USSR / Human and Animal Physiology (Normal and Pathological). Nervous System. Higher Nervous Activity. Behavior. T

Abs Jour: Ref Zhur-Biologiya, No 21, 1958, 97947

Author : Kovalev, A.G.

Inst : Leningrad State University

Title : The Problem of Requirements in the Light of the Doctrine of I.P. Pavlov on Higher Nervous Activity

Orig Pub: Uch. zap. LGU, 1957, No 244, 52-65

Abstract: No abstract

Card 1/1

KOVALEV, Aleksandr Grigor'yevich; MYASISHCHEV, Vladimir Nikolayevich; ANAN'YEV, B.G., otv.red.; SHCHERBAKOVA, G.A., red.; ZHUKOVA, Ye.G., tekhn.red.

[Psychological peculiarities of man] Psikhicheskie osobennosti cheloveka. Leningrad, Izd-vo Leningr.univ. Vol.2. [Aptitudes] Sposobnosti. 1960. 302 p. (MIRA 13:8)

1. Deystvitel'nyy chlen Akademii pedagogicheskikh nauk RSFSR (for Anan'yev).

(Ability)

KOVALEV, A.G. (Leningrad); MYASISHCHEV, V.N. (Leningrad)

Psychology of personality and social practice. Vop. psikhol. 9 no.6:23-34 N-D '63. (MIRA 17:4)

KOVALEV, A.I., inzhener

Study better the economics and increase the weight ratio of river transportations. Rech. transp. 14 no.5:19-22 My '55. (MLRA 8:7)
(Inland water transprotation)

CHUVIN, A.V.; KOVALEV, A.I.

For further developments in river transportation. Rech.transp. 14 no.4:5-7 Ap '56. (MLRA 9:8)
(Inland water transportation)

KOVALEV, A.; KUTYANIN, P.

Raise the quality level of operations in river transportation. Rech. transp. 16 no.2:9-13 F '57. (MLRA 10:3)
(Inland water transportation)

KOVALEV, Aleksandr Ivanovich; PALKIN, A.K., retsenzent; DOBROVOL'SKIY, [illegible], retsenzent; SOLOV'YEV, I.V., red.; LOBANOV, Ya.M., red. izd-va; YERMAKOVA, T.T., tekhn.red.

[Improvement of the use of navigable canals for transportation] Uluchshenie transportnogo ispol'zovaniia sudokhodnykh kanalov. Moskva, Izd-vo "Rechnoi transport," 1958. 49 p. (MIRA 12:2)
(Inland water transportation)

KOVALEV, A.I., inzh.-ekonomist.

Improve the use of navigable canals for transportation. Rech.transp. 18 no.2:4-8 F '59. (MIRA 12:4)
(Canals)

KOVALEV, A., inzh.

Strengthen the role of river transportation in the economy of the U.S.S.R. Rech.transp. 19 no.7:9-12 Jl '60. (MIRA 13:8)
(Inland water transportation)

BOBKOV, Nikolay Vladimirovich; GUREVICH, Sh.M., dots., kand. ekon. nauk, retsenzent; KOVALEV, A.I., retsenzent; MYASNIKOV, N.V., red.

[General course in river transportation] Obshchii kurs rechnogo transporta. Moskva, "Transport," 1964. 212 p. (MIRA 17:4)

SIDOROV, Pavel Petrovich, kand. ekon. nauk; KOVALEV, Aleksandr Ivanovich; Prinimal uchastiye KANIBOLOTSKIY, F.P.; ARSEN'YEV, S.P., red.; DEMIN, A.M., red.

[Economics of river transportation; production economics, organization, and planning] Ekonomika rechnogo transporta; ekonomika, organizatsiia i planirovanie proizvodstva. Moskva, Transport, 1965. 283 p. (MIRA 18:5)

U S S R .

539.373 : 539.27

3917. Electron microscopic investigation of slip bands. R. I. GARBER AND A. I. KOVALEV. *Dokl. Akad. Nauk SSSR*, 85, No. 5, 1001-4 (1952) In Russian.

Shadowed silica replicas of cleavage face of deformed rock salt crystals show presence of cracks along the slip bands. Hardening of crystals by deformation under water explained by removal of cracks by solution of surface layers. J. W. MENTER

KOVALEV, A.I.

reports of an Inter-vuz Conference on
Relaxation Phenomena in Pure Metals and Alloys SOV-3-58-9-25/36
2 - 4 Apr 1958, Moscow Inst. of Steels.

Institute) covered the resilient reaction of spring alloys, various physical and technological effects on it and the methods of its measurement. Ya.P. Selisskiy (Institute of Precision Alloys TsNIIChM) told of subsiding oscillations of ultrasonic frequency in some ferromagnetic solid solutions. R.I. Garber and A.I. Kovalev (Physico-Technical Institute UkrSSR AS in Khar'kov) spoke of the temperature dependency of moduli of elasticity of iron.

~~Card 4/4~~

AUTHORS: Garber, R.I., Kovalev, A.I.

32-24-4-46/67

TITLE: Investigations of the Temperature Dependence of the Elasticity Modulus of Iron (Issledovaniye temperaturnoy zavisimosti moduley uprugosti zheleza)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 4, pp. 477-479 (USSR)

ABSTRACT: S.A. Lavrent'yev (Ref 2) suggested a system for the determination of normal elasticity and of the bending modulus at low frequencies. However, the method causes difficulties if measurments have to be carried out in a vacuum and at high temperatures as well as in the case of determinations of damping decrement. A method is described which can be applied for determinations at the above mentioned conditions at temperatures of up to 1000° C and in a high vacuum at frequencies of from 1 to 12 c. It may be seen from a schematical drawing that the sample under investigation, which is in a molybdenum resistance furnace, is fastened above to a sill beam, whereas the lower end is connected with a pendulum. A platinum-platinum/rhodium element is welded to the upper part of the sample and the weights are welded onto the ends of the pendulum. The weights at the same time serve as the magnetic cores for two

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magnets each. One pair of the latter is used for rotation and the other for the bending of the sample. A revolving drum with a photographic paper which records the beam of light reflected by a mirror on the pendulum and thus also the motions performed by the pendulum. In the course of the determinations of the elasticity- and bending modulus the logarithmic damping decrement did not exceed 0.3, so that the maximum error amounted to 0.2%. Results were computed according to given formulae. The total maximum error at increased temperatures amounted to 2.5%. From the results mentioned, a hysteresis phenomenon at the temperature drop at 900°C is mentioned, which had already been observed by Köster (Ref 5). There is good agreement between results obtained by investigation and published data, according to which the plasticity of iron shows a sharp rise in the course of polymorphous transformations. For the paper under discussion Poisson's ratio, which rises sharply at 750° and attains its maximum at 900°, is considered to be a quantitative characteristic of plasticity. There are 2 figures, and 6 references, 3 of which are Soviet.

1. Iron---Mechanical properties 2. Iron--Test methods
3. Iron--Temperature factors

Card 2/2

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SOV/126-8-1-18/25

AUTHORS: Garber, R. I., Gindin, I. A., Kovalev, A. I. and Shubin, Yu. V.

TITLE: Study of the Plastic Properties of Monocrystals of Beryllium. II.

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 1, pp 130-139 (USSR)

ABSTRACT: In the present paper slip processes in monocrystals of beryllium which have not been submitted to preliminary twinning have been studied and the relationship between slip and fracture of beryllium in the white temperature range has been established. Specimens were made from monocrystals of a beryllium block grown by slow cooling of the melt in vacuum. The purity of the original material was 99.7%. Cutting of the block was carried out by an electro-corundum disk on a grinding machine. The worked layer was removed by etching the beryllium with an aqueous solution of hydrofluoric acid. The specimens had the shape of a rectangular prism, 3.5 x 4.0 x 7.0 mm. All prism facets were ground. Two side faces (3.5 x 7.0 mm - type-a face and 4.0 x 7.0 mm - type-b face) were polished. From the Lauegrams it was evident that the crystals were undistorted. The experi-

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Study of the Plastic Properties of Monocrystals of Beryllium. II.

ments were carried out under conditions of compressive deformation on a special press (Ref 6) at a constant deformation rate (0.03 mm/sec) at temperatures of -253, -196, 20, 400, 600 and 800°C. The specimens were orientated in such a way that the basal plane (0001) made an angle of 45 ± 1.5° with the axis of the compressive forces (Fig 1). The side face of the specimen was parallel with the crystallographic plane of the primary prism (1100) and subsequently also parallel to the primary diagonal [1120]. The metallographic and X-ray methods used for the studies have been described earlier by Garber et al. (Refs 1,7). Indexing of the exposed elements of plasticity and fracture was carried out according to the traces of deformed bands and cracks on previously polished specimen faces. The results were plotted on a standard stereographic projection of the basis plane of the crystal. An X-ray analysis method was used for the orientation of specimens and for the supplementary control of elements of slip and fracture. The structure of the bands of basal slip was studied also electronmicroscopically. In Fig 2 traces of slip occurring in monocrystals of beryllium at

Study of the Plastic Properties of Monocrystals of Beryllium. II.

various temperatures are shown schematically. Photomicrographs of the surface of specimen faces after compression at 20°C are shown in Fig 3a and b and the micro-interference picture of the relief of these surfaces in Fig 3b and 2. The slip bands have been resolved electronmicroscopically as slip packets. At -196 and +20°C the thickness of the packet is the same, namely 0.1-0.3 μ (Fig 4). The magnitude of slip can be estimated from the displacement of a scratch intersecting the trace of the slip band in a type-b face (Fig 5). In Fig 6 compression curves for monocrystals of beryllium (curves for various slip temperatures along the abscissae axis) are shown. 1 mm along the abscissae axis corresponds to 60 μ deformation; 1 mm along the ordinate axis corresponds to a load of 18 kg. Fig 7 shows the temperature dependence of the mechanical characteristics of monocrystals of beryllium: σ_s - yield stress in compression; σ_b - UTS in compression; δ - total residual compression; δ_s - residual compression prior to the appearance of the first slip bands. Fig 8 shows the prismatic slip in monocrystals of beryllium: a - slip trace in a type-a face. Compression at 20°C by

Study of the Plastic Properties of Monocrystals of Beryllium. II.

1.2%; X 10 000; b - trapeze-like slip trace in a type-a face. Compression at 400°C by 1.5%, X 432. Fig 9 shows photomicrographs of cross-sectional microcracks formed as a result of non-uniformity of shift in the slip along the slip bands. Fig 10 shows slip traces of a polygonized monocrystal of beryllium. The slip planes are wavy: polygonization blocks can be seen. The treatment consisted in compression by 0.6% at 20°C, annealing at 800°C for 3 hours, followed by repeated compression by 0.8% at 20°C, X 8000. The table on p 137 shows the crystallographic elements of slip, twinning and fracture and the temperature region in which they occur. Fig 11 is a standard stereographic projection of the basal plane (0001) of a monocrystal of beryllium. The orientation of monocrystals of beryllium is shown in Fig 12. The authors arrived at the following conclusions:
1. The essential aspect of plastic deformation of beryllium in a wide temperature range (-196° to +800°C) is slip along the base (0001) in the direction [1120]. The slip in beryllium differs fundamentally from that in

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Study of the Plastic Properties of Monocrystals of Beryllium. II.

other hexagonal crystals. Beryllium has a large number of different crystallographi- twinning systems. Mechanical twinning is not responsible for the great brittleness of beryllium. Re-forming of twins within an entire crystal leads to an increased plasticity and strength of the crystal in subsequent slip. An unevenness in movement along basal slip planes has been observed. This causes the formation of microcracks along prism and secondary pyramidal planes. Thus the brittleness of beryllium is associated with a large number of cleavage planes which are exposed particularly strongly because of the non-uniformity of slip at low temperatures.

There are 12 figures, 1 table and 13 references, 8 of which are Soviet and 5 English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR
(Physico-technical Institute, Ac.Sc., UkrSSR)

SUBMITTED: December 24, 1957

18.7500

67771

SOV/126-8-5-24/29

AUTHORS: Garber, R.I., and Kovalev, A.I.

TITLE: Determination of the Relaxation Period in the Polymorphic Transformation of Iron

PERIODICAL: Fizika metallov i metallovedeniye, Vol 8, 1959, Nr 5, pp 785-788 (USSR)

ABSTRACT: According to Köster (Ref 1) and Bratina and Winegard (Ref 2), in the polymorphic-transformation temperature regions of cobalt (Ref 1) and zirconium (Ref 2) a considerable increase in the logarithmic decrement of elastic oscillations takes place. This should lead to a sharp fall on the decrement-versus-temperature curves when phase changes are completed and the temperature is increased. The position of the fall does not change when the frequency changes which makes it difficult to determine the relaxation characteristics of the effect. This can be overcome by determining the dependence of the decrement on frequency at a fixed temperature. If there is a maximum at a definite frequency, the product of the relaxation period and the cyclic frequency is approximately unity. The present investigation of internal friction of iron at the alpha-gamma transformation

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Determination of the Relaxation Period in the Polymorphic Transformation of Iron

temperature was based on this. The test pieces and method were as previously described (Ref 3). The 0.04% C iron test pieces after machining were vacuum annealed at 950 °C for 15 hours and cooled to room temperature. The test temperature was then attained at 1 °C per minute, being maintained for 10-20 minutes to eliminate temperature gradients. Oscillographic recording of torsional vibrations was carried out at 10-15 °C intervals (8 °C in the transformation region). Five series were carried out with frequencies of 1.08, 1.80, 2.60, 5.00 and 6.80 c/s. Results for 0-1000 °C at 2.6 and 6.8 c/s are compared in Fig 1, while Fig 2 gives the curves for 800-1000 °C at 6.8 c/s obtained on heating and on cooling. Fig 1 shows that at a given temperature the decrement depends on temperature, the greatest difference being at the temperature of the sudden change. Fig 3 was therefore constructed, giving the greatest value of the decrement, obtained at the alpha-gamma transformation, as a function of the oscillation frequency. The curve has a pronounced

Determination of the Relaxation Period in the Polymorphic Transformation of Iron

maximum at 2.6 c/s, corresponding to a relaxation process whose period is 0.06 seconds. The authors attribute this to transformation processes localized at phase boundaries and compares the period with activation processes at phase boundaries at the transformation temperature. They obtain an activation energy of 64 kcal/g.atom, that for the coefficient of self-diffusion being 67, suggesting that the polymorphic transformation can be envisaged as the transfer of individual atoms from the lattice of the old to that of the new phase. The authors have insufficient data for a similar treatment of the gamma-alpha transformation.

Card 3/3

There are 3 figures and 5 references, of which 2 are Soviet, 2 English and 1 German.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR
Physico-Technical Institute, Acad.Sci. Ukr.SSR)

SUBMITTED: April 10, 1959

5(4)

AUTHORS: Pirogov, A. A., Kovalev, A. I. SOV/20-125-4-47/74

TITLE: Electron Microscopic Investigation of the Effect of Surface-active Additions to the Hydration of Periclase (Elektronno-mikroskopicheskoye issledovaniye vliyaniya poverkhnostno-aktivnykh dobavok na gidratatsiyu periklaza)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 4, pp 856-858 (USSR)

ABSTRACT: The surface-active additions introduced into periclase cement by means of water have a strong effect upon its hydration-setting (Refs 1, 2). In this connection a comparative investigation of the hydration process in pure water and with the mentioned additions was of interest. Fine-disperse periclase was used for the experiments, obtained by burning of magnesite at 1200° for 4 hours. At this temperature a highly active cement is formed (Ref 3) with a MgO-content of 97.5%. The suspension was prepared either with distilled water or with aqueous solutions of magnesium chloride and -sulfate (15° Bé). At the same time the addition of 1% sulfite-spirit-vinasse (SSV) was tried. The suspensions were stored at room temperature for 155 days. Samples were taken on the 1st, 3rd, 7th, 20th,

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Electron Microscopic Investigation of the Effect of Surface-active Additions to the Hydration of Periclase

28th, 60th and 155th day of hydration. Typical of this are the figures 1-4. In this connection sphenoid brucite crystals form in pure water (Figs 1a, b, v). After 28 days their size increases considerably. On the basis of the investigation carried out it is possible to draw the following conclusions: the process of hydration of fine-disperse periclase takes place in distilled water by the growth of sphenoid brucite crystals on periclase grains. SSV inhibits the hydration process of periclase as well as the growth of the brucite crystals in an aqueous medium. The hydration process is accompanied in the aqueous $MgCl_2$- and $MgSO_4$-solutions by a considerable formation of gel (in $MgCl_2$ it is more intensive). The crystallization process of magnesium hydroxide proceeds in the presence of the two mentioned salts more slowly than in pure water; the crystals formed in this process are needle-shaped. There are 4 figures and 4 Soviet references.

Electron Microscopic Investigation of the Effect of Surface-active Additions to the Hydration of Periclase SOV/20-125-4-47/74

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractories)

PRESENTED: December 11, 1958, by N. V. Belov, Academician

SUBMITTED: September 23, 1958

Card 3/3

28(5)

AUTHORS: Kovalev, A. I., Vishnevskiy, I. I. SOV/32-25-9-32/53

TITLE: Determination of the Modulus of Elasticity of Refractory Products at High Temperatures by the Dynamic Method

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 9, pp 1109 - 1111 (USSR)

ABSTRACT: A method was worked out for high-temperature measurements of the dynamic modulus of elasticity of refractories, allowing to determine the normal modulus of elasticity E and the shear modulus G simultaneously at any given temperature. This method has already been used by A. I. Kovalev (Ref 1) for measurements on metals. The sample is a parallelepipedon (30×30×230 mm) that is smaller in the center (16×16 mm and 80 mm long). That part of the sample that was turned down to a smaller diameter serves to localize the deformation and the zone of heating. When the sample is fastened to a bracket of the apparatus (Fig 1), it is possible to cause flexural vibrations or torsional vibrations through magnet coils, the resonance frequency of these vibrations being measured. During the test the sample is heated by means of an electric furnace (with

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wire coiling of EI626 alloy). The vibrations of the generator are transferred to a PS-64 scaler unit and the number of pulses per unit of time is determined. The equations are based on the assumption that the vibrations of the sample lead only to a deformation of the turned down part of the sample. Equations are given for E and G, according to which these quantities can be calculated with an absolute error of 14 to 16%. Among other things it was established that with Dinas-clay samples reliable results can be obtained, if the turned down part of the sample possesses moment of inertia of less than 0.5 cm^4. During high-temperature tests dimensional changes of the sample due to thermal effects are to be taken into account; the correction to be made for isotropic materials can be calculated according to an equation. The reproducibility of the results of measurement was checked on magnesite samples, wherefrom a maximum difference of $\pm$ 1% resulted. Diagrams of the temperature dependence of E and G in commercial refractories of magnesite, fire clay, and Dinas clay are shown (Fig 2). There are 2 figures and

Determination of the Modulus of Elasticity of Refractory Products at High Temperatures by the Dynamic Method SOV/32-25-9-32/53

1 Soviet reference.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute for Refractory Products)

Card 3/3

38224
S/032/62/028/006/020/025
B108/B104

15.2610

AUTHOR: Kovalev, A. I.

TITLE: Measurement of the elastic moduli of refractory materials in vacuo at high temperatures

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 6, 1962, 729-731

TEXT: A method is presented of determining the Young modulus and the shear modulus of refractory materials in vacuo at temperatures of up to 2000°C. The experimental arrangement is shown in Fig. 1. Measurements were made with Al_2O_3; $Al_2O_3 + TiO_2$; $ZrO_2 + 8\%$ CaO; $ZrO_2 + 5\%$ MgO, and ZrB_2. The elastic moduli of these materials decrease almost linearly to a certain temperature and then decrease more rapidly. There are 2 figures.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractories)

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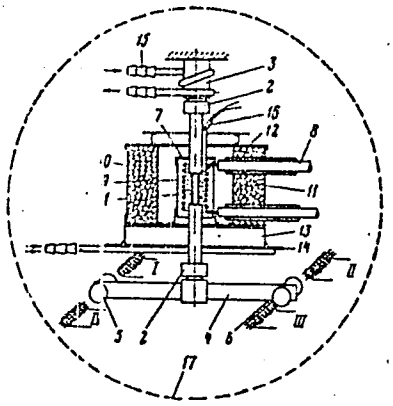

Fig. 1. Legend: (1) specimen, (2) fasteners, (3) support of upper fastener, (4) cross bar, (5) armatures of electromagnets, (6) electromagnets (I-IV) forcing the specimen into oscillation, (7) tungsten-spiral furnace, (8) molybdenum electrodes, (9) tantalum shield, (10) molybdenum shielding basket, (11) heat insulating ZrO_2 powder, (12) upper shield, (13) ZrO_2 tile, (14) shield for cooling of lower fastener and electromagnets, (15) water pipe for upper fastener cooling, (16) thermocouple, (17) vacuum chamber.

ACC NR: AP6033951 SOURCE CODE: UR/0294/66/004/005/0643/0648

AUTHOR: Zaorov, G. A.; Kovalev, A. I.; Sivakova, Ye. V. (Moscow)

ORG: none (Moscow) (Moscow)

TITLE: Thermal conductivity and degree of blackness of a coating made of aluminum oxide

SOURCE: Teplofizika vysokikh temperatur, v. 4, no. 5, 1966, 643-648

TOPIC TAGS: aluminum oxide, black body radiation, optic black body, thermal conduction, high temperature phenomenon

ABSTRACT: The authors propose a new measurement procedure, in which the temperature is determined by an optical parameter, wherein cavities imitating black body radiation are produced on tubes or rods, which are placed in vacuum and heated with electric current. If the rod is sufficiently long and its ends are cooled, it becomes possible to equate the electric power consumed in heat to the radiative heat transfer. If this heat is made to flow through two thicknesses of the investigated coating, then the difference in the surface temperatures of the two coatings is a measure of their thermal resistances. The possible errors of such a method are estimated to be 33 - 40% for the thermal conductivity and 5% for the integral degree of blackness. Results of tests on aluminum oxide coatings made at temperatures 1000 - 2200K are reported, and the contribution made by radiation to the effective thermal conductivity is estimated on the basis of the experimental results. It is indicated that this contribution may

Card 1/2 UDC: 536.2.08

ACC NR: AP6033951

be quite large at high temperatures. Orig. art. has: 3 figures, 17 formulas, and 2 tables.

SUB CODE: 20/ SUBM DATE: 12Mar65/ ORIG REF: 003/ OTH REF: 003

Card 2/2

KOVALEV, A. I.

32794. AVRUTIS, B. M.; KANTOROVICH, N. V.; i KOVALEV, A. I. Lechyeniye psikhonevrotikov na kurorte koysara, sbornik nauch.-trudov (Kirgiz. Gos. Med. In-t), T. IV, 1949, s. 66-72

SO: Letopis' Zhurnal'nykh Statey, Vol. 44, Moskva, 1949

KOVALEV, A.I.

Unusual case of a wound of the intestines resulting in strangulatory obstruction. Zdrav.Kazakh. 16 no.9:41-42 '56. (MLRA 10:1)

1. Iz khirurgicheskogo otdeleniya (zaveduyushchiy - A.I.Kovalev) otdelencheskoy bol'nitsy st. Kushmurun Karagandinskoy zh.d. (glavnyy vrach -V.D.Bryukhanova)
(INTESTINES--WOUNDS AND INJURIES)

KOVALEV, A.I.

Arterial blood transfusion for shock and acute anemia applied in the railroad division hospital. Zdrav.Kazakh. 17 no.6: 48-49 '57. (MIRA 12:6)

1. Iz bol'nitsy stantsii Kushmurun Karagandinskoy zheleznoy dorogi.
(BLOOD--TRANSFUSION) (SHOCK) (ANEMIA)

Kovalev, A. I.

KOVALEV, A.I. (Vyksa)

Gastric phlegmon. Klin.med. 35 no.11:142 N '57. (MIRA 11:2)
(STOMACH--DISEASES) (PHLEGMON)

KOVALEV, A. I.

"Fuel Elements for Light Water Cooled and Moderated Reactors of Atomic Power Stations", by R. S. Ambartsumyan, A. M. Glukhov, D. V. Goncharov, A. I. Kovalvev, and S. A. Skvortsov.

Report presented at 2nd UN Atoms-for-Peace Conference, Geneva, 9-13 Sept 1958.

KOVALEV, A.I.

21(4) PHASE I BOOK EXPLOITATION SOV/2583

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958.

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.F. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

KOVALEV, A. I.

PA 28T6

USSR/Aeronautics
Bolts
Aircraft - Construction

Mar 1947

"Some Cases of Premature Shattering of Steel," A. I. Kovalev, 5 pp

"Tekh. Voz. Flota", No 3 (228)

In many instances it has been found that bolts which hold together two parts in the structure of a plane shatter as soon as some force or load is applied to the bolted sections. The author presents mathematical formulas and graphs showing the stresses which act upon the individual bolts under different loading conditions.

BS

28T6

KOVALEV, A.I., pomoshchnik mashinista

These defects in electrified units could be eliminated. Elek. i tepl.tiaga 3 no.2:41-42 F '59. (MIRA 12:4)

1. Motorvagonnoye depo Moskva III, Severnaya doroga.
(Electric locomotives--Electric equipment)

KOVALEV, A.I., pomoshchnik mashinista

Defects in the equipment of electric sections can be averted.
Elek.i tepl.tiaga 3 no.10:33 O '59. (MIRA 13:2)

1. Depo Moskva III.
(Electric railroads--Equipment and supplies)

TUMANOV, A.T., glav. red.; VYATKIN, A.Ye., red.; GARBAR, M.I., kand. tekhn. nauk, red.; ZAYMOVSKIY, A.S., red.; KARGIN, V.A., red.; KISHKIN, S.T., red.; KISHKINA-RATNER, S.I., doktor tekhn. nauk, red.; PANSHIN, B.I., kand. tekhn. nauk, red.; ROGOVIN, Z.A., doktor khoz. nauk, red.; SAZHIN, N.P., red.; SKLYAROV, N.M., doktor tekhn.nauk, red.; FRIDLYANDER, I.N., doktor tekhn. nauk, red.; SHUBNIKOV, A.V., red.; SHCHERBINA, V.V., doktor geol.-miner. nauk, red.; SHRAYBER, D.S., kadn. tekhn.nauk, red.; GENEL', S.V., kand. tekhn.nauk, red.; NOVIKOV, A.S., doktor khoz. nauk, red.; KITAYGORODSKIY, I.I., doktor tekhn. nauk, red.; ZHEREBKOV, S.K., kand. tekhn. nauk, red.; BOGATYREV, P.M., kand. tekhn. nauk, red.; BUROV, S.V., kand. tekhn. nauk, red.; POTAK, Ya.M., doktor tekhn. nauk, red.; KUKIN, G.N., doktor tekhn. nauk, red.; KOVALEV, A.I., kand. tekhn. nauk, red.; ZENTSEL'SKAYA, Ch.A., tekhn. red.

[Building materials; an encyclopedia of modern technology] Konstruktsionnye materialy; entsiklopediia sovremennoi tekhniki. Glav. red. Tumanov, A.A. Moskva, Sovetskaia entsiklopediia. Vol.1. Abliatsiia - Korroziia. 1963. 416 p. (MIRA 17:2)

1. Chlen-korrespondent AN SSSR (for Kishkin).

KOVALEV, A.I., pomoshchnik mashinista

Methods for checking the heating networks of the ER1 electric train. Elek. i tepl. tiaga 7 no.4:35-36 Ap '63. (MIRA 16:5)

1. Depo Moskva II.
(Electric railroads--Heating and ventilation)

MATVEYEV, V.V., inzh.; LUSHNIKOV, A.M., kand.tekhn.nauk; Prinimali uchastiye: KOVALEV, A.I.; PETROV, V.I.

Instruments for the automatic control of the viscosity and level of liquids in the manufacture of artificial leather. Nauch.-issl.trudy VNIIPIK no.12:95-104 '60. (MIRA 16:2)

1. Laboratoriya avtomatiki Vsesoyuznogo nauchno-issledovatel'skogo instituta plenochnykh materialov i iskusstvennoy kozhi (for Petrov).
(Automatic control) (Viscosimeter) (Liquid level indicators)

NAZAROV, M.S.; OVSYANNIKOV, N.G.; SOYUZOV, A.A.; MITAISHVILI, A.A.; YUDIN, P.G.; SOLOV'YEV, I.F.; SVIRIDOV, A.A.; RUMYANTSEV, S.M.; KOLICHENKO, K.N.; NIKULIN, M.R.; ORLOV, D.A.; MAYORSKIY, G.I.; SEMENOV, I.Ya.; SUTYRIN, M.A.; KOVALEV, A.I.; VLASOV, A.A.; LEVIN, Ya.L.; KLIMOVITSKIY, A.Z.; METAL'NIKOV, G.F.; PANUSHKIN, G.P.; CHECHETKIN, A.V.; MIKHEYEV, V.D.; KOLOKOL'NIKOV, K.A.; MOISEYEVA, A.I.; TIKON, G.I.; KRYLOVA, V.F.; GOFMAN, Ya.M.; BUDCHANOV, B.F.

K.I. Korshunova; an obituary. Rech. transp. 20 no.12:59 D '61. (MIRA 14:12)

(Korshunova, Kseniia Ivanovna, 1910-1961)

BOCHAROV, Nikolay Filippovich [deceased]; DEGTYAREV, Viktor Olegovich; KOVALEV, Anatoliy Ivanovich. Prinimal uchastiye STEPANOV, N.G.; ZAUSAYLOV, B.A., retsenzent; FEDOROVSKIY, P.Ye., retsenzent; TSETLIN, B.V., red.; PESKOVA, L.N., red.; BOBROVA, Ye.N., tekhn. red.

[Fundamentals of safety engineering and fire prevention measures] Osnovy tekhniki bezopasnosti i protivopozharnoi tekhniki. Moskva, Transzheldorizdat, 1962. 202 p. (MIRA 16:2)

(Railroads--Safety measures)
(Railroads--Fires and fire prevention)

VIL'DER, S.I., inzh.; KOVALEV, A.I., inzh.; MARKACHEV, B.V., inzh.

Selecting efficient designs for the condensers of steam-ejector jet vacuum pumps. Khim.mashinostr. no.1:14-17 Ja-F '64. (MIRA 17:4)

BOGANOV, K.Ye., kand. tekhn. nauk; KOVALEV, A.I., inzh.

Wear resistance of the forcing element in distributor-type fuel pumps. Mashinostroenie no.5:79-80 S-O '64 (MIRA 18:2)

L 53645-65 EWT(1)/EWP(m)/EPA(sp)-2/EWG(v) EWA(d)/EPR/EPA(w)-2/T-2/FCS(k) EWA(1)/
EWA(m)-2 Pd-1/Pab-10/Pe-5/Ps-4/Pi-4 IJP(c)

ACCESSION NR: AP5013378 UR/0207/65/000/002/0091/0093

AUTHOR: Kovalev, I. I. (Leningrad) 61 B

TITLE: Modeling of current density distribution in a magnetohydrodynamic channel, accounting for anisotropic conductivity

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1965, 91-93

TOPIC TAGS: MHD, plasma, current density, electric conductivity, anisotropic medium, electric field, magnetic field, Maxwell equation

ABSTRACT: The effect of tensor conductivity on the current distribution in a rectangular channel MHD flow was investigated by using a special model. The model consisted of replacing the fluid by polycrystalline bismuth having the same general tensor conductivity characteristics as the fluid itself with a Hall parameter of 1,000 $cm^2/v \cdot sec$ at room temperature. The applied magnetic field was 5000 gauss, and the electrodes were continuous and made of copper. Analytically, the generalized Ohm's law

$$j = \sigma(-\operatorname{grad} V + v \times B)$$

was reduced to the simple form $j = -\sigma \operatorname{grad} V$ by defining an irrotational electric

Card 1/2

L 53648-65
ACCESSION NR: AP5013378

field E* = -grad V + v x B. The current density was determined from the expression

$$j = \frac{1}{\mu^2 B^2}\left(\mu - \frac{1}{\mu}\right)\operatorname{grad} V_2$$

and the conversion to current densities with the moving fluid was accomplished by

$$j = j_0 V_0 / U_{0M} M$$

where M is the ratio of apparatus dimensions to those of the model. The maximum scatter in equipotential lines did not exceed 3%. Comparing the potential distribution in the channel with exact numerical estimates showed a 10% scatter in the data. Orig. art. has: 10 formulas and 2 figures.

ASSOCIATION: none

SUBMITTED: 22May64 ENCL: 00 SUB CODE: ME, GP

NO REF SOV: 005 OTHER: 002

Card 2/2

L 44396-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6024529 SOURCE CODE: UR/0148/66/000/007/0143/0146

AUTHOR: Rastorguyev, L. N.; Kovalev, A. I.; Minkevich, A. N.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov) 50

TITLE: Structure of the diffusion layer in carboantimonized steel 46 B

SOURCE: IVUZ. Chernaya metallurgiya, no. 7, 1966, 143-146

TOPIC TAGS: antimonide, surface hardening, metallographic examination, microhardening, x ray diffraction analysis, crystal orientation, thermal emf

ABSTRACT: Carboantimonizing of type 20 steel and Armco iron was studied and compared with the more typical cemetizing process. All samples were treated in a Bandyuzhskiy carbonizer at 950°C for 6 hrs. A mixture of 10% Na_2CO_3 and 0.75% Sb_2O_3 was added for carboantimonizing; 10% Na_2CO_3 was added for cemetizing. Microstructures showed a light-etching layer in the carboantimonized samples which was harder and thinner than the cemetized layer. The microthermal emf method developed at the Moscow Institute of Steel and Alloys was used to study the diffusion layers. Antimony decreased the electronegativity of microthermal emf and above 2.7% Sb, the microthermal emf became more positive (F=0.7 v/°C at 3.25% Sb). Changes in microthermal emf are given as functions of layer thicknesses for cementing and carboantimonizing, the latter with 0.75% and 2.5% Sb_2O_3 added to the carbonizer. The Sb content of the layer was greater for 2.5%

UDC: 669.18.046.56:669.75:621.785.53

Card 1/2

Card 2/2 eah

BOL'SHAKOV, Anatoliy Stepanovich; SARIN, Valeriy Ivanovich; SHVAYNSHTEYN, Boris Simonovich; PONOMAREV, V.S., inzh., retsenzent; ZAZOVSKIY, D.G., inzh., retsenzent; MAKAROV, M.S., inzh., retsenzent; POPOV, G.V., inzh., retsenzent; KURBATOV, A.I., retsenzent; KITAYEVA, Z.A., inzh., retsenzent; SDOBNIKOV, Yu.F., retsenzent; KOVALEV, A.K., inzh., retsenzent; KESARIV, A.P., inzh., retsenzent; KISELEVA, N.P., inzh., red.; GROMOV, S.A., kand. tekhn. nauk, red.; SHCHERBACHEVICH, G.S., inzh., red.; USENKO, L.A., tekhn. red.

[Shunting diesel locomotives]Manevrovye teplovozy. Moskva, 1962. 383 p. (MIRA 15:6)

(Diesel locomotives)

KOVALEV, A.L.; ISAYENKO, V.F.; KUZNETSOV, A.M.

Apparatus for determining the speed rates of air flow. Khim. volok. no.4:72-73 '65. (MIRA 18:8)

1. VNIIMSV, Chernigov.

KOVALEV, A.M.

[Use of statistics in factory control] Opyt vnedreniia statisticheskogo kontrolia na zavode. Sverdlovsk, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry [Uralo-Sibirskoe otd-nie] 1952. 21 p. (MLRA 6:7)
(Factory management)

KOVALEV, A. M.

Bee culture Moskva, Gos. izd-vo selkhoz. lit-ry, 1935. 574 p. (Uchebniki i uchebnye posobiia dlia podgotovki sel'skokhoziaistvennykh kadrov massovoi kvalifkatsii)

KOVALEV, A. M.

Agriculture

(Advanced apiarists of the Kalinin Province) Moskva, Gos. izd-vo sel'khoz. lit-Ry, 1951

Monthly List of Russian Accessions, Library of Congress, July 1952. UNCLASSIFIED.

KOVALEV, A. M.

Bee Culture - Kalinin Province

Books about foremost beekeepers. ("The foremost beekeepers of Kalinin province." Reviewed by A.B. Tuchin) Pchelovodstvo 29, no. 4, April 1952

9. Monthly List of Russian Accessions, Library of Congress, August 2 1953, Uncl.

KOVALEV, A. M.

Bee Culture

All-year care of strong colonies of bees Pchelovodstvo 29, no. 6, June 1952.

Monthly List of Russian Accessions, Library of Congress, August 1952. UNCLASSIFIED.

KOVALEV, A. M.

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Ukhod za pchelami (Handling bees) Moskva, Sel'khozgiz, 1954.
254 p. illus., diagrs., tables.

KOVALEV, A. M. Cand Agr Sci -- (diss) "Effect of natural and economic conditions upon the state and prospects of apiculture in the central ~~Oblasts~~ areas of the RSFSR." Mos, 1957. 18 pp including cover (All-Union Sci Res Inst of Animal Husbandry), 110 copies (KL, 5-58, 102)

Kovalev, A.M

USSR / Farm Animals. Honeybee. Q-5

Abs Jour: Ref Zhur-Biol., No 12, 1958, 54871.

Author : Kovalev, A. M.
Inst : Not given.
Title : Apiculture in the Years of Total Collectivization.

Orig Pub: Pchelovodstvo, 1957, No 10, 18-23.

Abstract: At the beginning of collectivization (1929) there were 6,020 thousand bee colonies on the farms of all classes in the USSR. During the first period of collectivization, the number of colonies was decreasing, and in 1933 it dropped to 5,002.5 thousand families. Subsequently, from 1934 on the number of colonies began to increase, and in 1940 reached the figure of 10 million.

Card 1/1

MECHAYEVA, Ye.G., red.; PEVZNER, V.I., tekhn.red.

[Textbook on beekeeping] Uchebnik pchelovoda. Izd.2., perer. i dop. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1958. 635 p. (MIRA 13:1)

(Bee culture)

KOVALEV, A.M.

[Honey-bearing plants and the development of bee culture in the central districts of the U.S.S.R.] Medonosnye resursy i razvitie pchelovodstva v tsentral'nykh raionakh SSSR. Moskva, Gos.izd-vo selkhoz.lit-ry, 1959. 306 p. (MIRA 13:6)
(Honey plants) (Bee culture)

KOVALEV, Aleksandr Mikhaylovich

[Beekeeping] Ukhod za pchelami. Izd.2. Moskva, Gos. izd-vo sel'-khoz. lit-ry, 1959. 246 p. (MIRA 14:10)
(Bee culture)

KOVALEV, A.M.

BADAR'YAN, G.G.; TYUTIN, V.A.; CHERNUSHKIN, S.D.; ZUZIK, D.T.; KHODASEVICH, B.G.; MEYER, S.V.; GUKASOV, Ye.I.; KAZANSKIY, A.M.; KASSIKOV, L.N.; KARAYEV, S.A.; ABRAMOV, V.A.; VASIL'YEV, N.V.; BUGAYEV, N.F.; SAPIL'NIKOV, N.G.; KISTORIN, A.A.; RUDNIKOV, V.N.; YAKOVLEV, V.A.; PEREMYKIN, V.I.; ISAYEV, A.P.; KUZ'NICHEV, N.N.; IL'IN, S.A.; PRONIN, V.A.; LUK'YANOV, A.D.; SHAMOV, Ya.K.; IL'ICHEV, A.K., kand. sel'-khoz. nauk; KOGAN, A.Ya.; TSYNKOV, M.Yu.; BABIY, L.T.; GORBUNOV, I.I.; KOVALEV, A.M.; ROMANCHENKO, G.R.; ZHODSKAYA, M.L., red.; IVANOVA, A.N., red.; GUREVICH, M.M., tekhn. red.; TRUKHINA, O.N., tekhn. red.

[Economics of agriculture]Ekonomika sotsialisticheskogo sel'-skogo khozyaistva; kurs lektsii. Moskva, Sel'khozizdat, 1962. 710 p. (MIRA 15:10)

(Agriculture--Economic aspects)

KOVALEV, A.M., inzh.; KOTOV, V.N., inzh.

Source of calibrating voltage. Priborostroenie no.9:27 S '65. (MIRA 18:10)

31944
S/051/62/032/001/004/018
B104/B138

C/, 14/2

AUTHORS: Kovalev, A. M., and Krasil'nikov, V. N.

TITLE: Reflection of electromagnetic waves from moving planes

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 1, 1962, 30-33

TEXT: The reflection of electromagnetic waves was studied from an ideally conductive mirror moving in vacuo. The motion of the mirror is described by $z = z_s(t)$, and the electromagnetic waves are taken to be transversely polarized ($E_y = E$, H_x, H_z). The waves are incident in the XZ-plane, and the Z-axis is perpendicular to the mirror. The reflection of perpendicularly incident plane waves is easy to solve. If $E_{inc} = \varphi(ct-z)$, then $E_{refl} = \psi(ct+z)$. The equation

$$\psi(ct'+z) = -\frac{c-\dot{z}_s(t')}{c+\dot{z}_s(t')}\varphi[ct'-z_s(t')]. \qquad (3)$$

describes the change in amplitude with reflection, caused by external

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Reflection of electromagnetic ...

forces moving the mirror. Eq. (3) also describes the change in frequency; If the incident wave is monochromatic (ω_0), then $\omega = \omega_0(c-\dot{z}_s(t'))/(c+\dot{z}_s(t'))$.

The reflection of obliquely incident plane waves is much more difficult to solve, since the reflected waves are not then plane ones. A monochromatic wave incident at the angle θ is examined. $z_s(t)$ is taken to be periodic. The incident wave is given by $E_{inc} = \exp(i\omega t - ik_x x - ik_z z)$.

The field of reflected waves is sought in the form

$$E_{refl} = \sum_{n=-\infty}^{\infty} V_n \exp(i\omega_n t - ik_x x - iz\sqrt{(\omega_n/c)^2 - k}), \text{ where } \omega_n = \omega - n2\pi/T.$$

By substituting $E = E_{inc} + E_{refl}$ in the boundary condition $E + \dot{z}_s \int^t \partial E d\tau/\partial z = 0$ at $z = z_s(t)$, one obtains

$$\sum_{n=-\infty}^{\infty} V_n \frac{c+\dot{z}_s(t)}{c-\dot{z}_s(t)\cos\theta}\sqrt{1-\left(\frac{\omega}{\omega_n}\right)^2\sin^2\theta} \times \times e^{i\left(k_x+\sqrt{\left(\frac{\omega_n}{c}\right)^2-k^2}\right)z_s(t)+i(\omega_n-\omega)t} = -1. \quad (8).$$

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This periodic function is expanded in a Fourier series, the Fourier coefficients of which are Bessel functions. It is shown that the reflection of electromagnetic waves from a periodically vibrating mirror is very similar to the modulation of electromagnetic oscillations on the one hand, and to the reflection of waves from a periodically uneven surface on the other. Poynting's theorem is formulated for the field in question in a study of the energy balance of the electromagnetic field. The resulting equation shows that an electromagnetic field can be excited parametrically. L. I. Mandel'shtam and N. D. Papaleski (Polnoye sobraniye trudov, v. II, Izd. AN SSSR, 1947) are mentioned. There are 1 figure and 7 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gosudarstvennogo universiteta (Scientific Research Institute of Physics of the Leningrad State University)

SUBMITTED: February 8, 1961

Card 3/3

FEFELOV, Nikolay Aleksandrovich; KOVALEV, A.M., inzh., ved. red.; TAMBOVTSEV, S.P., kand. tekhn. nauk, red.; SOROKINA, T.M., tekhn. red.

[Rapid turning of heat-treated chromium-nickel steel]Skorostnoe tochenie termoobrabotannoi khromonikelevoi stali. Moskva, Filial Vses. in-ta nauchn. i tekhn. informatsii, 1958. 21 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyi opyt. Tema 10. No.M-58-74/12) (MIRA 16:3)
(Chromium-nickel steel) (Metal cutting)

YUKHIDOV, Mikhail Yefimovich; MANUYLOV, Leonid Konstantinovich; OSIPOV, Kim Aleksandrovich; KOVALEV, A.M., inzh., ved. red.; ESTERKIN, M.A., inzh., red.; SMIRNOV, B.M., tekhn. red.

[Highly efficient methods of slitting shafts]Vysokoproizvoditel'nye metody obrazovaniia shlitsev na valakh. Moskva, Filial Vses. in-ta nauchn. i tekhn. informatsii, 1958. 17 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyi opyt. Tema 10, No.M-58-90/18) (MIRA 16:2)
(Metal cutting) (Shafting)

VOLOSATOV, Viktor Alekseyevich; KOVALEV, A.M., inzh., ved. red.; KOSTROMIN, F.P., kand. tekhn. nauk, red.; PONOMAREV, V.A., tekhn. red.

[Universal pneumatic attachments for turret and turning lathes] Universal'nye pnevmaticheskie prisposobleniia k revol'vernym i tokarnym stankam. Moskva, Filial Vses.in-ta nauchn. i tekhn. informatsii, 1958. 22 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyi opyt. Tema 10. No.M-58-145/26) (MIRA 16:3)
(Lathes--Attachments)

Kovalev, A.N.

SAVASTEYEV, V.G., dots., kand. tekhn. nauk; KOVALEV, A.N., otvetstvennyy red.; NOVAKOVSKIY, G.L., tekhn. red.

[Principles of Laplace transformation applied to problems in automatic mining machinery] Osnovy preobrazovaniia laplasa primenitel'no k zadacham rudnichnoi avtomatiki. Moskva, Mosk. gornyi in-t im. I.V. Stalina, 1957. 32 p. (MIRA 11:7)
(Laplace Transformation) (Mining machinery)

KOVALEV, Anatoliy Nikolayevich; KANTER, A.I., red.

[Innovators' councils] Sovety novatorov. Moskva, Izd-vo "Znanie," 1964. 75 p. (Narodnyi universitet kul'tury: Tekhniko-ekonomicheskii fakul'tet, no.3) (MIRA 17:5)

84620

S/181/60/002/010/050/051
B019/B056

9,4340 (1143,1160,1331)

AUTHORS: Belova, N. A., Kovalev, A. N., and Penin, N. A.

TITLE: The Effect of Carrier Production in the Blocking Layer Upon the Inverse Branch of the Volt-ampere Characteristic of Germanium Diodes

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 10, pp. 2647 - 2654

TEXT: The authors investigated the effect of carrier production in the blocking layer of the p-n-junction of germanium diodes upon the reverse current. In the first part of the paper, the carrier production in the blocking layer is estimated, after which the authors discuss the inverse branch of the volt-ampere characteristic of germanium diodes with nickel impurities. Finally, the volt-ampere characteristic of germanium diodes with a very low resistivity is discussed. The authors summarize their results as follows: The carrier production in the blocking layer of a p-n-junction may significantly influence the shape of the inverse branch of the volt-ampere characteristic, if impurities with deep levels are

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The Effect of Carrier Production in the Blocking Layer Upon the Inverse Branch of the Volt-ampere Characteristic of Germanium Diodes

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B019/B056

introduced into the germanium. By a decrease of the volume lifetime in germanium, not only in low-ohmic, but also in the case of high-ohmic germanium diodes an influence of the generation current upon the volt-ampere characteristic was found to occur. Here the condition is that the thickness of the blocking layer is of the same order of magnitude as the diffusion length of the minority carrier. In diodes produced from pure indium melted in germanium and nickel, the production exerts no significant influence upon the reverse current. This is explained by extraction of nickel from that crystal region in which the blocking layer is located. This extraction sets in during the melting of indium as a consequence of diffusion of nickel in indium. For all investigated germanium diodes with a resistivity lower than 0.01 ohm.cm, a considerable change could be found: the reverse current increases with a decrease of resistivity and is practically independent of temperature. In the direct branch of the volt-ampere characteristic a considerable increase of the current could be observed at low voltages. This was explained by the tunnel effect in the p-n-junction. The authors thank

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84620

The Effect of Carrier Production in the Blocking Layer Upon the Inverse Branch of the Volt-ampere Characteristic of Germanium Diodes

S/181/60/002/010/050/051
B019/B056

Professor S. G. Kalashnikov for discussing the result obtained. There are 4 figures and 6 references: 3 Soviet and 3 US.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radiotechnology and Electronics of the AS USSR)

SUBMITTED: March 28, 1960

Card 3/3

9.4300(1136, 1143, 1150, 1161)

S/109/61/006/001/019/023
E140/E163

AUTHORS: Belova, N.A., and Kovalev, A.N.

TITLE: Experimental investigation of tunnel current in narrow Germanium p—n junctions

PERIODICAL: Radiotekhnika i elektronika, Vol.6, No.1, 1961, pp. 160-165

TEXT: It is shown experimentally that the degree of alloying of the n- and p-regions of a narrow p—n junction has substantial influence on the tunnel current and in particular on the magnitude and positions of the maxima and minima in the volt-ampere characteristics. For diodes with stronger alloying of the p-region the position of the maximum is basically defined by the degree of degeneration in the p-region. The position of the minimum on the volt-ampere characteristic shifts towards higher potentials with increase of the degree of alloying in the n- and p-regions; it is suggested that this is connected with the presence of impurity zones in strongly alloyed semiconductors. It also follows from the experiment that the character of the temperature dependence of the tunnel current is defined by the degree of degeneration in

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Experimental investigation of .....

the n- and p-regions. No appreciable dependence of tunnel current on the dislocation density was found.
Acknowledgements are expressed to N.Ye. Skvortsova for proposing the topic, to V.L. Bonch-Bruyevich for his advice, and to S.G. Kalashnikova for instructions.
There are 5 figures, 2 tables and 5 references: 1 Soviet and 4 English.

ASSOCIATION: Institut radiotekhniki i elektroniki, AN SSSR
Institute of Radio Engineering and Electronics, AS USSR)

SUBMITTED: September 10, 1960

Card 2/2

30301

S/109/61/006/011/016/021
D201/D304

9.4340 (1143, 1150)

AUTHORS: Belova, N.A., and Kovalev, A.N.

TITLE: Certain peculiarities of the volt-ampere characteristics of narrow germanium p-n transitions

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 11, 1961, 1921 - 1926

TEXT: In the present article results are described of further experiments in studying the effect of alloying germanium of both n- and p- type on the max. of tunnel current, i.e. the influence of the concentration of majority carriers in the fundamental germanium of p-type when this concentration in the p-region is known. For this purpose diodes were prepared from germanium doped with gallium with a concentration of majority carriers from 1.5×10^{19} cm^{-3}. The electron conduction zone was obtained by alloying indium with arsenic impurities to a germanium wafer. The evaluated value of degeneration μ_p for the used germanium was calculated as follows:

For a concentration of mobility carriers $p = 1.5 \times 10^{19}$ cm^{-3} $\mu_p \sim 3k$

Card 1/3

Certain peculiarities of the ...

T; for $p = 5 \times 10^{19} cm^{-3}$ $\mu_p = 7.5 kT$, where k - the Boltzmann constant and T - absolute temperature. Diodes with a large degree of degeneration in the p-region ($\mu_p > \mu_n$) were found to have the voltage, corresponding to the maximum of the tunnel current, determined by the degree of degeneration in the hole region, the position of maximum being proportional to the degree of degeneration μ_p (Fig. 2). On the maximum value of the tunnel current, it was found that this depends mainly on the transparency of the potential barrier. This transparency depends again strongly (exponentially) on the thickness of the potential barrier and consequently on the concentration of majority n and p carriers. By comparing the experimental data obtained with the expression for the transparency of the barrier, it was found that the maximum current in the analyzed region may be hard to determine by the probability of electron drift through the potential barrier. It means that the maximum of the tunnel current depends very strongly on the degree of alloying n - and p-region. In conclusion, the authors thank S.G. Kalashnikov V.L. Bonch-Bruyevich and N.Ye. Skvortsov for assessing their work.

Card 2/3

Certain peculiarities of the ...

There are 5 figures, 1 table and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: F.A. Trumbore, Bell System Techn. J. 1960, 39, 1, 169; S.V. Furukawa, J. Phys. Soc. Japan, 1960, 15, 4, 730.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio Engineering and Electronics, AS USSR)

SUBMITTED: March 14, 1961

Fig. 2.

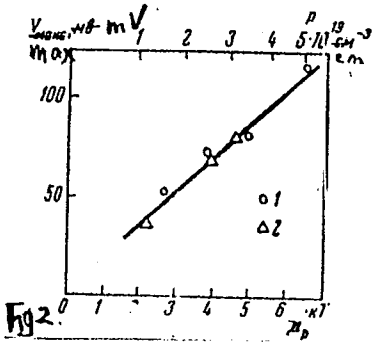

Fig 2

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S/058/63/000/002/043/070
A062/A101

AUTHORS: Belova, N. A., Kovalev, A. N.

TITLE: Experimental investigation of the influence of the alloy degree on the tunnel current in narrow p-n junctions of germanium

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 69, abstract E458 ("Tr. Soveshchaniya po udarn. ionizatsii i tunnel'n. effektu v poluprovodnikakh, 1960". Baku, AN AzerbSSR, 1962, 120 - 129)

TEXT: It has been shown experimentally that the alloying degree of the n and p regions of a narrow p-n junction has an appreciable effect on the tunnel current and first of all on the magnitude and position of the maximum and minimum of the voltampere characteristic. For diodes with a more strongly alloyed p region, the position of the maximum is determined, in principle, by the degree of degeneration in the p region. The position of the minimum of the volt-ampere characteristic is shifted towards the higher tensions as the alloying degree in the n and p regions increases; perhaps this is connected with the presence of admixture zones in the strongly alloyed semiconductor. It follows also from the

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experiment that the character of the temperature dependence of the tunnel current is determined by the degree of degeneration in the n and p regions. No noticeable dependence of the tunnel current on the density of dislocations was observed. See RZh Fiz, 1961, 9Zh108.

[Abstracter's note: Complete translation]

39433
S/109/62/007/008/012/015
D409/D301

9,4330

AUTHOR: Kovalev, A.N.

TITLE: Experimental investigation of the voltage dependence of the negative resistance of germanium tunnel-diodes

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 8, 1962, 1416-1420

TEXT: The magnitude and character of the negative resistance R of tunnel diodes is investigated as a function of the applied voltage for various degrees of doping of the germanium. The diodes were made of n-type germanium with resistivity 0.0007 - 0.0016 ohm-cm. The difference in doping degree was obtained by using an indium alloy with varying gallium concentration (from 0.5 to 2%). The degree of degeneration, and hence the carrier concentration in the p-region, was determined by the magnitude of the voltage, corresponding to the current maximum I_{max}; this was done on the basis of earlier experimental results. The negative resistance was measured directly, and was also determined graphically from the current-volt-

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age characteristic. Two groups of tunnel diodes were investigated: 1) With different doping degree of the n-region, but with same degree of degeneration of the p-region; b) with different degree of degeneration. From the curves R versus V (applied voltage) for diodes with different carrier concentration in the n-region, it is evident that an increase in the degree of doping leads to a decrease in the minimum value R_o of the negative resistance. Measurements of the current-voltage characteristics of a large number of diodes, yieldedthe formula:

$$|-R|_o = (55 + V_{max})\, I_{max}^{-1} \text{ ohm.}$$

It was found that the character of the dependence R(V), as well as the voltage V_o, corresponding to R_o, depend weakly on the carrier concentration in the n-region, being mainly determined by the doping degree of the p-region. The dependence of the inflection point V_o on the degree of degeneracy μ_p was investigated for various values of V_{max}. It was found that the peculiarities of the current-voltage characteristics are essentially determined by a broadening of the band edges, due to a partial covering of the "intrinsic" bands by

Experimental investigation ...

"impurity" bands which penetrate (at concentrations of the order of 10^{19} cm^{-3}) the forbidden gap to a considerable depth. Hence follows that the existing theory of current-voltage characteristics, (given in the references), which does not take into account this broadening, cannot explain the observed peculiarities. There are 4 figures. The most important English-language reference reads as follows: T.P. Brody, J. Appl., Phys., 1962, 33, 1, 100.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio Engineering and Electronics of the AS USSR)

SUBMITTED: December 25, 1961

Card 3/3

ACCESSION NR: AP3000999 S/0109/63/008/006/1009/1018

AUTHOR: Kovalev, A. N.; Skvortsov, N. Ye.

TITLE: Effect of the degree of germanium alloying on the basic radiotechnical parameters of tunnel diodes

SOURCE: Radiotekhnika i elektronika, v. 8, no. 6, 1963, 1009-1018

TOPIC TAGS: tunnel diode, germanium, p-n junction, carrier density

ABSTRACT: The results of varying the alloy concentrations and junction areas in Ge tunnel diodes are described. Both n- and p-types were tested over concentration ranges of n = 8 x 10 sup 18 to 5 x 10 sup 19 electrons/cm sup 3 and p = 5 x 10 sup 18 to 1 x 10 sup 20 electrons/cm sup 3. In diodes based on n-type Ge the p-region was formed by doping with indium and 0.5-2% traces of gallium; in those based on p-type Ge the n-region was also obtained from indium, with arsenic traces. The junctions were reduced in size by repeated etching, while operating parameters were observed. Sample data are given for a series of 16 etch steps, after each of which the I sub p (peak current),

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ACCESSION NR: AP3000999

I sub v (valley current), C sub j (capacitance), and r sub s (forward resistance) were recorded. A final junction diameter of approximately 10 microns was obtained in this way, with C sub p less than 3 pf and r sub s less than 2 ohms. Various degrees of alloying had the following effects on diode operation. 1) Peak voltage V sub p could vary from 35 to 110 mv by increasing p density, although no such dependence was observed on n density. 2) Tunnel current densities varied from 10 sup -1 to 10 sup 3 amp/cm sup 2. 3) The ratio I sub p/C sub p had the exponential relation to carrier density predicted by theory, with peaks up to 10 ma/pf in p-type junctions. 4) The minimum negative resistance value R sub 0 decreased nonlinearly with a rise in n- or p-type carrier density. 5) The upper limit frequency f sub lim was found to increase nonlinearly with carrier density; for C = .1 pf and r sub s = 1.4 ohms, f sub lim was 25 Gc. Tests made with temperature as the controlled variable showed that the diode temperature-current characteristic depends on the p-density and may be negative (low density) or positive (high density); hence an optimum alloy exists for a given operating voltage range which will have the least temperature sensitivity. Test results are analyzed with a view to improving tunnel diode performance in respect to lower noise level, better temperature stability, and higher

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ACCESSION NR: AP3000999

frequency response. Orig. art has: 13 figures and 1 table.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio Engineering and Electronics AN SSSR)

SUBMITTED: 03Jun62 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 004 OTHER: 002

Card 3/3

ACCESSION NR: AP4038619 S/0109/64/009/004/0676/0680

AUTHOR: Kovalev, A. N.; Serebrennikov, P. S.

TITLE: Numerical calculation and experimental verification of the current-voltage characteristic of a germanium tunnel diode

SOURCE: Radiotekhnika i elektronika, v. 9, no. 4, 1964, 676-680

TOPIC TAGS: semiconductor, semiconductor diode, germanium diode, tunnel diode, current voltage characteristic

ABSTRACT: V. L. Bonch-Bruyevich's general formula for the current-voltage characteristic (Rad. i elektronika, 1963, 8, 6, 1002) allows for the field non-uniformity in a narrow p-n junction and is suitable for any temperature and any degree of alloying. In the present article, the formula is used for a numerical calculation of the current-voltage characteristic of a Ge tunnel diode. A comparison with experimental data obtained earlier by the authors (Rad. i elektronika,

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ACCESSION NR: AP4038619

1963, 8, 6, 1009) reveals that the best agreement occurs in the cases when, for the n-region, a value of Δ_n is selected close to Δ_p and is somewhat higher than that determined on the Hall effect basis; Δ_n is the difference between the Fermi level and the bottom of the conductivity zone in the n-region; Δ_p is the difference between the top of the valence zone in the p-region and the Fermi level." "The authors are thankful to N. P. Rumyantseva for her assistance in carrying out the numerical calculation. In conclusion, we wish to thank V. L. Bonch-Bruyevich for his valuable comments." Orig. art. has: 2 figures, 2 formulas, and 1 table.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio Engineering and Electronics, AN SSSR)

SUBMITTED: 13Mar63 DATE ACQ: 05Jun64 ENCL: 00

SUB CODE: EC NO REF SOV: 004 OTHER: 003

Card 2/2

L 36500-65 EEC(b)-2/EEC(k)-2/EWA(h)/EWT(l)/EWG(m)/T Pu-4/Pz-6/Peb IJP(c)

ACCESSION NR: AP5007090 S/0109/65/010/003/0449/0456

33
B

AUTHOR: Voronenko, V. P.; Kovalev, A. N.

TITLE: Investigation of the special features of a tunnel-diode amplifier

25

SOURCE: Radiotekhnika i elektronika, v. 10, no. 3, 1965, 449-456

TOPIC TAGS: semiconductor amplifier, tunnel diode amplifier, electronic amplifier

ABSTRACT: As a description of the tunnel-diode current-voltage characteristic by a third-degree polynomial and elsewhere places too many limitations on the bias voltage and the signal amplitude, in the present article the current-voltage characteristic is described by a fifth-degree polynomial. This permits expressing (formulas 11, 12) the amplifier saturation power in a wider range of bias, up to the voltages where $\partial^3 i/\partial u^3 \leq 0$. The effect of frequency on the saturation power is investigated, and formulas for the saturation power under both straight-through

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L 36500-65

ACCESSION NR: AP5007091

and reflection conditions are developed. The effect of higher harmonics is neglected because their voltage across the p-n junction is small (resonant system) as compared with the fundamental-harmonic voltage. The results of the above analysis are used to estimate the saturation power of a Ge tunnel-diode amplifier. Experimental studies of the effect of the degree of doping on the principal parameters of the tunnel diode permitted establishing a connection between the coefficients of the approximating polynomial and the impurity-concentration in Ge and, thus, evaluating the saturation power with an allowance for the electrophysical properties of the semiconductor. Also, the noise factor and the passband of a tunnel-diode amplifier depending on the doping degree are found. Orig. art. has: 6 figures and 23 formulas.

ASSOCIATION: none

SUBMITTED: 17Jan64 ENCL: 00 SUB CODE: EC

NO REF SOV: 004 OTHER: 000

Card 2/2

L 45152-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG
ACC NR: AP6027245 SOURCE CODE: UR/0109/66/011/008/1525/1528

50
B

AUTHOR: Kovalev, A. N.; Logunov, L. A.

ORG: none

TITLE: Gallium antimonide tunnel diodes

SOURCE: Radiotekhnika i elektronika, v. 11, no. 8, 1966, 1525-1528

TOPIC TAGS: gallium antimonide semiconductor, tunnel diode, semiconductor diode, semiconductive material, GALLIUM COMPOUND, ANTIMONIDE

ABSTRACT: Tunnel diodes are now being manufactured mostly from Ge, GaAs, and GaSb. The properties of GaSb diodes have had the least attention among investigators. The purpose of the present article is a detailed evaluation of the properties of such diodes as compared with the characteristics of tunnel diodes based on Ge or GaAs. The diodes were prepared by the fusion method on both n- and p-type GaSb. The P-type materials were alloyed with zinc and had a carrier charge concentration of $(1-2)\cdot 10^{19}$ cm^{-3}; the n-region was formed by doping with Sn + 5% Te. The n-type material was alloyed with Te and had a charge concentration of $2\cdot 10^{18}$cm^{-3}; the p-n junction was obtained by fusion in Sn + 10% Zn. Etching of finished p-n junctions produced a mesa-structure; the capacitance of the junctions in

Card 1/2 UDC: 621.382.23.011.222

L 45152-66

ACC NR: AP6027245

this case was 1—5pf. The authors conclude that the GaSb tunnel diodes now manufactured as yet do not have a substantial advantage as low-noise amplifiers, due to the high values of forward resistance. Furthermore, GaSb low-noise tunnel diodes have a strong temperature-dependence of the peak current. The most promising areas for the application of GaSb tunnel diodes are, apparently, detectors and mixers. In this case, however, the advantages of the shape of the volt-ampere characteristics of these diodes may best be used only by reducing forward resistance to values found in Ge diodes. This problem can be solved by perfecting the manufacturing technology of GaSb tunnel diodes. [26]

SUB CODE: 11,20/ SUBM DATE: 15Nov65/ ORIG REF: 002/ OTH REF: 005/ ATD PRESS: 5081

Card 2/2

BELYAYEV, V.V., inzh.-kapitan pervogo ranga; BEREZOVSKIY, V.N., kapitan pervogo ranga; KVITNITSKIY, A.A., kapitan pervogo ranga; KOVALEV, A.P., kapitan pervogo ranga zapasa; RODICHEV, A.I., kontr-admiral, red.; MASLOVA, N.Ya., tekhn. red.

[Antisubmarine defense in modern warfare; collection of translated articles] Protivolodochnaia oborona v sovremennoi voine; sbornik perevodnykh statei. Moskva, Voenizdat, 316 p. (MIRA 15:10)

(Submarine warfare)

KOVALEV, Aleksandr Petrovich; SMIRDYUKOV, S.A., redaktor; KAMOLOVA, V.M., tekhnicheskiy redaktor.

[Installing machinery and pipe-lines in ships] Montazh mekhanizmov i truboprovodov na sudakh. Leningrad, Gos. soiuznoe izd-vo sudostroitel'noi promyshl., 1955. 242 p. (MLRA 9:4)
(Marine engineering) (Marine pipe fitting)

Country : USSR
CATEGORY : CULTIVATED PLANTS. Grains. Leguminous Grains. M
Tropical Cereals.
ABS. JOUR. : RZBiol., No. 1 1959, No. 1593

AUTHOR : Kovalev, F.V.
INST. : Azovo-Chernomorsk Agric. Inst.
TITLE : Several Biological Features of Branched Wheat in Connection with the Formation of Yield Structure.
ORIG. PUB. : Sb.nauchno-issled. rabot Azovo-Chernomorsk. s.-kh.in-t, 1957, 15, 95-106
ABSTRACT : Branched wheat of the Plinianum strain has a vegetating period of 82-97 days; by means of vernalization this was cut by 2-3 days. Against a high agricultural background the number of blossoms in the spikelet reached 150; however, the grain setting capacity of the spike was 35-45%. Productivity with combine reaping averaged 25.6 centners per hectare. Data are given on the increases in dry matter according to the stages, on

CARD: 1/2

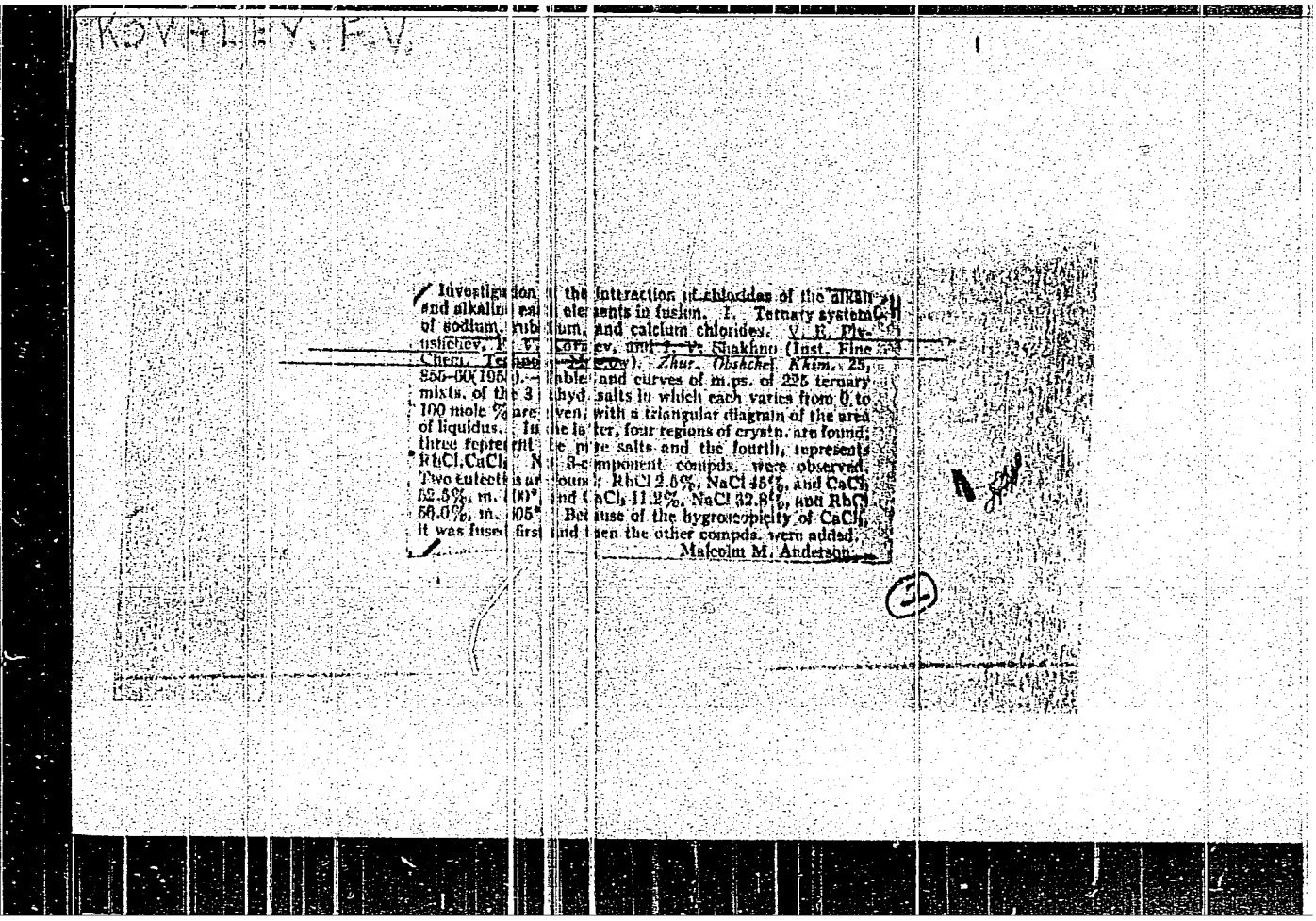
KOVALEV, F.V.

Investigation of the interaction of chlorides of the alkali and alkaline earth elements in fusion. I. Ternary system of sodium, rubidium, and calcium chlorides. V. E. Plyushchev, F. V. Kovalev, and I. V. Shakhno. *J. Gen. Chem. U.S.S.R.* 25, 8[illegible](1955)(Engl. translation).—See C. A. 49, 15424a. B. M. R.

CH

(2)

KOVTUNENKO, P. V.



Investigation of the interaction of chlorides of the alkali and alkaline earth elements in fusion. I. Ternary system of sodium, rubidium, and calcium chlorides. V. E. Plyushchev, P. V. Kovtunenko, and T. V. Siukhno (Inst. Fine Chem., Tsentr. Nauch.-Issled. Inst., Moscow). *Zhur. Obshchei Khim.*, 25, 956–60(1955).—Tables and curves of m.ps. of 225 ternary mixts. of the 3 chlorides in which each varies from 0 to 100 mole % are given, with a triangular diagram of the area of liquidus. In the latter, four regions of crystn. are found; three represent the pure salts and the fourth, represents RbCl.CaCl$_2$. No 3-component compds. were observed. Two eutectics are found: RbCl 2.6%, NaCl 45%, and CaCl$_2$ 52.5%, m. [illegible]°; and CaCl$_2$ 11.2%, NaCl 32.8%, and RbCl 56.0%, m. 105°. Because of the hygroscopicity of CaCl$_2$, it was fused first and then the other compds. were added.

Malcolm M. Anderson