The Solubility of Iron- and Calcium Chlorides in Trichlorosilane

05363
SOV/78-4-11-16/50

Analysis has shown only a small degree of solubility at 18°C; it amounts to $1.3 \cdot 10^{-4}$ g-mol/ℓ for $FeCl_3$ and to less than $4 \cdot 10^{-6}$ g-mol/ℓ for $CaCl_2$. The content of $FeCl_3$ is reduced by at least two orders by a single rectification of trichlorosilane saturated with $FeCl_3$. There are 2 figures and 5 references, 4 of which are Soviet.

SUBMITTED: July 10, 1958

Card 2/2

24.7700
24.7600

67801

SOV/180-59-5-13/37

AUTHORS: Zhurkin, B.G., Zemskov, V.S., Petrov, D.A., and Suchkova, A.D. (Moscow)

TITLE: The Solubility of Indium and Antimony in Germanium and their Effect on some Electrical Properties of Germanium

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 5, pp 86-90 (USSR)

ABSTRACT: Single crystals of germanium were pulled from melts doped with up to 80 wt % of indium or of antimony. [111] seeds were used; growth rate was 0.04 mm/min and the crystal was rotated at 140 rpm. Starting materials were: high purity germanium (25-30 ohm.cm N-type, mobility 3600 $cm^2/V.sec$, diffusion length ~ 1.5-2 mm); indium showing spectrographic traces of Fe, Al, Cu, Ca, Ni and antimony of Cu, As, Pb, Au, Al and P. A pure graphite crucible fitted with a quartz sheathed thermocouple (Fig 1) held a charge of 10-12 g. The pulled ingots were 7-9 mm diameter and 8-10 mm long. These were cut in half lengthways. One half was studied metallographically for homogeneity while Hall effect specimens (7 x 3 x 1 mm) were cut from the other, close to the seed and perpendicular to the growth axis. Resistivity and Hall

Card 1/3

SOV/180-59-5-13/37

The Solubility of Indium and Antimony in Germanium and their Effect on some Electrical Properties of Germanium

emf were measured with a potentiometer type PPTN-1 and a galvanometer type M-25/3. Resistivity measurements were ± 5% but Hall measurements (3700 Oe field) for the higher impurity concentrations had greater errors, from 10-50%. In determining impurity concentrations from resistivity and Hall measurements complete ionization and degeneracy were assumed. The table shows equilibrium concentrations of indium and antimony in solid and liquid germanium at various temperatures (both wt % and at % values are given). The corresponding phase diagrams are plotted in Figs 3 and 4 (compositions in at %). Solid Ge containing $6.6 \cdot 10^{-2}$ at % In is in equilibrium with a melt containing 71.6 at % In at 620 °C, and solid germanium containing $7.2 \cdot 10^{-2}$ at % Sb with liquid containing 70.5 at % Sb at 693 °C. Extrapolation to the eutectic horizontals suggests maximum solid solubilities of $8 \cdot 10^{-2}$ at % In and about 0.1 at % Sb. No retrograde solid solubility was found for Sb. Fig 5 shows log-log plots (which are linear)

Card 2/3

The Solubility of Indium and Antimony in Germanium and their Effect on some Electrical Properties of Germanium

of resistivity vs impurity concentration for Sb (1) and In (2) doping. 2.5×10^{-19} Sb/cm^3 gave $\sim 6 \cdot 10^{-4}$ ohm.cm, and $2 \cdot 10^{-19}$ In/cm^3 gave $2 \cdot 10^{-3}$ ohm.cm. Fig 6 shows the corresponding variations in Hall mobility; the plots for both holes and electrons varying similarly. The results presented for In are in good agreement with those in Ref 3. There are 6 figures, 1 table and 14 references, of which 3 are Soviet, 10 English and 1 German.

Card 3/3

SUBMITTED: April 3, 1959

4

5(4)

AUTHORS: Potemkin, A. Ya., Potapov, V. I., SOV/20-127-6-[illegible]
Petrov, D. A.

TITLE: A Contribution to the Study of Copper Ion Mobility in Germanium

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 6, pp 1256-1258 (USSR)

ABSTRACT: In the beginning the insufficient and partly contradictory data about the state of the Cu-atom in Ge are mentioned (Refs 1-4). Therefore the mobility (electrodiffusion) of the Cu-ion in n-germanium at 500-680° was investigated. The plane surface of a sample, that was cut out of a Ge-monocrystal was electrolytically covered by a copper coat of 10 μ thickness. In vacuum (10^{-3} to 10^{-4} torr) the sample was inserted into a circuit (ammeter type M-340, rheostat and rectifier type VS[illegible]-6M) of 0.5-1 v/cm and 4-10 a. After disconnection and cooling the potential line at the intersection plane of the sample was measured. As shown by figure 1 this line proceeds linear for samples without copper, whereas for copper-coated samples the linearity is disturbed at the edges by the diffusion of Cu-ions.

Card 1/2

A Contribution to the Study of Copper Ion Mobility in [illegible] Germanium

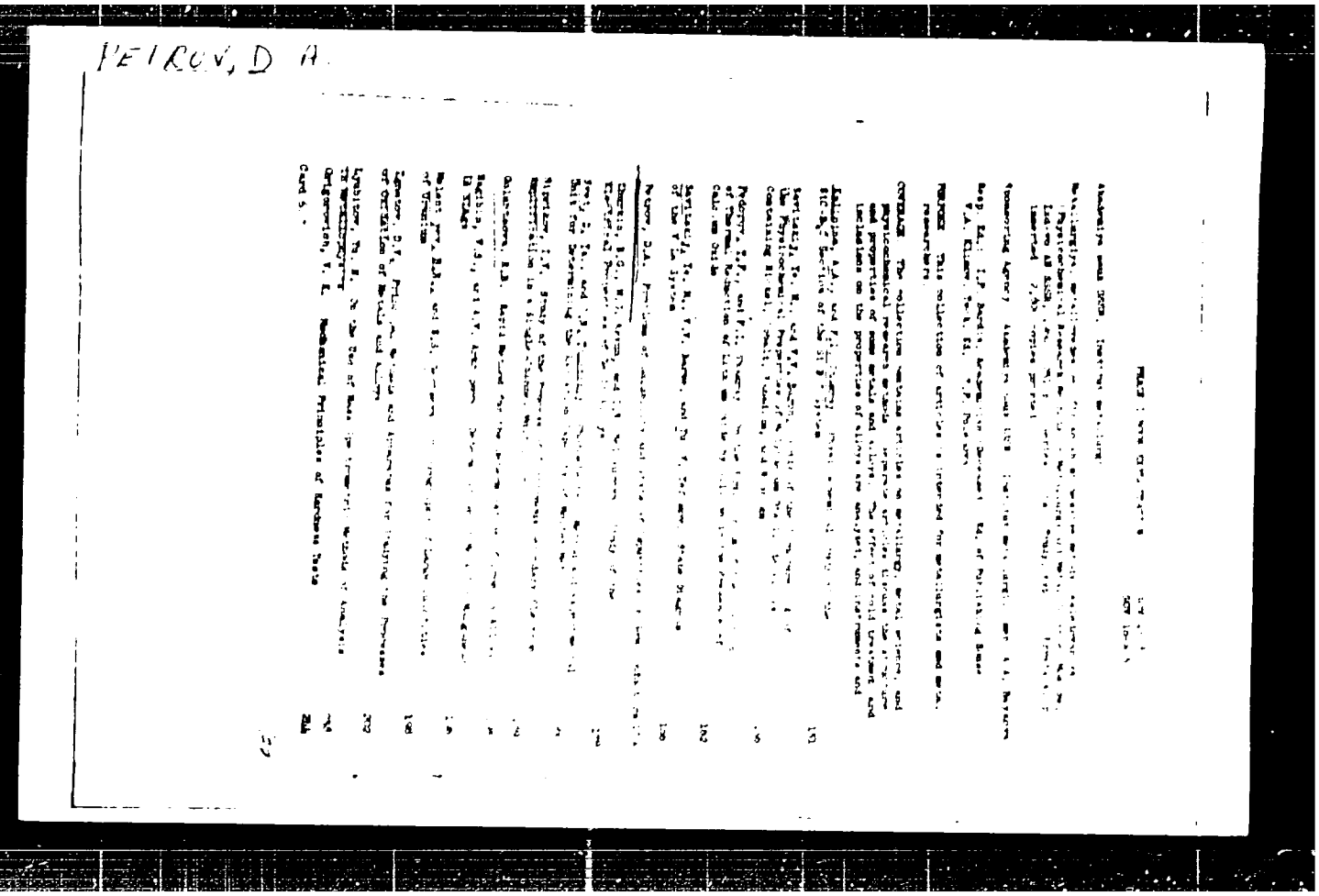
The effect of the thermal and electric diffusion is unidirectional at the negative charged copper plane, but is directed at the positive charged one. Hence a different [illegible] of penetration at the surfaces follows, and the electric diffusion rate of the copper ions, which were negative charged in the case under review, was determined according to this difference (Table 1). Figure 2 represents the dependence of the diffusion on temperature. Measuring results, which disagree with the data given by C. S. Fuller and J. D. Struthers (Ref [illegible]), are due to the different temperature ranges in which the measurements were made. The scientists mentioned used temperatures above 700°, where the Cu-ions are positively charged. The authors thank L. S. Milevskiy for advice and V. [illegible] Semskov for Ge-monocrystals made available to them. There are 1 figure, 2 tables, and 5 references, 2 of which are Soviet.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences, USSR)

PRESENTED: April 20, 1959, by I. P. Bardin, Academician

SUBMITTED: April 20, 1959

Card 2/2



KOLACHEV, B.A., kand.tekhn.nauk [translator]; PETROV, D.A., prof., red.; L'VOVA, N.M., red.; PRIDANTSEVA, S.V., tekhn.red.

[Silicon] Kremnii; sbornik statei. Moskva, Izd-vo inostr.lit-ry, 1960. 435 p. (Translated from the English). (MIRA 13:11)
(Silicon)

PETROV, D.A.; KOLACHEV, B.A.

Using the method of extracting the solid phase from the melt in plotting a constitutional diagram. Issl.splav.tsvet.met. no.2:104-113 '60. (MIRA 13:5)
(Phase rule and equilibrium)

PETROV, D.A.

Solubility and constitution of impurities in semiconductors. Trudy Inst.met. no.5:174-177 '60. (MIRA 14:4)
(Semiconductors)
(Phase rule and equilibrium)

S/536/60/000/043/011/011
E111/E435

18 1000

AUTHORS: Petrov, D.A., Doctor of Chemical Sciences, Professor and Kolachev, B.A., Candidate of Technical Sciences

TITLE: Non-Equilibrium Crystallization of Ternary Alloys

PERIODICAL: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy. No.43. 1960. pp.117-129. Termicheskaya obrabotka i svoystva stali i legkikh splavov

TEXT: D.A.Petrov has shown (ZhFKh, 1947, T.XXI, No.12) that alloy crystallization can be considered as two processes occurring in parallel: separation of crystals of the solid phase from the liquid and change in the composition of crystals formed at a higher temperature through reaction with the liquid at a lower temperature. The authors now consider the crystallization of an alloy with two alloying components, with no diffusion in the solid state and a continuous series of solid solutions. For equilibrium conditions the changes in liquid and solid compositions as crystallization proceeds can be found from phase diagrams with the aid of Konovalov's rule. For non-equilibrium conditions crystallization is not completed at the temperature corresponding to the intersection of the alloy ordinate with the solidus surface.

Card 1/6

S/536/60/000/043/011/011
E111/E435

Non-Equilibrium Crystallization ...

Crystallization in the assumed system then ends at the fusion temperature of the lowest-melting component. In non-equilibrium crystallization of alloys belonging to a system with four-phase eutectic transformation the lines showing changes of liquid- and solid-phase composition changes will also be displaced from the equilibrium lines depending on the overall conode position in the primary-crystallization region. For the conditions specified the crystallization of any alloy of the ternary system is completed with the crystallization of the ternary eutectic. Non-equilibrium crystallization of ternary-system alloys with a peritectic four-phase transformation ends with the solidification of the binary $\beta + \gamma$ eutectic. For the experimental verification of their ideas the authors chose the method of drawing solid phase from the melt, since this largely satisfies the conditions specified in the theoretical treatment. Transformation of the equations deduced gives the distribution of components along the drawn specimen, but through lack of data the authors had to confine themselves to a qualitative verification. The systems Al-Cu-Si and Al-Cu-Mn were chosen, for which phase diagrams can be constructed from published data (H.W.Phillips, J.Inst. of Metals, 1953, T.82, p 9-15

S/536/60/000/043/011/011
E111/E435

Non-Equilibrium Crystallization ...

H.W.L.Phillips, W.Day, J.Inst. of Metals, 1947, 74, p.33-47). The test compositions were: Al + 4% Cu + 3% Si; Al + 8% Cu + 1.0% Si; Al + 4% Cu + 0.6% Mn; Al + 2.25% Cu + 1% Mn; Al + 0.5% Cu + 1.3% Mn. Aluminium (99.98% Al, 0.02% (Fe + Si)), electrolytic copper and manganese, and silicon (0.25% Fe, 0.20% Al) were used for preparing alloys; copper, silicon and manganese being introduced as alloys. Specimens were drawn at 0.07 mm per minute in the apparatus previously described by Petrov and Bukhanova (ZhFKh, 1953, T.27, No .1). After microstructural examination, samples of the solid were taken for chemical analysis; liquid-phase compositions were calculated. Fig.7 shows changes in the copper and silicon contents for the solid and liquid phases with respect to relative length (continuous lines relate to liquid and broken lines to solid phases, respectively); the corresponding curves for copper and manganese distribution are shown in Fig.9. These results and microstructure-examination show that not all the range of composition expected from the theoretical treatment is found. This is due to the fact that at low concentrations of the alloying components the range of the binary

Card 3/6

Non-Equilibrium Crystallization ...

eutectic is very small. For example, in the alloy obtained from Al + 4.5% Cu + 0.5% Si, 0.91 of the specimen will consist only of α-solid solution (of variable composition). Thus the binary and ternary eutectics crystallize at the last moment, when drawing conditions are already disturbed and complete replacement of one structural component by another does not occur. Nevertheless, the general change of composition and microstructure confirms the theoretical treatment both for drawing and for non-equilibrium crystallization in general. There are 10 figures and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The two references to English language publications read as follows:
H.W.L.Phillips, J.Inst. of Metals, 1953, T.82, p.9-15;
H.W.L.Phillips, W.Day, J.Inst. of Metals, 1947, 74, p.33-47

Card 4/6

9,4300 (1143, 1150, 1160)
187510 1454, 1555, 1043

20618
S/063/60/005/005/007/02?
A051/A029

AUTHOR: Petrov, D.A., Professor

TITLE: Methods of Growing Silicon and Germanium Single Crystals

PERIODICAL: Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva im D.I. Mendeleyeva, 1960, No. 5, Vol. 5, pp. 544-552

TEXT: The outstanding feature of modern semiconductor materials is their high chemical purity. Admixtures have a significant effect on the electrical properties of semiconductors. The high degree of purity of semiconductor materials is necessary if the electrical properties are to be controlled. The control becomes possible at the moment when its self-resistance is attained at operating temperatures, i.e., when the admixtures remaining in the semiconductor even when highly purified can have no longer an effect on its electrical characteristics. A practical interest is shown in semiconductor alloys. It is known that the work of producing a semiconductor rectifier or amplifier is based on the possibility of forming adjacent regions with different types of conductivity in the semiconductor crystal. The boundary be-

Card 1/16

S/063/60/005/003/007/02·
A051/A029

Methods of Growing Silicon and Germanium Single Crystals

tween these regions, the so-called electron-hole or n-p- transition is the main part of the semiconductor instrument. This transition can be produced by introducing admixtures into the semiconductor, since pure Ge and Si have only one type of conductivity, viz. electronic conductivity. The problem of alloying a purified semiconductor by introduction of admixtures, i.e., the problem of producing alloys with the required electrical properties arises Another outstanding feature of modern semiconductor materials is their application in industry in the single crystal state. The latter is obtained by growing them from the melt. The methods of single crystal growing are limited by the property of the single crystals to expand when solidifying similar to water. The Chokhral'skiy method (Ref. 1) is described in some detail: It is based on drawing a solidifying crystal at a certain rate from the melt located in the crucible (Fig. 1). The heater which has the form of a high-frequency inductor or a graphite resistance heater in the form of a tumbler is located around the crucible. The working space of the equipment where the crystal is grown is a vacuum chamber made in the form of a quartz-

Methods of Growing Silicon and Germanium Single Crystals

ite or metal cylinder with two caps. A rod is introduced through the top cap to which a priming crystal is attached. The rod is connected to the mechanisms which ensure the submersion, elevation and rotation of the crystal at the necessary rates. Electrodes are introduced through the lower cap for the graphite heater and a rod with a pouch for the crucible. This rod is connected to the mechanisms which elevate and lower the crucible for the corresponding set-up within the heater and rotate the crucible, usually in the direction of the ingot's rotation, in order to ensure a uniform heating and a definite mixing of the melt. Evacuating the operating space of the apparatus is carried out through the neck in the lower cap to a pressure of [illegible]mm using a pre-vacuum and diffusion pump. After the material loaded in the crucible has been melted and after subsequent overheating for the removal of gases and volatile admixtures, the appropriate temperature is established in the melt to be slightly higher than the melting point. By gradually lowering the rod into the melt, the priming crystal is introduced to a certain depth under the surface of the melt and is maintained there until

Card 3/16

S/[illegible]
A051/A029

Methods of Growing Silicon and Germanium Single Crystals

the end of the primer melts and a thermal equilibrium is established in the system melt-crystal. The rod with the primer is then slowly raised at a rate within the range from several tenths to 1 - 2 mm. In the region of lower temperatures above the melt surface the melt pulling after the primer solidifies, continuing the primer structure. The primer is capable of transferring the admixtures contained in it and structural defects to the crystal growing on it. It must be of the same or higher chemical purity, therefore, than the single crystal which is to be obtained and, if possible, without structural defects. The primer is usually selected as thin as possible, or a narrow "neck" is formed on it by melting down prior to the crystal growing (Fig. 2). The primer must also be carefully oriented in the required crystallographic direction which determines the quality of the crystal grown. The optimum orientation of the primer crystal axis is considered to be in the crystallographic direction [111]. If the growing rate is increased, a large amount of heat of crystallization is liberated and the melt is overheated. Thus the crystal diameter decreases. The crystal should be grown

Card 4/16

Methods of Growing Silicon and Germanium Single Crystals

in the form of a regular cylinder with a smooth surface in order to achieve circular symmetry of the thermal field determined by the cylindrical heater The temperature distribution in the melt and the growing crystal plays an important part. The interface crystal surface - fusion should be flat, excluding the occurrence of internal tensions. A circular interface surface is considered unsatisfactory, but cannot be avoided unless measures are taken to prevent the cooling of the growing crystal at the lateral surface. Reference is made to the thermal tensions which occur in the crystal, expansion in the central parts and compression in the external parts. The values of these tensions are approximately estimated from the expression $s = E \alpha \Delta T$, where E is Jung's modulus, α the linear expansion (compression) coefficient, ΔT the temperature difference between the center and "skin" of the ingot. The magnitude of the axial temperature gradient has a significant effect on the perfection of the crystal. An unsatisfactory crystal structure is obtained at a lower axial temperature gradient in the melt when octahedral formations on the interface surface grow to dendrite shapes. A considerable

S/063/60/005/[illegible]
A051/A029

Methods of Growing Silicon and Germanium Single Crystals

shortcoming of any crystal-growing method from melts is the uneven distribution of admixtures and, thus, electrical and other properties along the crystal's length. The reason is the different solubility of admixtures in the melt and the crystal growing in it (Fig. 1) The admixture distribution is judged from the distribution coefficient k, which is the ratio of y, the admixture content in the solid phase, to the admixture content x in the liquid phase, i.e., $k = \frac{y}{x}$, which may be determined from the state diagram The value of k depends on the temperature of the contacting phases As the admixture content increases in the melt, it also increases in the growing crystal according to the indicated ratio $y = k x$. A crystal is divided into 3 parts (fractions), according to the admixture content. Two methods are suggested for the production of single crystals with an even distribution of the admixtures along the length. The first method applies the relationship of k to the growing rate. The second method consists in maintaining the admixture content in the melt constant during the growing process of the crystal by continuous feeding of the melt with material having the same admixture

Card 6/16

Methods of Growing Silicon and Germanium Single Crystals

content which is required in the single crystal being grown. The author shows special interest in the method with a melting crucible in the melt described in Ref. 5. It is pointed out that the methods of zonal recrystallization at the present time are used for the purification of initial materials from admixtures. Contrary to the Chokhral'skiy method, in this method not the entire batch placed in the crucible is melted down, but only a part of it, a zone. Two variants are given: the horizontal (Ref. 4) and the vertical variant. The latter is also called the method of crucibleless recrystallization. In discussing the "spiral" macro-heterogeneity of admixture distribution in crystals in order to smooth out the non-uniform temperature field, the crystals of Ge and Si are rotated when grown and the crucible is also rotated for the same purpose with the melt in the direction opposite to the rotation of the ingot. Any spiral macro-heterogeneity can be obscured by the electrolytic precipitation of copper. The method is described in Ref. 6 with respect to its application to Ge (see Fig. 5). Figure 6a shows a photograph of a Si crystal alloyed with Ni. Figure 6b a Si crystal alloyed with phosphorus. The picture of non-uniform distribution of the admixture

Card 7/16

S/063/60/005/005/007/021
A051/A029

Methods of Growing Silicon and Germanium Single Crystals

is the same in both photographs. Linear imperfections known as dislocations are considered to be the structural imperfections in crystals, particularly linear or marginal dislocations (Fig. 7). The marginal dislocation corresponds to a destruction along the edge of the formed incomplete atomic surface in the crystal under the influence of various causes. A marginal dislocation behaves in a semiconductor similar to an acceptor admixture. Thus, dislocations alter the electrical properties of the semiconductor impairing the life-span of the secondary charge carriers, a characteristic determining the quality of work of important semiconductor apparatus (transistors). Dislocations in Ge and Si crystals are primarily the product of plastic deformation of the crystal occurring as a result of the thermal tensions created in them. The degree of imperfection of the crystal is determined by the dislocation density, i.e., by the number of etching cavities to 1 cm^2 of surface (Fig.8). Similar dislocations occur when the growing crystal is rapidly torn away from the melt, in a "thermal shock". Admixtures introduced into Ge and Si crystals generally increase the dislocation density only slightly if their

20618

S/063/60/005/003/017/021
A051/A029

Methods of Growing Silicon and Germanium Single Crystals

concentration does not exceed the solubility limits in the solid state. Precipitation of admixture atoms on the dislocations can lead to an improvement of the electrical properties of the semiconductor as a result of eliminating the unfavorable effect both of the admixtures and the dislocations by their interaction. Since dislocations in Ge and Si crystals are caused mostly by thermal tensions, an important measure for their elimination in crystals would be the creation of conditions, whereby the thermal flow in the cooling crystal would be directed primarily along its axis. These conditions can be attained by setting up the proper thermal screen around the cooling ingot having the purpose of eliminating heat losses from the lateral surface of the ingot (adiabatic process). An important role in the elimination of structural defects in Ge and Si crystals is played by the primer, from which the crystal grows (Ref. 9, 10). There are 7 photographs, 3 diagrams, and 10 references: 3 are Soviet, 6 English, 1 Dutch.

Card 9/16

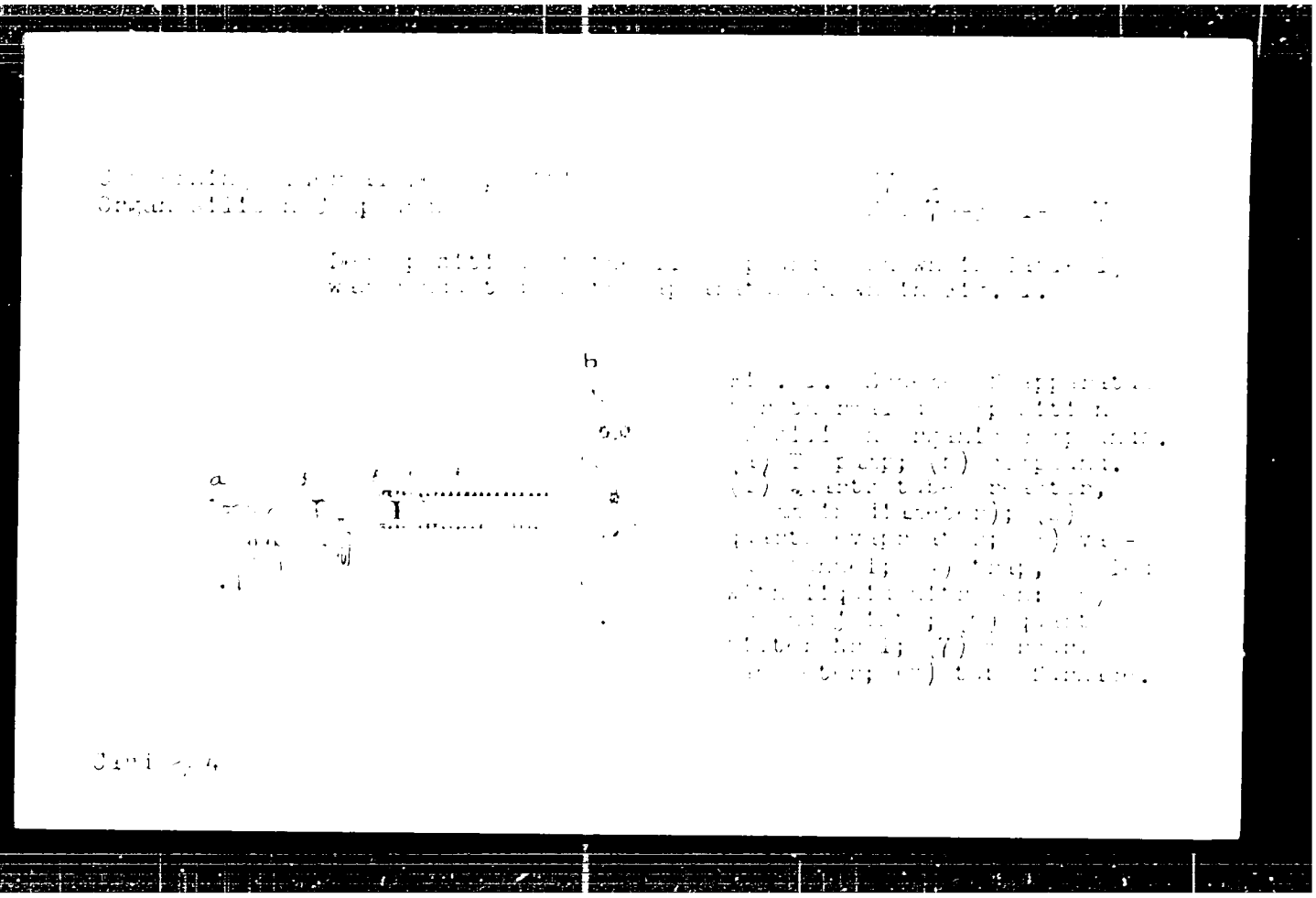
AUTHOR:

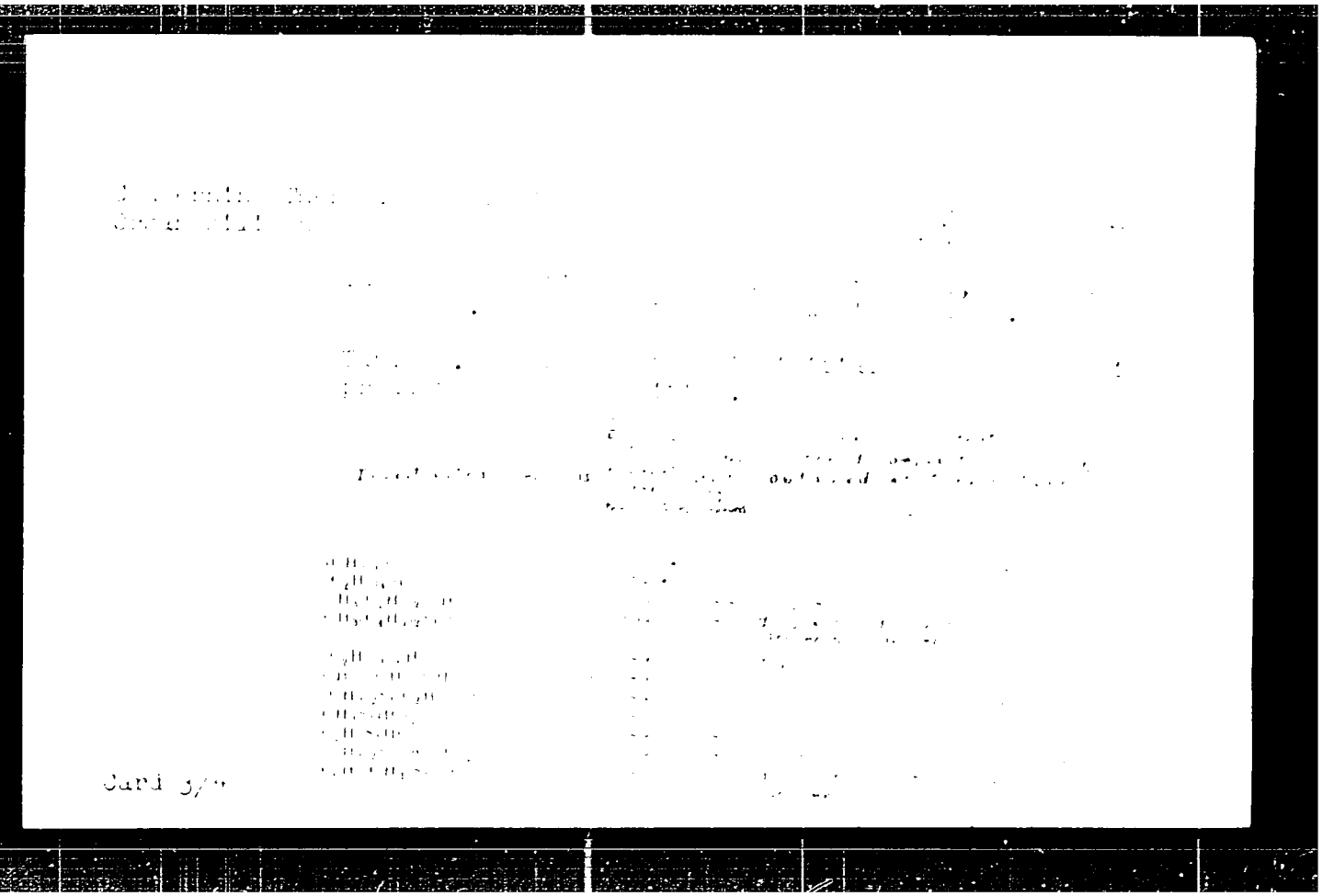
TITLE:

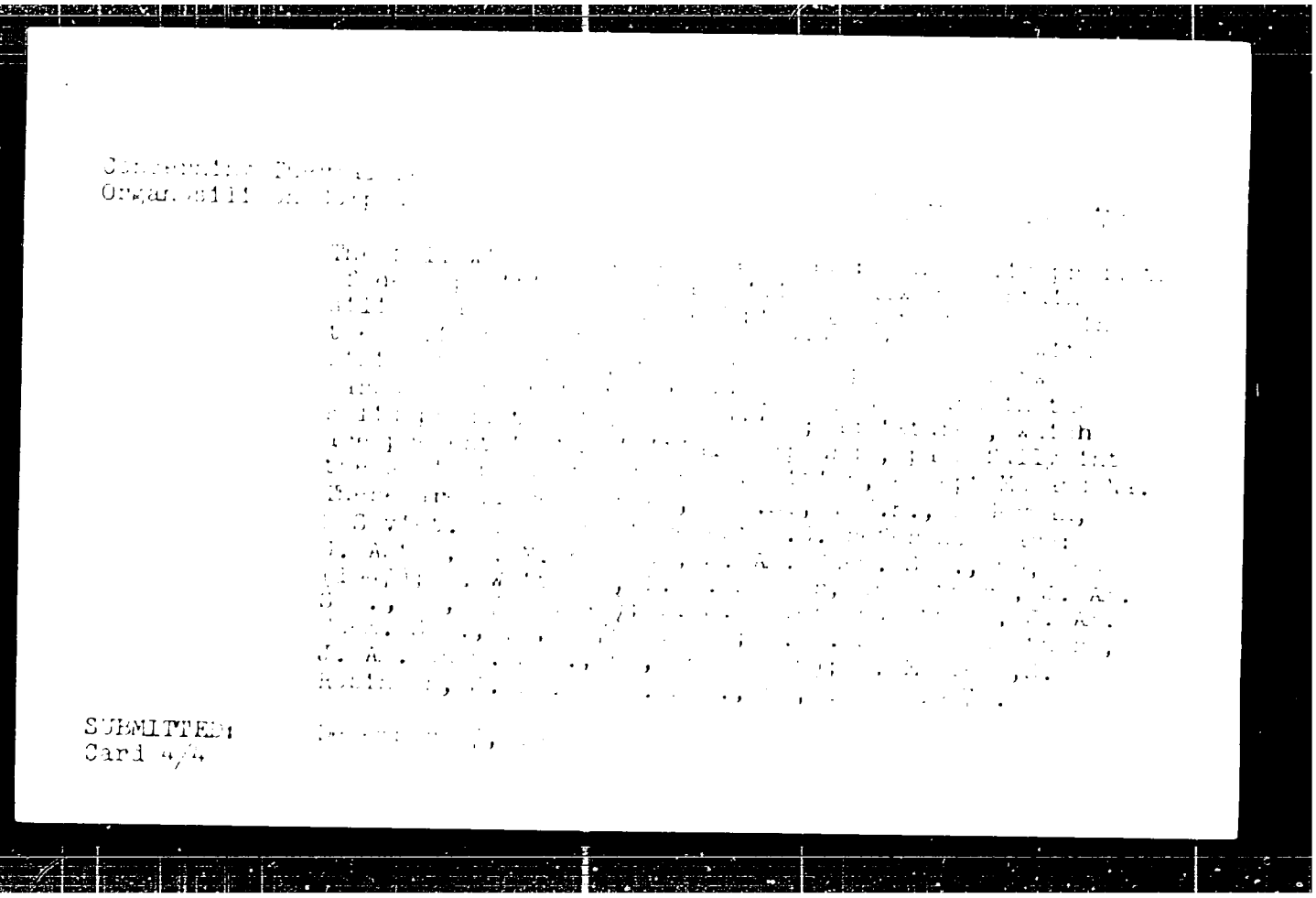
PERIODICAL:

ABSTRACT:

Card 1/4







SUBMITTED:
Card 4/4

83696

18 7500 also 2308, 2508

AUTHORS. Petrov, D. A., Kolachev, B. A. (Moscow)

TITLE. Investigation of the Purification of a Substance From Impurities by Methods Basing on the Difference in the Composition During Crystallization

PERIODICAL. Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1802-1810

TEXT. To produce highly pure substances it is usual at present to apply methods which are based on the difference in composition of the liquid and solid phase during crystallization, such as the extraction of the solid phase from the melt according to Chokhral'skiy, or the zone melting. In some investigations of semiconductor metallurgy (Ref. it was assumed that the distribution coefficients of the impurities in a material are equal to the distribution coefficients of these impurities in the corresponding binary systems, which is incorrect since there is an interaction between the material and the impurities. As the interac-

Card 1/3

83695

Investigation of the Purification of a Substance From Two Impurities by Methods Basing on the Difference in Phase Composition During Crystallization

B070/B074 B071/B084

can be seen from the phase diagram the distribution coefficient [illegible] impurities should be determined from the corresponding phase [illegible]. In the present case the authors show with the aid of K[illegible] among other things, that in an arbitrary three component melt representing a system of continuous solid solutions the distribution coefficient for the low-melting impurities will be lower than for the higher-melting impurities, or in other words a more efficient purification will be attained by the component with the lower melting point. The distribution coefficient of the one impurity varies dependence on the concentration of the other and it corresponding to the character of the phase diagram of these impurities with the basic substance. To check the above explanations the authors studied experimentally the distribution coefficients [illegible] and Mn, Cu and Si, as well as Fe and Si in aluminum at different concentrations (Table . The distribution coefficient of Fe in Al considerably in the presence of Si i.e. the efficiency of [illegible]

Card 2/3

83696

Investigation of the Purification of a Substance From Two Impurities by Methods Basing on the Difference in Phase Composition During Crystallization

S/076/60/034/04/[illegible]/B[illegible]
B[illegible]/B[illegible]

refining (elimination of Fe) by the extraction method deteriorates in the presence of Si. As opposed thereto, the efficiency of aluminum refining for the elimination of Mn increases with the content of Si in the alloy, the distribution coefficient of Mn in Al drops in the presence of Si. Thus it is possible to utilize the reduction of the distribution coefficient of one impurity in the presence of another impurity to increase the purifying effect in a substance with difficultly separable impurities i.e. impurities with a distribution coefficient near unity. There are 8 figures, 1 table, and 4 references, 3 Soviet and 1 US.

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskiy institut (Moscow Aviation Technological Institute)

SUBMITTED: November 22, 1958

Card 3/3

18.9500

25903

AUTHORS: Petrov, D. A., and Bukhanova, A. A.

TITLE: Undercooling of melts and crystal growth by Chokhral'skiy's method

PERIODICAL: Akademiya nauk SSSR. Doklady, v. [illegible]

TEXT: Undercooling plays an important part in crystal growing by Chokhral'skiy's method and also in the distribution of impurities in crystals. This applies chiefly to germanium and silicon [illegible] aluminum, copper, iron, and all other relatively [illegible] crystallizing substances. In an asymmetric temperature field [illegible] crystal [illegible] inclined to the cold part of the field. Two neighboring regions with different etch patterns, obtained by etching with an aqueous NaOH solution, appear on the longitudinal face of an aluminum crystal with [illegible] % [illegible] content, which was grown [illegible] [illegible] extent in the [illegible] The [illegible]

25896

Under[illegible] flow of melts, and [illegible] B [illegible]

side and increases on the [illegible] side. [illegible] crystal which is periodically rotated [illegible] was a pattern of mutually oriented wedges. Continuous rotation of the crystal during growth will result in a screw-type pattern. The pitch of the screw is determined by the growth rate v, of the crystal, the [illegible] at which the level of the melt is dropping in the crucible, and the number of rotations of the crystal per unit time $S = \frac{[illegible]v}{[illegible]}$. [illegible] the etchings will follow the screw [illegible]. [illegible] the structure will change when the rotation speed is [illegible]. There are 4 figures.

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskiy institut (Moscow Aviation Technological Institute)

PRESENTED: January [illegible], by [illegible] A. A. [illegible], Academician

SUBMITTED: January [illegible]

Card 2/2

[illegible]TROV, D.A., prof., red.; [illegible]LACHEV, P.A., kand. tekhn. nauk [translator], [illegible]OVA, V.V., red.; [illegible]IVANTSEVA, S.V., tekhn. red.

[New data on the production of simple crystals of semiconductors] Novoe v poluchenii monokristallov poluprovodnikov. Sbornik statei. Moskva, Izd-vo inostr. lit-ry, 1961. 125 p. Translated from the English. (MIRA 15:1)

(Crystals--Growth) (Semiconductors)

PETROV, D.A.; RUSAKOV, T.A.; IACHEVA, S.K.

Radial heterogeneity in germanium and silicon crystals.
Godishnik fiz mat 55 no.2:89-103 '60/'61 [publ. '62].

LASTOVSKIY, R.P. ; MIKHAYLOV [illegible] ; N/IKOVSKAYA, N.A. ; PETROV, D.A. ; DANSKE[illegible], V.[illegible] ; [illegible]Ye.[illegible] ; MALKIE[illegible], G.E. red. ; PIRUZHKOVA, A.[illegible] [illegible] red.

Urea for intravenous [illegible]. Mochevina dlia vnutrivennogo vvedeniia. Moskva, Vses. nauchno-issl. in-t khim. reaktivov i osobo chistykh khimicheskikh veshchestv, 1960. 10 p. (MIRA 16:7)

1. Russia (1923-) Gosudarstvennyy komitet Sovet Ministrov SSSR po khimii.

(UREA--THERAPEUTIC USE)

PETROV, D.A.; RUSAKOV, T.A.; YACHEVA, S.K.

Formation of faces on germanium and silicon crystals grown by Czochralsky's method. Dokl. AN SSSR 146 no.3:588-591 S '62. (MIRA 15:10)

1. Predstavleno akademikom A.A. Kochvarom.
(Crystals—Growth)

PETROV, D.A.; RUSAKOV, T.A.; YACHEVA, S.K.

Origin of radial nonuniformity in germanium and silicon crystals. Izv. AN SSSR.Otd.tekh.nauk. Met. i topl. no.5:187-190 S-O'62. (MIRA 15:10)

(Metal crystal—Growth)

PETROV, D. A.; BUKHANOVA, A. A.

Determining role of the supercooling of a melt in the formation of macroscopic screw dislocations in crystals grown by Czochralsky's method. Kristallografiia 7 no.3:442-445 My-Je '62. (MIRA 16:1)

1. Moskovskiy energeticheskiy institut i Moskovskiy aviatsionnyy tekhnologicheskiy institut.

(Crystals—Growth)

TROSTYANSKAYA, Ye.B.; SHISHKIN, V.A.; SIL'VESTROVICH, S.I.; PANTELEYEV, A.S.; POLUBOYARINOV, D.N.; BALKEVHICH, V.L.; NATANSON, A.K.; KOLACHEV, B.A.; PETROV, D.A.; GOL'DBERG, M.M.; SHAROV, M.Ya., inzh., retsenzent; KITAYGORODSKIY, I.I., doktor tekhn. nauk, prof., retsenzent; LIVANOV, V.A., kand. tekhn. nauk, prof., retsenzent; TROSTYANSKAYA, Ye.B., red.; BABUSHKINA, S., ved. red.; TITSKAYA, B.F., ved. red.; VORONOVA, V.V., tekhn. red.

[New kinds of materials in engineering and industry]Novye materialy v tekhnike. Pod red. Trostianskoi E.B., Kolacheva, B.A., Sil'vestrovicha S.I. Moskva, Gostoptekhizdat, 1962. 656 p. (MIRA 16:2)
(Materials)

S/180/62/000/005/010/011
E132/E460

AUTHORS: Petrov, D.A., Zasakov, T.A., Yacheva, S.K.
(Moscow, Sofia)

TITLE: The origin of radial nonuniformities in crystals of germanium and silicon

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no.5, 1962, 187-190

TEXT: The formation of (111) faces on a crystal of Si or Ge often leads to the presence of a rod-shaped region of nonuniformity along the axis of the crystal which is easily revealed by etching. The crystals are grown typically along [111] at 0.8 mm/min while being rotated round this axis at 1/3 rpm. In a crystal of Ge the disturbed region was shown to have the form of a helix. The defect is associated only with the [111] direction. The disturbed region contains more n-type defects than the bulk of the crystal. It appears that the (111) face grows in a relatively more strongly supercooled melt than the faces near it. The thermal field in the crucible may be eccentric and depart from

Card 1/2

S/180/62/000/005/010/011
E132/E460

the origin of radial ...

... about periodically on the end of the crystal. Experiments involving changes in the ratio of speed of rotation to speed of withdrawal were carried out to demonstrate this. There are 4 figures.

[illegible] April 2[illegible]

Card 2/2

S/020/62/146/003/011/019
B101/B144

AUTHORS: Petrov, D. A., Rusakov, T. A., Yacheva, S. K.

TITLE: Formation of germanium and silicon crystal faces under Czochralski's conditions of growth

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 3, 1962, 588-591

TEXT: General rules are established for the formation of crystal faces when growing Ge or Si crystals. (1) Ge or Si crystals develop as regular octahedrons. In the direction of growth [111] the potential growth faces are the horizontal lower face (111), the group of lower side faces ($1\bar{1}\bar{1}$), ($\bar{1}1\bar{1}$), ($\bar{1}\bar{1}1$), and the group of upper side faces ($\bar{1}11$), ($1\bar{1}1$), ($11\bar{1}$). The lower faces form with the direction of growth [111] an angle of $19^{\circ}28'$ measured clockwise, and the upper faces the same angle counterclockwise. (2) If the half-angle of aperture of the upper cone of the pulled crystal is $19^{\circ}28'$, the crystal will show the corresponding genuine, reflecting crystal faces (111). The following condition to determine the active growth faces is formulated: If an octahedral face is tangent to the interface and if it extends above the contact area outside

Card 1/2

the crystal (thus being directed towards the melt) it will be an active growth face. This makes it possible to determine the active faces for other directions of growth, [100], [112], [110]. (3) Experiments showed that when crystals are grown as described by Czochralski the lower horizontal (111) face also developed. After tearing off a crystal, d = 10 mm, a round shining face, d = 6 mm, was observed. (4) The observed rise of the melt level near the faces favors their development within the crystal body, while the steep temperature gradient outward leads to the formation of sharp edges. As it is the {111} faces in crystals with diamond structure that have the densest packing and, therefore, the lowest surface energy, their growth is favored at the expense of other faces with higher surface energy. The melt is overheated as compared with the faces richer in energy, and undercooled as compared with those poorer in energy. If, accordingly, the conditions for the development of {111} faces are given in Czochralski growing, the melt adjacent to these faces will be more undercooled than in the neighboring regions. There are 4 figures.

PRESENTED: April 21, 1962, by A. A. Bochvar, Academician

SUBMITTED: March 6, 1962

S/070/62/007/003/016/026
E132/E460

AUTHORS: Petrov, V.V., Bukhanova, V.A.

TITLE: The determining role of the supercooling of the melt in the formation of screw macro-nonuniformities in crystals grown by Czochralski's method

PERIODICAL: Kristallografiya, v.7, no.3, 1962, 442-445 + 1 plate

TEXT: It has been experimentally shown that if a crystal is not rotated a certain nonuniformity occurs which is connected with the asymmetry of the thermal field and manifests itself in the formation of two bands differing in structure and in impurity content which lie along the whole length of the crystal. A strongly etched region with a high impurity content is formed on the cold side of the field and a weakly etched region with a low impurity content on the warmer side. Rotation of the crystal aggravates the nonuniformity in the melt, due to the asymmetry of the field and leads to screw macro-nonuniformities in the crystal. The latter are exhibited in the forms of two mixed layers, creeping into the volume of the crystal in the form of a screw, which are different in structure, impurity contents and properties. Removal of this defect is possible by means of the creation of a

Card 1/2

The determining role of ... S/070/62/007/003/016/026
E132/E460

symmetrical heat field. There are 6 figures.

ASSOCIATIONS: Moskovskiy energeticheskiy institut (Moscow Power Engineering Institute)
Moskovskiy aviatsionnyy tekhnologicheskiy institut (Moscow Aviation Technology Institute)

SUBMITTED: March 29, 1961

Card 2/2

ACCESSION NR: AP4043382 S/0181/64/006/008/2518/2519

AUTHORS: Bukhanova, A. A.; Petrov, D. A.

TITLE: Growth of germanium dendrites in so-called "difficult" directions

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2518-2519

TOPIC TAGS: germanium, fiber crystal, twinning

ABSTRACT: It was stated earlier by E. Billig (Proc. Roy. Soc. ser. A, 229, 343, 1955) and by A. J. Bennett and R. J. Longini (Phys. Rev. v. 116, 53, 1959) that germanium dendrites with two ($\bar{1}\bar{1}\bar{1}$) principal surfaces cannot be produced ("difficult" directions). The present authors are apparently the first to establish that the principal role in the growth of different types of dendrites of germanium is played by the distances between the twinning planes in the dendrite. Growth of dendrites becomes possible when the distance be-

Card 1/2

ACCESSION NR: AP4043382

tween the twinning planes reaches 8--10 microns and more, and in the case of dendrites with three twinning planes, an important role is played by the ratio between the two distances, the optimum being 1:1. Under these conditions, "easy" directions become "difficult" and vice versa, so that the concept of easy and difficult directions introduced by Bennett and Longini becomes meaningless. Photographs of dendrites grown with two (111) and two ($\bar{1}\bar{1}\bar{1}$) surfaces are presented. It is also shown that when the dendrite breaks away from the melt, side stubs are formed in all four directions (both easy and difficult). This equivalence of the four lateral directions is in contradiction with the results of N. Albon and A. E. Owen (J. Phys. Chem. Sol., v. 24, 899, 1962). Orig. art. has: 3 figures.

ASSOCIATION: Moskovskiy aviatsionny*y tekhnologicheskiy institut (Moscow Aviation Technological Institute)

SUBMITTED: 22Feb64 ENCL: 00

SUB CODE: SS NR REF SOV: 000 OTHER: 002

Card 2/2

ACCESSION NR: AP4043383 S/0181/64/006/008/2520/2521

AUTHORS: Bukhanova, A. A.; Petrov, D. A.

TITLE: Growth of <110> dendrites of germanium

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2520-2521

TOPIC TAGS: germanium, fiber crystal, twinning

ABSTRACT: Germanium dendrites grown with two twinning planes exhibit a stable growth for all thicknesses of the twinning plate, from fractions of a micron up to at least 300 microns. However, in the case of thin twinning plates, below 6--7 microns, the lateral branches of the dendrites include those growing in the <110> directions. Between 6--7 and 2 microns mixed growth is observed in the <112> and <110> directions. Below 2 microns, only <110> dendrites grow. The <110> dendrites differ from <112> in much greater homogeneity both on the surface layers and in the deeper layers. Photo-

Card 1/2

ACCESSION NR: AP4043383

graphs presented by the authors show that the individual links of the <110> dendrite, in hexagonal form, grow into each other parallel to one of the pairs of the sides when joined together, unlike the <112> dendrites, which join together in a direction perpendicular to one of the pairs of the sides of the link. Orig. art. has: 2 figures.

ASSOCIATION: Moskovskiy aviatsionny*y tekhnologicheskiy institut (Moscow Aviation Technological Institute)

SUBMITTED: 22Feb64

ENCL: 00

SUB CODE: SS

NR REF SOV: 000

OTHER: 001

Card 2/2

L 17157-65 EWT(l)/EWT(m)/EWP(t)/EWP(b) Pa-4 IJP(c)/AS(mp)-2/ASD(a)-5/
AFWL/SSD/RAEM(c)/ESD(gs)/ESD(t) JD
ACCESSION NR: AP4048408 S/0181/64/006/011/3331/3335

AUTHOR: Petrov, D. A.; Bukhanova, A. A.

TITLE: On the concept of reentrant angle as applied to the growth of dendrites with diamond structure

SOURCE: Fizika tverdogo tela, v. 6, no. 11, 1964, 3331-3335

TOPIC TAGS: crystal growth, filament crystal, crystal lattice structure, dendrite, diamond, germanium, reentrant angle

ABSTRACT: The authors discuss photographs of two crystals grown from seeds in the [$\bar{1}2\bar{1}$] and [$1\bar{2}1$] directions, and having one twin plane. An analysis of these photographs shows that the planes propagating during the growth of these crystals form angles which emerge from the crystal, thus refuting the mechanism proposed by R. S. Wagner for the growth of germanium dendrites (Acta Metallurgica, v. 8, 57, 1960), whereby the angle ψ is supposed to enter into

Card 1/3

L 17157-65
ACCESSION NR: AP4048408

the crystal. The real growth of a [12̄1] crystal is shown in Fig. 1 of the Enclosure, where the angle emerging from the crystal forms a dihedral angle of 140° 04' . The sides of the reentrant angle form the propagating planes of the growing crystal. Orig. art. has: 7 figures.

ASSOCIATION: Moskovskiy aviatsionny*y tekhnologicheskiy institut (Moscow Aviation Technological Institute)

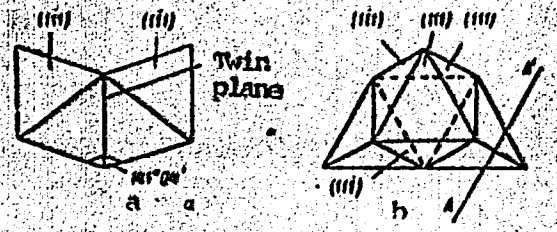
SUBMITTED: 22Feb64 ENCL: 01 SUB CODE: SS

NO REF SOV: 000 OTHER: 003 ATD PRESS: 3150

Card 2/3

L 17157-65
ACCESSION NR: AP4048408

ENCL: 01



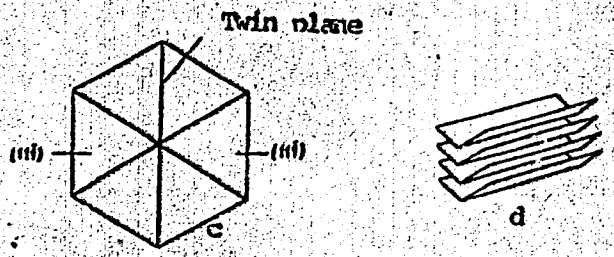


Fig. 1. Analysis of the growth of germanium crystal [12̄1]

a - Orientation of the crystal along the growth direction perpendicular to the twin plane; b - same, parallel to twin plane; c - orientation of hexagonal crystal on the melt side; d - scheme showing real crystal growth

Card 3/3

KONSTANTINOV, Mikhail, inzh.; PETROV, Dimitur, inzh.; IANEV, Toni, inzh.

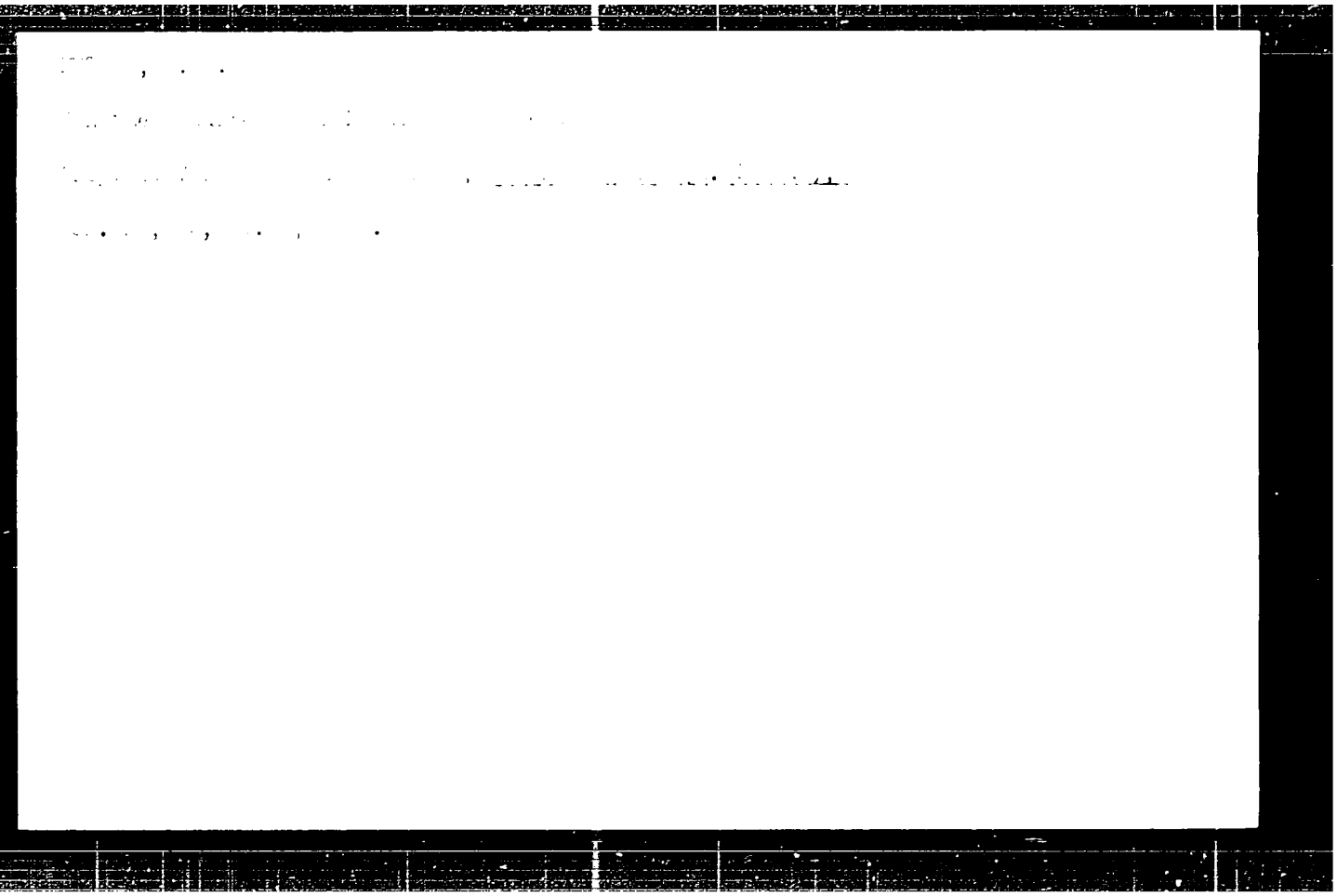
A geometric method for kinematic analysis of flat mechanisms. Tekhnika Bulg 10 no.8:19-20 '61.

(Kinematics)

PETROV, D. P.

"The Interspecific Hybridization in Fruits and Berries" (p. 29) by Petrov, D. P.

In: Advances in Contemporary Biology, (Uspekhi Sovremennoi Biologii), Vol. X, No. 2, 1939



PETROV, D. F.

"New discoveries of cytogenetics in Neurospora crassa ." (p. 309) by D. F. Petrov

SO: Advances in Modern Biology (Uspekhi Sovremennoi Biologii) Vol. XXII., No. 2, 1947

PETROV, D.F.

Origin of species. Bot.zhur. 38 no.6:853-861 N-D '53. (MLRA 7:1)
(Origin of Species)

PETROV, D. F.

A strain of F. [illegible]
I. Petrov [illegible]
S S S R. 95, [illegible]
does not grow in [illegible]
the normal strain [illegible]
strain requires for its develop[illegible]
B_{12} or methionine [illegible]

USSR / Microbiology. General Microbiology F

Abs Jour : Ref Zh . . Bi . . No . 1 . . . .

Author : Petrov, I.F., Moscow . .

Inst : Not Given

Title : Study of Met . . ism in Bi. hemically Deficient Forms of Bacterium coli and Bacterium E. . . . with Sulfur-Labeled Methionine

Orig Pub : Biokhimiya, 19. . . , No . . . . . .

Abstract : Using S_{35} labeled methionine, the correlation was studied between development of metabolites necessary for growth in available form, and their independent synthesis in a minimal medium by biochemically deficient forms of Bacterium coli and Bacterium . . . requiring methionine or bitamin B_{12}. Three biochemically deficient forms were used, one prototrophi . The bacteria were inoculated into a minimal medium, containing 10 γ per ml of radioactive methionine and different quantities of vitamin B_{12} (from 0.0000. to 1.1 γ per ml) and also into one free of the latter. The radioactivity of prototrophi

Card 1/2

PETROV, D.F.

A contribution to the problem of the material basis of heredity. (MLRA 10:4)
Zhur. ob. biol. 19 no.1:31-46 Ja-F '57

1. Yaroslavskiy meditsinskiy institut.
(HEREDITY)

PETROV, D.F.

Significance of nucleic acids in protein synthesis and the problem of the origin of life. Biul.MOIP. Otd.biol. 62 no.3:83-85 My-Je '57. (MLRA 10:8)
(NUCLEIC ACIDS) (LIFE--ORIGIN)

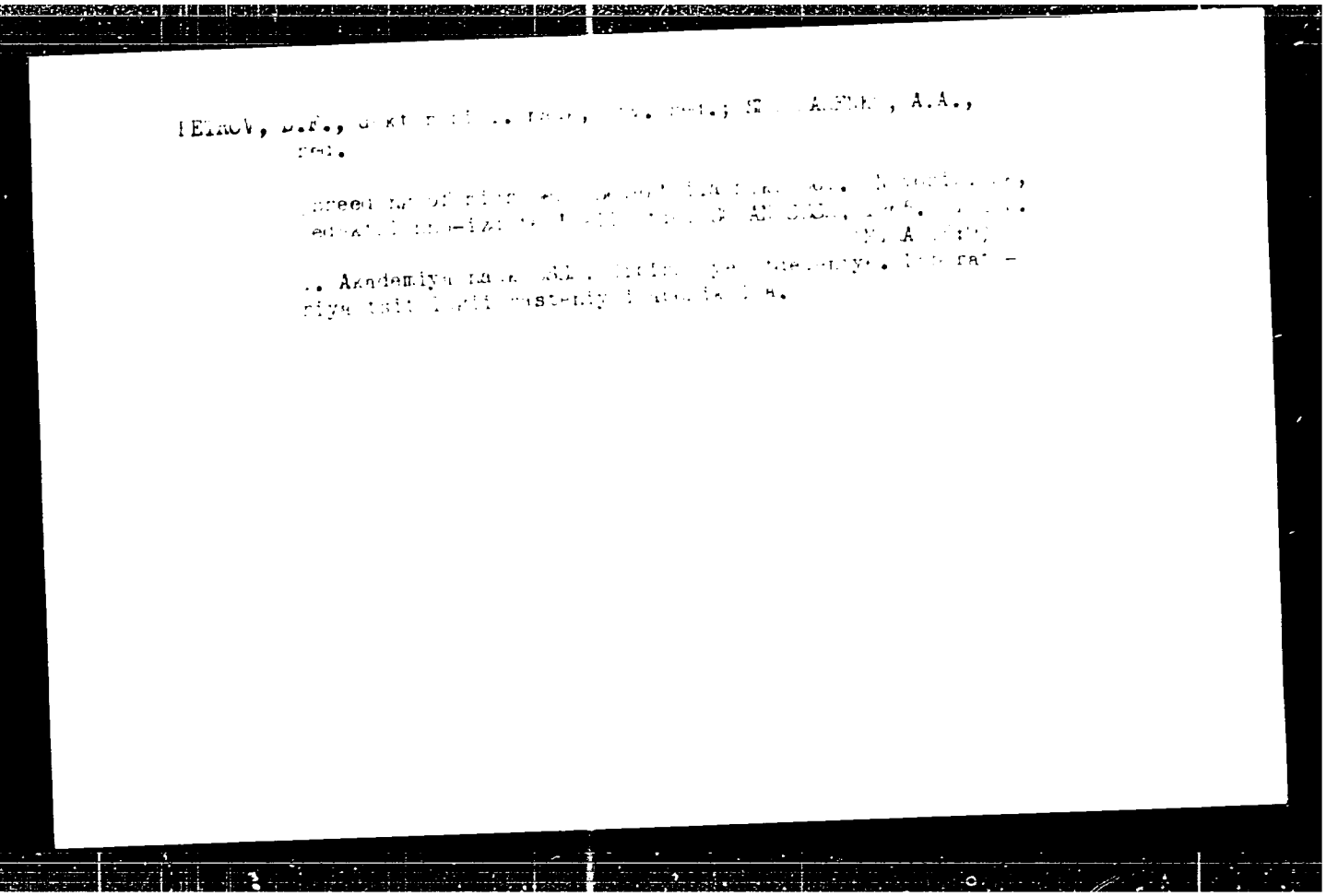
PETROV, D.F.

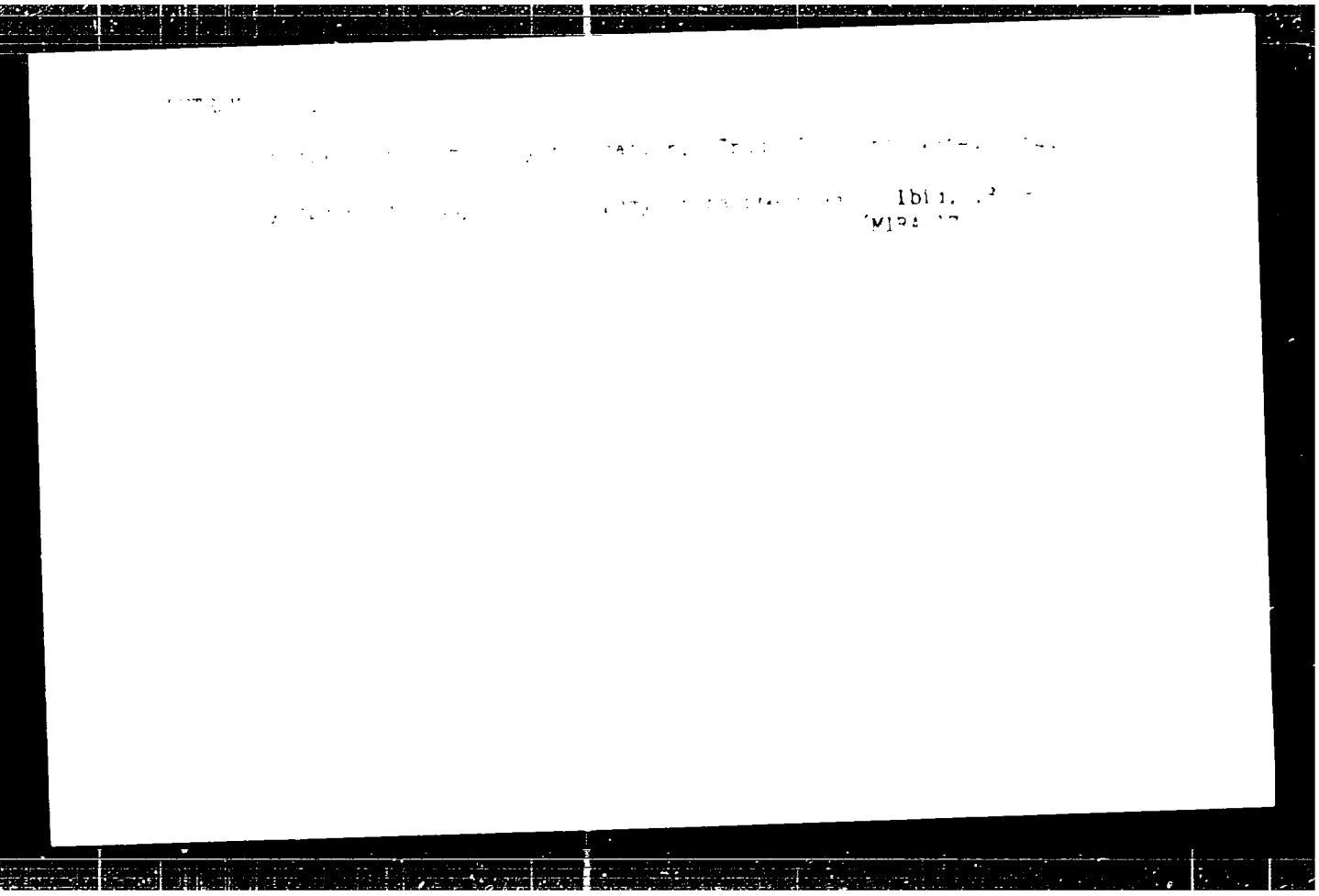
Significance of apomixis in heterosis fixation. Dokl. AN SSSR 112 no.5:954-956 F '57. (MLRA 10:4)

1. Predstavleno akademikom V.N. Sukachevym.
(Heterosis)

PETROV, Dmitriy Fedorovich; RYZHKOV, Vitaliy Leonidovich, red.

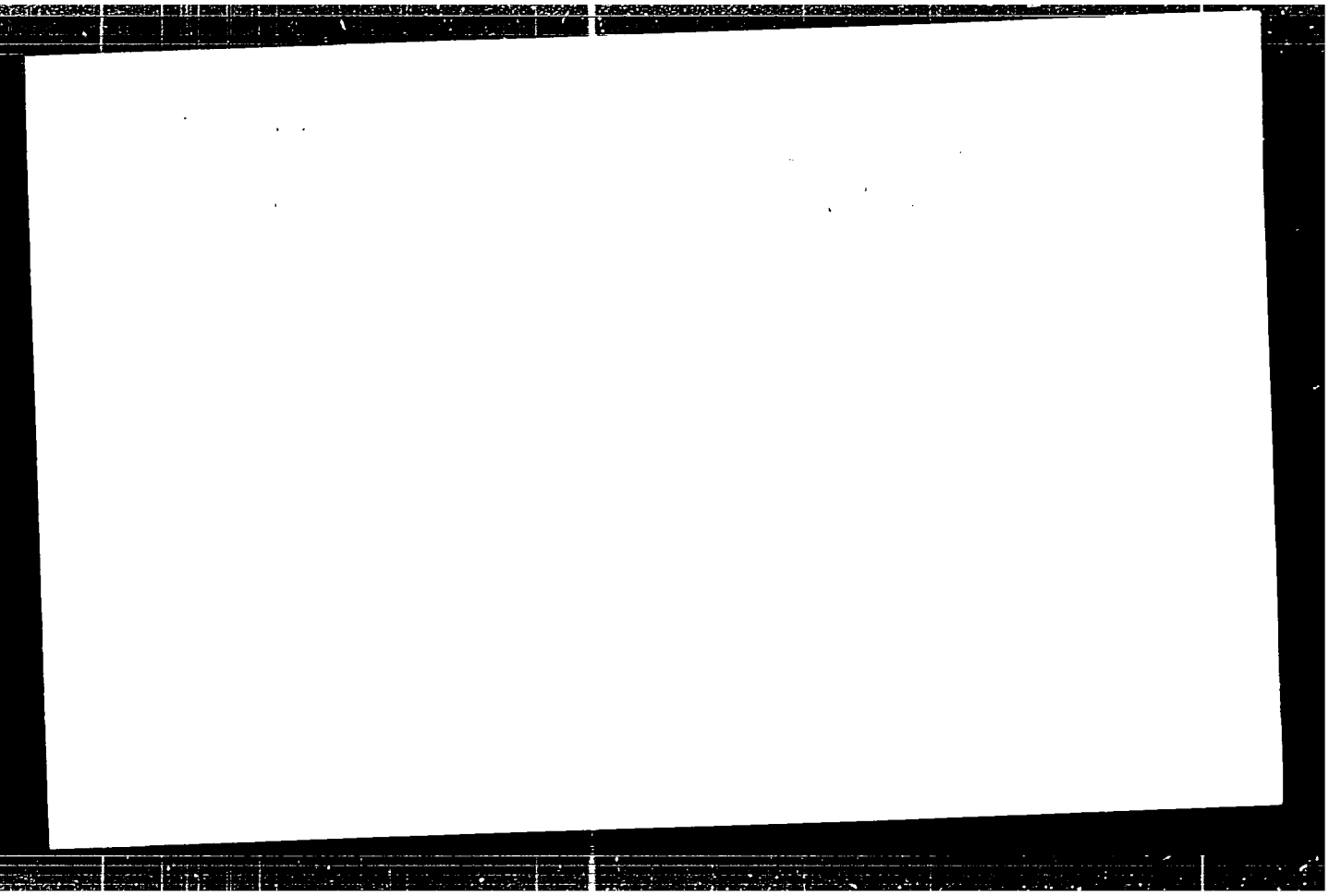
[Selection of microbes] Selektsiia mikrobov. Moskva, Medgiz, 1959. 276 p. (MIRA 13:9)
(BACTERIOLOGY--CULTURES AND CULTURE MEDIA)

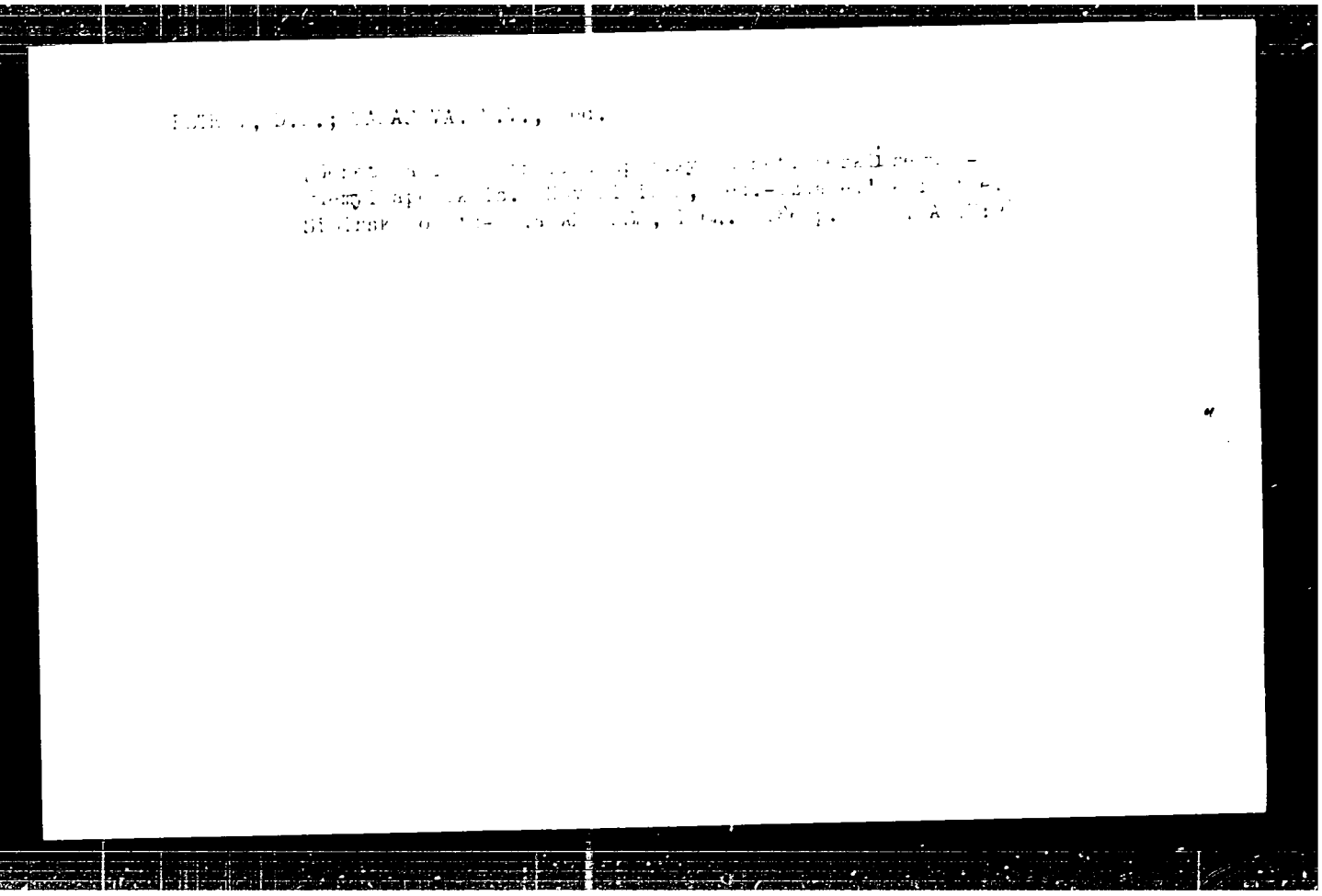




PETROV, D.F.; SANKIN, L.S.; KRYLOVA, [illegible].V.

Polyploid forms of Fragaria vesca and F. orientalis. Trudy TSSBS no. 2:65-68 '64. MIRA [illegible]





PETROV, D.F., doktor biol. nauk, prof., otv. red.; BESHUYEVA, V.M., red.; LOKSHINA, O.A., tekhn. red.

[Apomixy and some new methods of plant breeding] Apomiksis i nekotorye novye metody selektsii rastenii. Novosibirsk, 1963. 146 p. (MIRA 16:12)

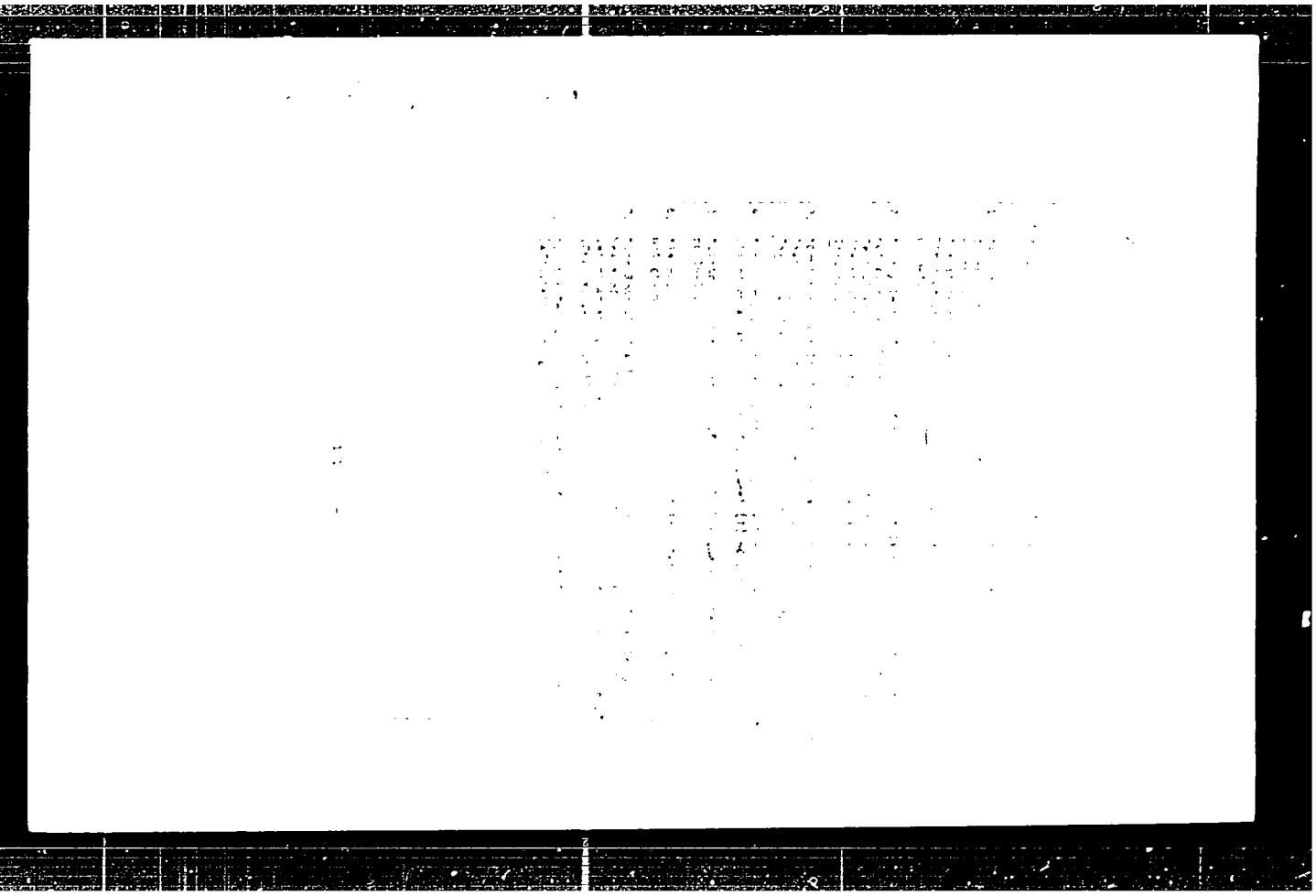
1. Akademiya nauk SSSR. Sibirskoye otdeleniye.
(Plant breeding)

PETROV, D. F.; ZHELEZNOVA, N. B.

Experimental androgenesis in corn. Dokl. AN SSSR 147 no.6: 1470-1472 D '62. (MIRA 16:1)

1. TSentral'nyy botanicheskiy sad Sibirskogo otdeleniya AN SSSR. Predstavleno akademikom N. V. TSitsinym.

(Corn breeding)



PETROV, D.F.; GRABLEVA, T.I.

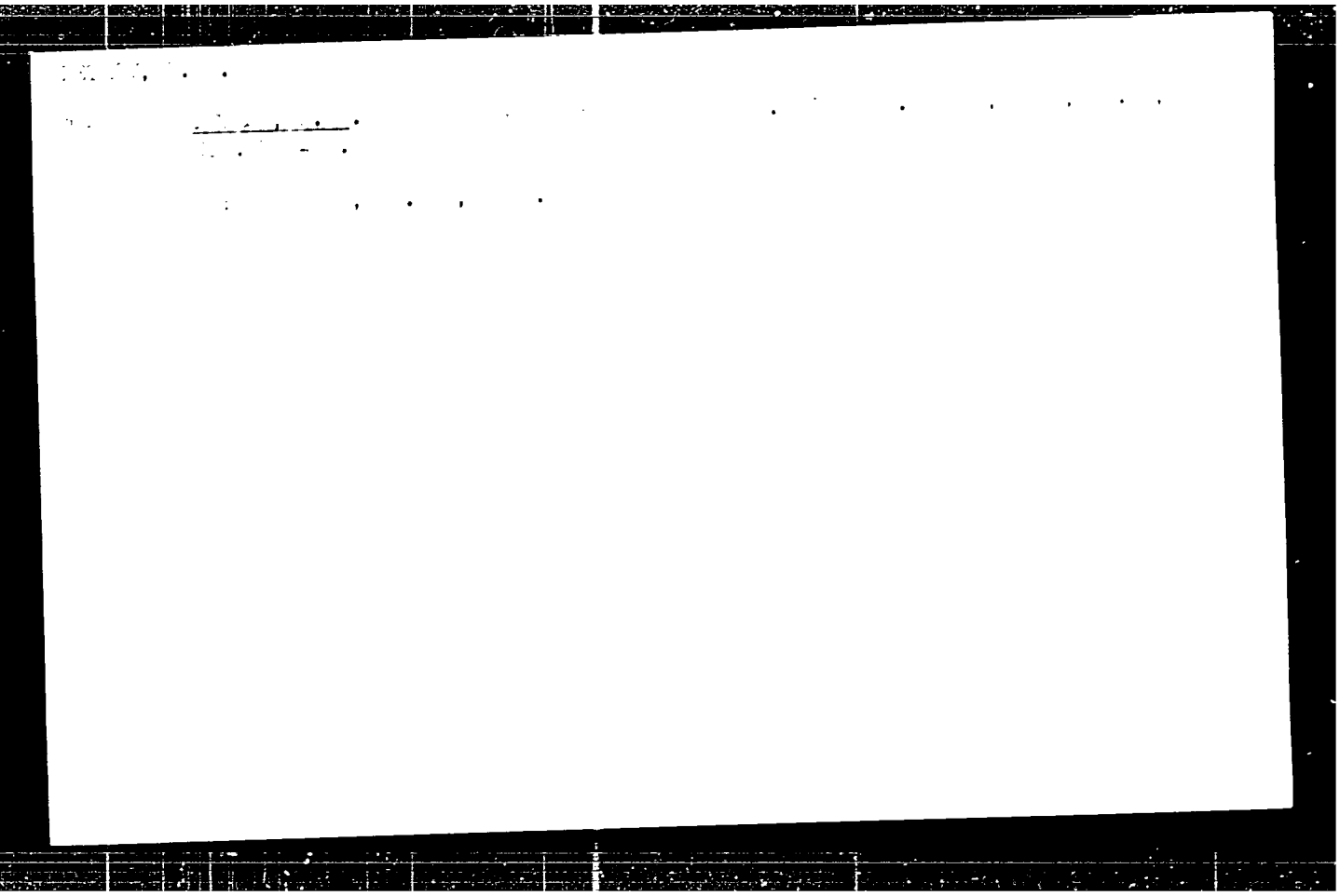
A new autotrophic strain of Bacterium coli requiring only methionine. Dokl. AN SSSR 139 no.4:984-986 Ag '61. (MIRA 14:7)

1. Predstavleno akademikom V.N. Shaposhnikovym.
(ESCHERICHIA COLI) (METHIONINE)

PETROV, D. G.

Petrov, D. G. - "The effect of hexenal on the kidneys and its application in urology," Vrachob. delo, 1949, No. 2, columns 147-50

SO: U-3566, 15 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 14, 1949).



PETROV, D.G., LYSENKO, Ye. V.

Plasmotherapy of inflammatory diseases of the female genitalia. Akush. gin. no.2:45-47 Mar-Apr 1953. (CIML 24:3)

1. Docent for Petrov. 2. Of L'vov Scientific-Research Institute of Blood Transfusion (Director -- Docent D. G. Petrov) and of L'vov Oblast Oncological Dispensary (Director -- Candidate Medical Sciences A. A. Kel'man).

PETROV, D.G., dotsent, direktor; FEDOROV, I.I., professor, nauchnyy rukovoditel'.

Intravenous alcohol-thiopental narcosis. Khirurgiia no.6:15-18 Je '53. (MLRA 6:8)

1. L'vovskiy nauchno-issledovatel'skiy institut perelivaniya krovi i neotlozhnoy khirurgii. (Anesthesia)

"Alcohol-Glucose-Citrated Blood and Its Therapeutic Use," by Docent D. G. Petrov, Ivov Scientific Research Institute of Blood Transfusion (Director, Docent D. G. Petrov; scientific director, I. I. Fedorov), Problemy Gematologii i Perelivaniya Krovi, Vol 2, No 1, Jan Feb 57, pp 35-42

The institute conducted 1,066 transfusions using alcohol-glucose-citrated blood, in 250 - 500 ml quantities, and in only 2 cases were there post transfusion reactions, i.e. ..6 % [sic]. Clinical observations prove the advantage of using alcohol-glucose-citrated blood because of its effectiveness in major operations such as traumatic and surgical shock, terminal states, purulent-septic processes, etc.

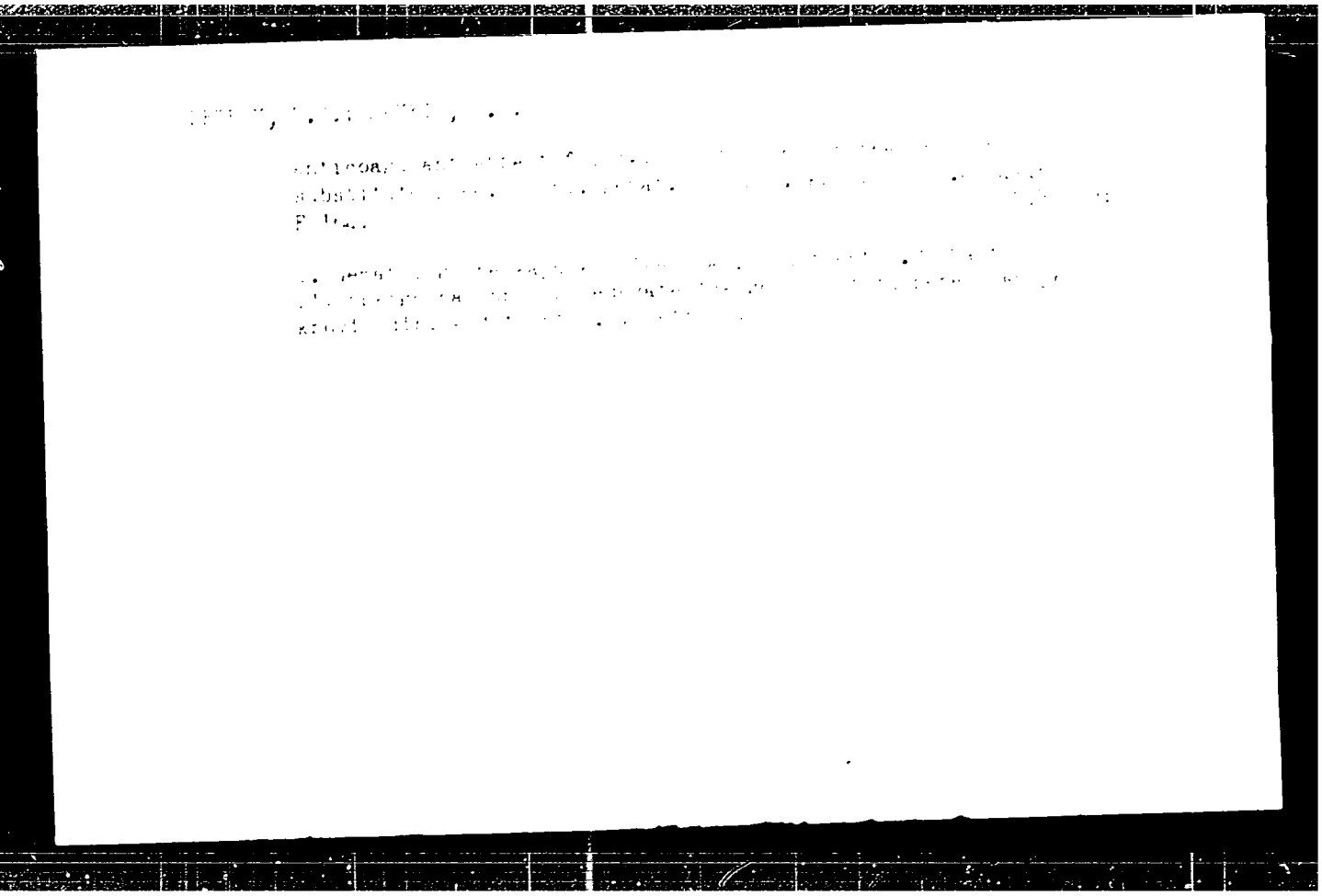
Alcohol-glucose-citrated blood may be safely preserved for 30 - 35 days.

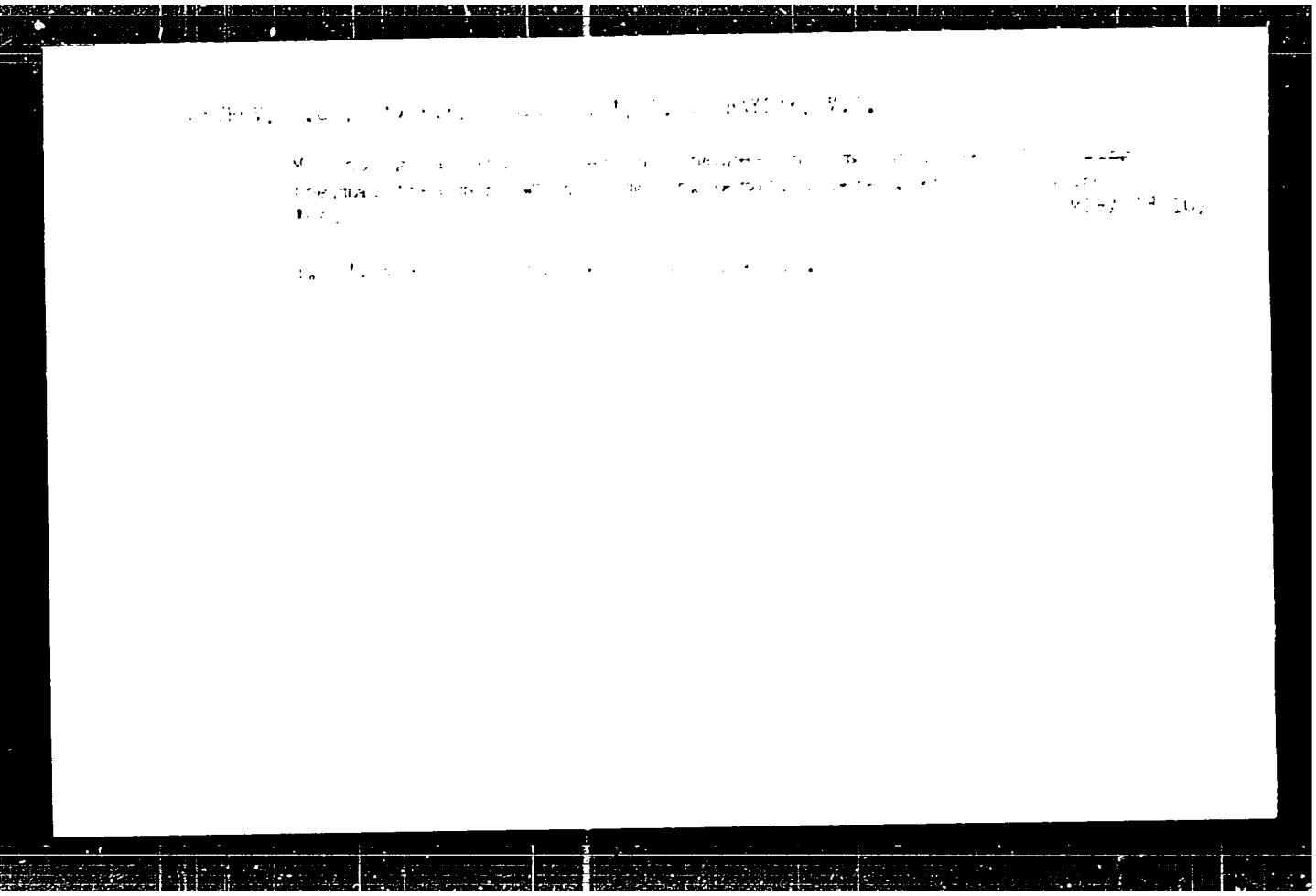
PETRO[illegible], [illegible], dotsent; [illegible]; MARTSENKO, [illegible]

Method for individual bacteriological sterility control of preserved blood. Probl. gemat. i perel. krovi [illegible]

[illegible]

.. Iz [illegible] nauchno-issledovatel'skogo instituta perelivaniya krovi (direktor - dotsent [illegible]).



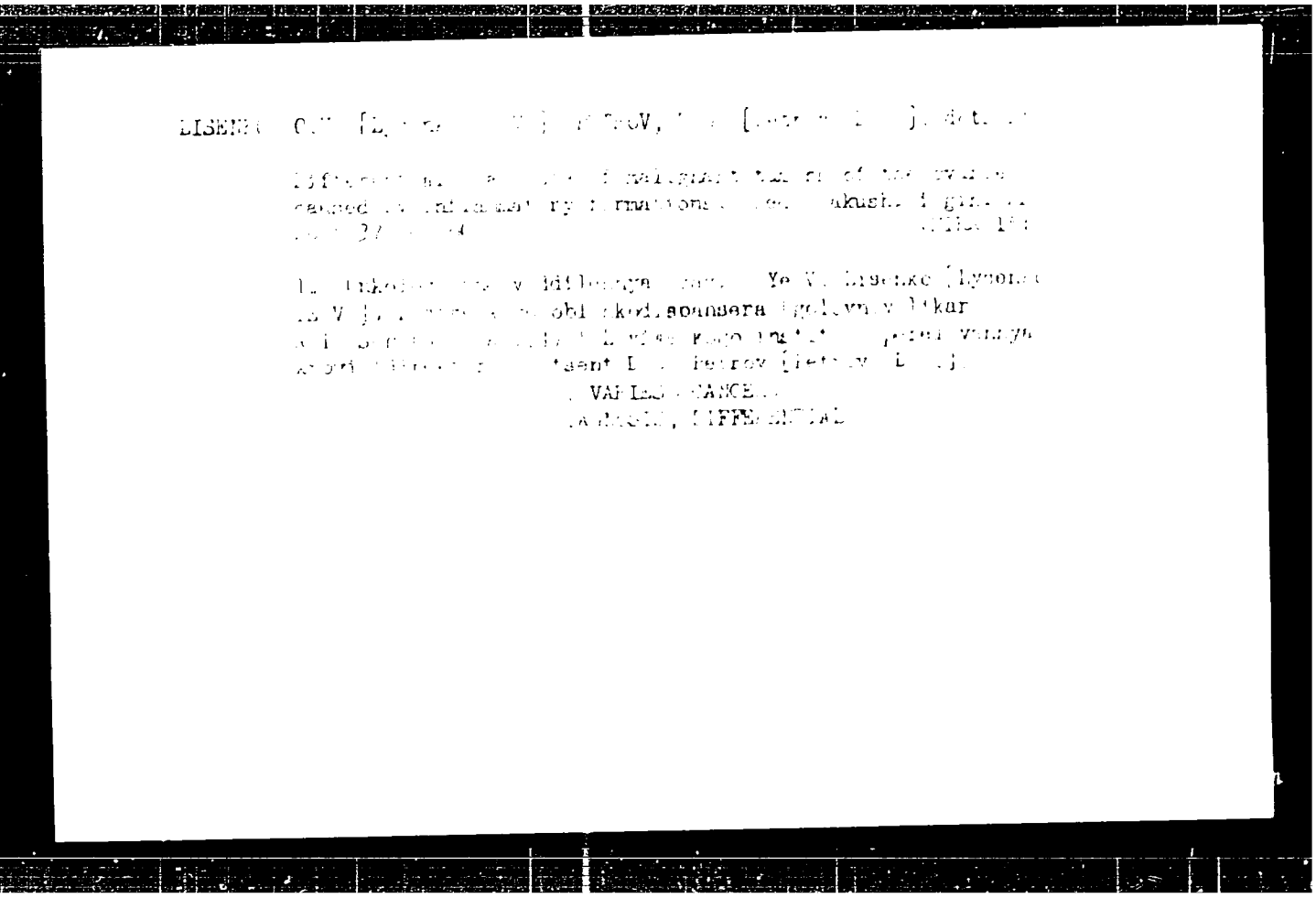


ISHCHENKO, I.N., zas. [illegible] FELDKOVSKIY, A.A., zast. [illegible] FELDKOV, [illegible] AN USSR, D.M., prof. [illegible] ISHCHENKO [illegible]

[Transactions of the Sixth Enlarged Plenum of the Board of the Scientific Society of Surgeons of the Ukrainian S.S.R. and the Xlth Republican Conference on Blood Transfusion] Trudy Rasshirennogo plenuma pravleniia Nauchnogo obshchestva kirurgov USSR i XI respublikanskoi konferentsii po pereli-vaniiu krovi. Kiev, Zdravookhranenie USSR, 1963. 392 p. (MIRA 16:10)

1. Rasshirennyy plenum pravleniya Nauchnogo obshchestva khirurgov USSR i XI respublikanskoy konferentsii po pereli-vaniyu krovi. 6th, Lvov, 1962. 2. Chlen-korrespondent AN Ukr.SSR (for Ishchenko).

(BLOOD--TRANSFUSION)



PETROV, D.G., dotsent; KRIVORUCHKO, R.A.; TURCHIN, V.L.; YEDKINA, V.D.

Centralized supply of flasks with factory produced blood preservatives. Probl.gemat.i perel.krovi no.7:50-53 '61.
(MIRA 14:9)

1. Iz L'vovskogo nauchno-issledovatel'skogo instituta pereliyaniya krovi (dir. - dotsent D.G. Petrov).
(BLOOD--COLLECTION AND PRESERVATION)

[illegible] Human and Animal Physiology - (Normal and Pathological) [illegible] Blood [illegible] Transfusion and Blood [illegible]

Abs Jour : [illegible], No [illegible]

Author : Petr[illegible], I.G.

Inst : -

Title : A[illegible]-Glucose-Citrate [illegible] and Its Therapeutic Application

Orig Pub : Probl. [illegible] i [illegible], No [illegible]-42, [illegible]

Abstract : Many experimental and clinical observations illustrate the positive qualities of [illegible]-glucose-citrate [illegible] (AGCB) and its advantages over the [illegible] prepared [illegible] citrate medium. In the [illegible], ethyl [illegible] was utilized. Transfusion of AGCB was performed on [illegible] patients ([illegible], traumatic and surgical [illegible], in serious operations, etc., as well as in various forms of anemia).

Card [illegible]

MERENOV, [illegible]; PE[illegible], [illegible]

Materials [illegible] lesions [illegible] the development [illegible]a. Sb. [illegible] trud. L'vov. nauch.-iss. inst. perel. krovi [illegible] zh. khir. no.4:50-54 (MIRA [illegible])

PETROV, D.G., dotsent; NOVOSAD, N.A.

Seventh Conference of the Lvov Institute of Bleed Transfusion and Emergency Surgery. Probl.gemat. i perel.krovi 4 no.8:59 Ag '59. (MIRA 13:1)

(BLOOD)

PETROV, D.G., dotsent; TKACH, Ye. A., starshiy nauchnyy sotrudnik; FEDOROVA, Z.P., starshiy nauchnyy sotrudnik; YEDKINA, V. D., nauchnyy sotrudnik

Loss of blood and blood transfusion in hypothermia. Nov. khir. arkh. no.2:59-63 Mr-Ap '59. (MIRA 12:7)

1. L'vovskiy nauchno-issledovatel'skiy institut perelivaniya krovi i neotlozhnoy khirurgii (nauchnyy rukovoditel (prof. I.I. Fedorov). (Adres avtorov: Lvov, ul. Pushkina, d.45. Nauchno-issledovatel'skiy institut perelivaniya krovi).
(HYPOTHERMIA) (HEMORRHAGE) (BLOOD TRANSFUSION)

PETROV, D.G.; YAES, S.B.

Fourth conference of the Lvov Institute of Blood Transfusion. Probl. gemat. i perel. krovi 3 no.1:60 Ja-F '58. (MIRA 11:3)
(BLOOD--TRANSFUSION)

PETROV, Dmitriy Georgiyevich, [illegible]; ZELONOV, I.I., red.; NAZINSKAYA, A.L., tekhn. red.

[Preservation and transfusion of blood] Konservirovanie i perelivanie krovi. Kiev, Gosmedizdat USSR, [illegible] 422 p. (MIRA 16:12)

(BLOOD--COLLECTION AND PRESERVATION)
(BLOOD--TRANSFUSION)

ARBATSKAYA, Yu.D.; KOGAN, V.M.; PETROV, D.I.; PIS'MENNYY, R.Ya.; CHULKOVA, M.S.

Studying patients in the first stage of hypertension with an initial cerebral syndrome in connection with their working conditions. Zhur. nevr. i psikh. 56 no.6:472-477 '56. (MLRA 9:8)

1. Kafedra vrachebno-trudovoy ekspertizy (zav. prof. N.K.Bogolepov) TSentral'nogo instituta usovershenstvovaniya vrachey i TSentral'nyy institut ekspertizy trudosposobnosti i trudovogo ustroystva invalidov (dir. - prof. O.I.Sokol'nikov), Moskva.

(HYPERTENSION, compl.
funct. disord. of brain in telegraphers, determ. of clin. manifest.)
(BRAIN, dis.
funct. disord. in telegraphers with hypertension, determ. of clin. manifest.)
(OCCUPATIONAL DISEASES
cerebral funct. disord. in telegraphers with hypertension, determ of clin. manifest.)

PETROV, Du (Azerbaydzhanskaya SSR)

Good luck! Zdorov'e 4 no.12:23 D '58 (MIRA 11:12)
(AZERBAIJAN--MEDICINE, RURAL)

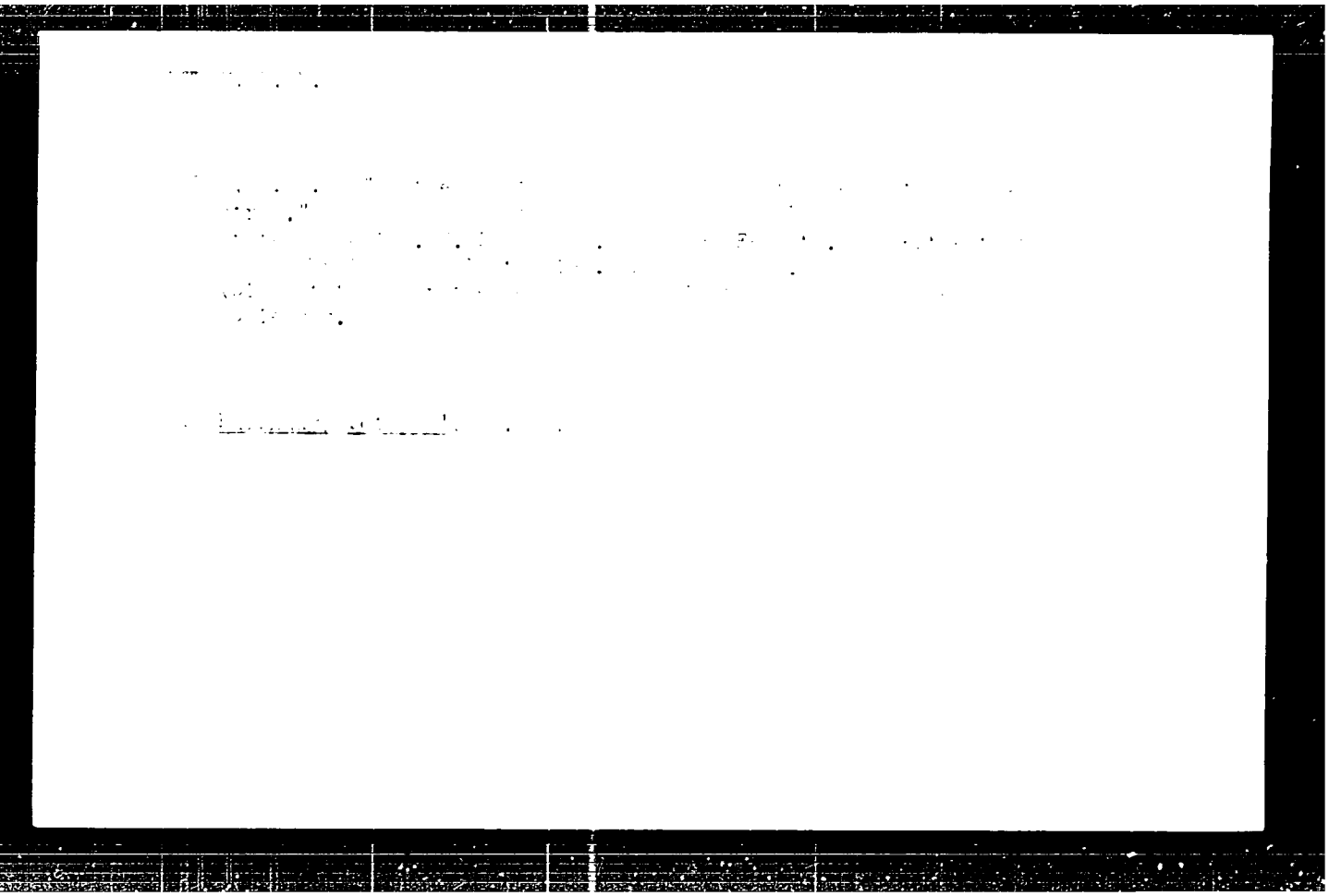
PETROV, Dmitriy Ivanovich; TERESHCHENKO, V., red.; KALECHITS, G., tekhn. red.

[Let us work the communist way] Rabotaem po-kommunisticheski. Minsk, Gos.izd-vo BSSR. Red. proizvodstvennoi lit-ry, 1961. 38 p. (MIRA 15:1)

1. Direktor Vitebskogo kovrovogo kombinata (for Petrov).
(Vitebsk—Rug and carpet industry)

IVANOV, Dimitur

Some problems of fodder balance on cooperative farms.
Selskostop nauka [illegible] no. 2:151-161 '63.



9,4220 (also 1071)

Translation from [illegible]

#6[illegible]

AUTHOR [illegible], P.M.

TITLE [illegible]

PERIODICAL [illegible]

TEXT. The results from a theoretical analysis are explained [illegible] of a space charge, the impedance of the electrode surface and the phase relation on the electronics of the reflex klystron. The results are presented [illegible] klystron test under the condition of external filter [illegible] excited) at small amplitudes. The comparison of the results from calculating the electronic conductance with its value determined experimentally shows a considerable (by ~ 2 times) discrepancy between the theory of the idealized klystron and the experimental data. Improvements connected with the factors mentioned and introduced into the theory lead to a satisfactory agreement [illegible]

Card 1/2

36774

On the Electronics of the Reflex Klystron

[illegible]
A[illegible]/A[illegible]

results with the measurement data [illegible] study of the stationary generation [illegible] parison with the data from the [illegible] to introduce the improvements [illegible] klystron.

[illegible]

Translator's note. This [illegible]

Card [illegible]

88699

S/058/60/000/010/008/014
A001/A001

9.4220

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 10, p. 31[illegible], # 27431

AUTHOR: Petrov, D.M.

TITLE: Electronics of Reflex Klystron

PERIODICAL: Tr. Konferentsii po elektronike SVCh, 1957, Moscow-Leningrad, Gosenergoizdat, 1959, pp. 202 - 225

TEXT: The author describes the results of a theoretical analysis of the effects of space charge, curvature of electrode surface and phase aberration on the electronics of reflex klystron. The results of klystron studies are presented for the case of external action (klystron does not self-excite) at small amplitudes. The value of calculated electronic conductivity is compared with its experimental value. A considerable (by a factor of approximately two) discrepancy was found between the theory of idealized klystron and experimental data. The introduction into the theory of corrections due to the factors mentioned leads to the satisfactory agreement of calculational results with the measurement data. The author

Card 1/2

88699

Electronics of Reflex Klystron.

S/[illegible]
A001/A001

presents also the results of experimental studies of the stationary generation mode of the reflex klystron in comparison with the data of theoretical calculations. He points out the necessity of introducing corrections in engineering calculations of the reflex klystron.

Author's summary

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

PHASE I BOOK EXPLOITATION SOV/3292

Konferentsiya po elektronike sverkhvysokoy chastoty

Trudy (Transactions of the Conference on Superhigh-Frequency Electronics) Moscow, Gosenergoizdat, 1959. 271 p. 3,500 copies printed.

Sponsoring Agency: Vsesoyuznyy nauchnyy sovet po radiofizike i radiotekhnike AN SSSR.

Eds. (Title page): I. S. Dzhigit, Professor, and Ye. G. Solov'yev, Candidate of Technical Sciences; Ed.: S. Akalunin; Tech. Ed.: G. Ye. Larionov.

PURPOSE: This book is intended for scientific and technical personnel concerned with the development and operation of superhigh-frequency devices.

COVERAGE: The book contains a number of papers dealing with the more important problems of superhigh-frequency electronics. The papers were submitted at the Conference on Electronics called by the Vsesoyuznyy nauchnyy sovet po radiofizike i radiotekhnike AN SSSR (All-Union Scientific Council for Radiophysics and Radio Engineering, AS USSR) and the Byuro novoy tekhniki MO SSSR (Bureau of Modern Engineering, Ministry of Defense, USSR) and held in Moscow in 1957. The reports deal with the following topics: problems of the theory and calculation of the delay systems of traveling-wave and backward-wave tubes, certain phenomena occurring in a cylindrical electron beam finding itself in a uniform magnetic field; the focusing of long beams by means of periodic magnetic and electric fields; and some problems concerning reflex klystrons. Modern types of cathodes for superhigh-frequency devices are described. No personalities are mentioned. References accompany most of the reports.