaya Letopis' No 43, October 1956, Moscow





closing domains are further described which are ascribed as "drop", "comb", "pine tree", "stem" etc.) . In the chapter: The dependence of the shape of closing domains on the thickness of the sample the change in the formation of the closing domains from a 100 -thickness of the sample up to 5 is described, and it is said that the particularly thin samples - under 5 have no more closing domains of the surface. In the chapter: Modification of the shape of closing domains in the case of an elastic extension of the sample it is said that, corresponding to the increase of the force causing extension of the sample parallel to the orientation of magnetization, the magnetic structure becomes gradually simplified until finally it goes over into the extinguishing closing domain. In the chapter: Transformations in closing domains accompanied by an increase of the intensity of the magnetic field it is said that in the weak fields the processes of shifting the boundaries of the basic domain take place and, if a closing domain is encountered, this boundary vanishes. The same, however, occurs again as soon as the place of this domain is passed. After the definite completion of the process (with growing intensity) these boundaries vanish, but the closing domains remain. With a further increase of intensity the

closing domains grow weaker as far as the strong fields, where they also vanish. In the chapter: Transformation of the closing domains during the decrease of the intensity of the magnetic field a process that is inverse to the above described one is found to occur, but transformations here take place in comparatively weaker fields. The closing domains partly go over into the basic domains by negative re-magnetization (examples). In the chapter: Magnetic structure in the state of definite magnetization the process of magnetization is described on the ring-shaped sample (in order to avoid magnetization of the edge). In this case it was possible, on the occasion of final magnetization, to determine the basic domains, and, (in special cases), also inversely charged basic domains, which may be explained by the remaining effect of re-magnetization.
There are 11 figures and 8 references, 7 of which are Slavic.

AVAILABLE: Library of Congress

Card 3/3

AUTHORS: Shur, Ya. S. and Abel's, V. R. SOV/126-6-3-24/32

TITLE: Investigation of the Processes of Magnetization in Silicon Iron Crystals (Issledovaniye protsessov namagnichivaniya v kristallakh kremnistogo zheleza)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol6, Nr 3, pp 556-563 (USSR)

ABSTRACT: In spite of the fact that during recent years a number of theoretical and experimental investigations have been made relating to the processes of magnetisation, the mechanism of these processes in real crystals has still not been clarified. Only the general conceptions appear to be established with a great degree of probability, according to which the magnetisation and remagnetisation of a ferromagnetic is effected by displacement of the boundaries between adjacent domains and rotation of the magnetisation vector of the individual domains. Usually the mechanism of the process of magnetisation itself, i.e. the mechanism of reconstruction of the magnetic structure as a result of the effect of the external magnetic field is not considered. Furthermore, as was shown in earlier work of the authors (Refs 1 and 2), only

Card 1/6

the simplified magnetic structure is considered, namely, the main domains. In a real ferromagnetic the magnetic structure may be very complicated; in addition to main domains, there are additional domains of various types which may have a considerable influence on the magnetisation process. For elucidating many properties of ferromagnetics it is necessary to have available reliable data on the changes of the magnetic structure under the effect of the magnetic field. At present observation of such a reconstruction can be effected by the powder pattern method and the authors of this paper used this method for studying the mechanism of the process of magnetisation of silicon iron crystals with the aim of establishing general relations governing the changes in the magnetic structure caused by a magnetic field. The investigations were carried out on 10 mm dia, 0.005 to 0.3 mm thick discs of coarse grain steel containing 3.5% Si. The preparation of the surface of the specimens and of the magnetic suspension was carried out by a method described in earlier work (Ref.1). Prior to observing the powder

Investigation of the Processes of Magnetisation in Silicon Iron Crystals

patterns, the specimens were demagnetised by means of an a.c. field. Following that, the powder patterns were observed during gradual increase of the magnetic field which was orientated parallel to the surface of the specimen. The magnetic field was generated by means of two solenoids located on both sides of the specimen on a single axis. The orientation of the crystals was determined by means of X-rays with an accuracy of up to 2°. The following designations were used for the tetragonal axes of the crystal: the nearest to the specimen surface was denoted by [100], the more distant one by [010] and the most distant one by [001]. Study of the changes of the powder patterns under the effect of the external field was effected on a large number of crystallites with various crystallographic orientations of their surface and various directions of the magnetic field in the plane of the investigated crystallite. As was shown in earlier work of the authors (Ref 2), the magnetic structure of relatively thin crystals of silicon iron can be of the type A, in which case the magnetisation

Investigation of the Processes of Magnetisation in Silicon Iron Crystals

vectors $\vec{I}_s$ of the main domains are orientated parallel to the direction [100] and the boundaries between the main domains are perpendicular to the surface of the specimen, and of the type B, in which case the orientation of the main domains is parallel to the direction of [010] or [001] and the magnetic flux between adjacent domains is closed through additional domains which cover the entire surface of the crystal. In the additional domains the I_s are in the direction perpendicular to the boundaries between these domains. If $\alpha_{[100]}$ is larger than 0, then, in addition to the main domains in the case of a type A structure and the additional surface domains in the type B structure, other additional domains of various shapes will be present. Photos of the changes of the powder patterns caused by the effect of the magnetic field are reproduced in Figs.1-4 and in Fig.5 a sketch shows the changes in the type B magnetic structure in the case of magnetisation in the direction [100]. The obtained results have shown that under the influence of a magnetic field complicated

Investigation of the Processes of Magnetisation in Silicon Iron Crystals

changes may take place in the magnetic structure of crystals of silicon iron. Such changes depend on the field strength, the type of the initial magnetic structure and the orientation of the field relative to the crystallographic axes of the crystal. The changes in the structure may consist of boundary displacements, displacement in the orientation of the magnetisation of the field, displacements, changes in the dimensions and cessation of additional domains, and changes in the type of the magnetic structure. In weak magnetic fields there is a displacement of the boundaries between the main domains as well as displacement of the additional domains. In strong fields, in addition to processes of rotation, there are also processes of displacement of the boundaries between the domains, i.e. a reduction in the volume of the additional domains and a fragmentation of the surface domains in the type B structure. It can be assumed that the derived relations governing the change of the magnetic structure of silicon iron crystals caused by the effect of a magnetic field are generally

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Investigation of the Processes of Magnetization in Silicon Iron Crystals

for sheets of soft magnetic material, particularly for materials with a crystal lattice, such as the crystal lattice of iron, possessing a sufficiently large anisotropy constant.
There are 6 figures and 4 references, 3 of which are Soviet, 1 English.

ASSOCIATIONS: Institut fiziki metallov Ural'skogo filiala AN SSSR (Institute of Metal Physics, Ural Branch of the Ac.Sc., USSR) and
Vecherniy politekhnicheskiy institut v g. Komsomol'ske-na Amure (Evening Polytechnical Institute, Komsomol'sk on the Amur)

SUBMITTED: August 21, 1957

1. Silicon iron crystals--Magnetic properties 2. Magnetic susceptibility--Determination 3. Ferromagnetic materials--Properties 4. Magnetic fields--Effectiveness

Card 6/6

24.7900 (1055, 1144, 1160) S/126/60/010/002/024/028/XX
E073/E335

AUTHOR: Abel's, V.R.

TITLE: On the Theory of Anisotropy of the Coercive Force in Single Crystal Discs

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol. 10, No. 2, pp. 305 - 306

TEXT: The theory of Vonsovskiy (Ref. 1) on the anisotropy of the force in single crystal discs does not elucidate satisfactorily the real anisotropy. The divergences between theoretical and experimental results are particularly great for discs, the surface of which is parallel to the (110) plane (Ref. 2). To elucidate the reason for the divergence between theory and practice the author studied the magnetic structure of discs cut out from cold-rolled silicon iron, during the process of their remagnetisation. The discs were cut out by mechanical etching, and then the magnetic structure was studied by means of powder patterns. Simultaneously, the coercive force was measured in various directions. It was found that in the demagnetised state the major part of the specimen consisted of basic regions that are magnetised along

S/126/60/010/002/024/028/XX
E073/E335

On the Theory of Anisotropy of the Coercive Force in Single Crystal Discs

the directions [100] and [$\bar{1}$00] and are separated by 180-deg boundaries (structure A, Ref. 4). In some of the specimens the structure A appears to be the only one. This structure was retained for various methods of reducing the demagnetised state. Particularly, no principal difference could be observed between the structure obtained during demagnetisation of the specimen by an alternating magnetic field of decreasing amplitude and the structure obtained after imposing a reverse field $H = -H_c$. Furthermore, no changes were detected in the character of the magnetic structure during demagnetisation of the specimen along various directions in the disc plane. After magnetising to saturation in any direction and subsequent demagnetisation to zero, the structure always reverted to the initial one. Thereby, in the direction [100] the process of remagnetisation occurs as a result of a 180° displacement of the boundaries and in the direction [011] as a result of a 90°

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E073/E335

On the Theory of Anisotropy of the Coercive Force in Single Crystal Discs

displacement of the boundaries. The remagnetisation occurred in other directions as a result of both processes. Thus, the assumption of Vonsovskiy that the concentration of magnetic phases in the state $H = -H_c$, $I = 0$ depends on the direction of magnetisation proved incorrect. This disagreement with the theory of Vonsovskiy is attributed to the fact that he did not take into consideration the 90° displacement of the boundaries and also the fact that during remagnetisation in the direction [011] the starting field plays an important part since in the neighbourhood of the state $I = 0$, $H = -H_c$ a nucleus of a new magnetic phase is formed, whilst for directions approaching the direction [100] the coercive force is determined solely by the critical field.

S/126/60/010/002/024/028/XX
E073/E335

On the Theory of Anisotropy of the Coercive Force in Single Crystal Discs

There are 4 Soviet references.

ASSOCIATION: Vecherniy politekhnicheskiy institut g. Komsomol'sk-na-Amure (Evening Polytechnical Institute, Komsomol'sk-on-Amur)

SUBMITTED: February 15, 1960

Card 4/4

S/126/61/011/003/002/017
E193/E483

24.2200 (1137, 1147, 1158)

AUTHOR: Abel's, V.R.

TITLE: Magnetic Domain Clusters in Thin Silicon-Iron Strip

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.3, pp.353-359

TEXT: It was shown earlier by the present author (Ref.1) that magnetization of crystals in thin silicon-iron strip, carried out in the [011] direction, consists in that a specific magnetic structure (so called "structure B_1", shown schematically in Fig.1) spreads throughout the crystal volume. The present paper describes experiments in which the formation of this structure has been further studied. Small discs (0.01 to 0.2 mm thick, 10 to 15 mm in diameter) of a Fe-base alloy containing 3.5% Si were used as the experimental specimens; the changes of the magnetic structure were studied by the powder patterns method. The following conclusions were reached: (1) In the processes of magnetization and magnetic polarity reversals, an essential part is played by magnetic domains clusters which behave as one unit of the magnetic structure and which are characterized by a resultant intensity of magnetization. The magnetic flux of some clusters or

Magnetic Domain Clusters in ...

individual magnetic domains is often completed by other clusters. (2) Magnetization of the iron-silicon alloy in weak magnetic fields takes place as a result of displacement of the boundaries between the adjacent magnetic domain clusters. (3) It is convenient to regard an aggregate of magnetic domain clusters, characterized by a resultant intensity of magnetization of the same direction, as a single magnetic quasi-phase. (4) If the concept of a quasi-phase is introduced, it can be shown that the magnetic structure of thin crystals, the surface of which is sufficiently close to the (011) plane, is identical with the structure of crystals with surfaces whose orientation approaches that of the (001) plane. In both cases the process of magnetization and demagnetization takes place in the same manner. There are 6 figures and 7 Soviet references.

ASSOCIATION: Vecherniy politekhnicheskiy institut g. Komsomol'sk-na-Amure (Evening Polytechnical Institute, Komsomol'sk-on-Amur)

SUBMITTED: June 23, 1960

Card 2/3

ABEL'S, V.R.; NIKOLAYEVA, Ye, L.

Effect of the shape of a specimen on the anisotropy of the coercive force of cold-rolled silicon iron. Fiz. met. i metalloved. 11 no.6:851-855 Je '61. (MIRA 14:6)

1. Vecherniy politekhnicheskiy institut, Komsomol'sk-na-Amure.
(Iron-silicon alloys—Magnetic properties)

ABEL'S, V.R.

Effect of the direction of demagnetization on the magnetic structure of crystals of laminated ferrosilicon. Izv. AN SSSR. Ser. fiz. 25 no.12:1452-1455 D.'61. (MIRA 14:12)
(Ferrosilicon crystals--Magnetic properties)

L 08979-67 EWT(l)/EWT(m)/EWP(t)/ETI IJP(c) JD/HW/GD
ACC NR: AT6028985 SOURCE CODE: UR/0000/66/000/000/0175/0181

AUTHOR: Abel'a, V. R.; Nikolayeva, Ye. L.

ORG: none

TITLE: Temperature hysteresis of magnetic permeability of nickel-zinc ferrites

SOURCE: Vsesoyuznoye soveshchaniye po ferritam. 4th, Minsk. Fizicheskiye i fiziko-khimicheskiye svoystva ferritov (Physical and physicochemical properties of ferrites); doklady soveshchaniya. Minsk, Nauka i tekhnika, 1966, 175-181

TOPIC TAGS: magnetic permeability, temperature dependence, hysteresis loop, ferrite, nickel oxide, zinc oxide, domain structure

ABSTRACT: The temperature hysteresis of magnetic permeability was studied in nickel-zinc ferrites with the following compositions: 66.0-66.8% Fe_2O_3, 10.0-12.0% NiO, 17.9-23.3% ZnO, and one ferrite with 4.0% CuO. Before applying the temperature cycle, the samples were either demagnetized by an alternating magnetic field (condition 1), or slowly cooled from temperatures above the Curie point (condition 2). The magnetic permeability (μ_a) is given as a function of temperature for magnetic fields of 0.006 and 0.004 oersted. The observed hysteresis was caused by irreversible displacement of domain boundaries and the consequent changes in the domain boundary surface area S; in nickel-zinc ferrites, S increased upon heating. Equations are given for μ_a and the co-

Card 1/2

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ACC NR: AT6028985

ercive force (H_c), relating these to the spontaneous magnetization (I_s) and the density of the boundary energy (γ). The temperature dependence of S was established as $S \alpha \mu_a H_c / I_s$, and the experimental hysteresis effects were analyzed in terms of this relation. In all cases, the values of μ_a were greater for condition 2. The change in $\mu_2 - \mu_1 / \mu$ was given as a function of the cooling temperature (T) from above the Curie point (θ), where μ_1 and μ_2 are the permeabilities of conditions 1 and 2. This ratio increased upon cooling to a temperature T/θ of 0.7-0.8, coinciding with a gradual increase of hysteresis. At very low temperatures, magnetic structural changes were retarded and the hysteresis decreased. A table shows the effects of different heating and cooling cycles on the permeability ratio. Temperature hysteresis in a sample could be diminished by cooling to its operating temperature before use. Orig. art. has: 4 figures, 2 tables, 3 formulas.

SUB CODE: 20,11,20/ SUBM DATE: 22Dec65/ ORIG REF: 005/ OTH REF: 001

Card 2/2