to be described as drift, rotation, and deformation of the "current petal". The motion of the particles in the $\vec{r}$-space can be represented as rapid oscillation about the "center of circle" $\vec{R}$ and smooth displacement of this center in the direction of the magnetic field. The following relation holds here: $\dot{\vec{R}} = \bar{v}_H \vec{\xi}$, where $\vec{\xi} = \vec{H}/H$, $\vec{H} = \vec{H}(\vec{R}, t)$. The mean velocity $\bar{v}_H$ is determined by the formula:

$v_H(P_H, \bar{\varepsilon}, \vec{\xi}) = -\frac{1}{2\pi m^*} \frac{\partial S}{\partial P_H}(P_H, \bar{\varepsilon}, \vec{\xi})$. Here, S is the area of cross section $\varepsilon = \bar{\varepsilon}$, $p_H = P_H$. The mean values $P_H = \bar{P}_H$, $\bar{\varepsilon}$, and the unit vector $\vec{\xi}$ of the magnetic field give the position of the "current petal" in the momentum space. The most important characteristic of the average motion in the above mentioned type of field is the adiabatic invariance of the quantity $S(P_H, \bar{\varepsilon}, \vec{\xi})/H(\vec{R}, T)$ which allows the mean differential equation to be partially integrated. For a complete knowledge of the motion it is necessary to know the equation for the quantities

P_H or $\bar{\varepsilon}$. In the following these equations are introduced for three forms of the field: 1) For a weak homogeneous constant magnetic field this equation reads: $\dot{\varepsilon}$ = const. 2) For the case of parallel electric and magnetic fields: $\dot{P}_H = eE$. 3) If an alternating field $\vec{H}(t)$ acts on the particle the resulting electric field has to be taken into account which leads to a nonconservation of $\bar{\varepsilon}$. In that case: $\dot{P}_H = \frac{1}{m^*} \frac{\partial}{\partial \epsilon} \iint \vec{P}_\perp dS$, where $\vec{P}_\perp$ is the projection of the momentum on a plane perpendicular to $\vec{\xi}$. With the help of these equations the drift of the "current petal" is studied by the saddle point of the isoenergetic surface (Fig. 1). From a short consideration it is shown that the introduction of a particle in the region I and II may be considered as a random process. It is therefore, possible to speak of a scattering in the neighborhood of the saddle point which is a singular point in the sense of the dynamics of the motion of a particle in a homogeneous magnetic field. The scattering probabilities w_1 and w_2 in the regions I and II possess fully defined

values which are determined in the following. For the case (1) mentioned above the ratio of the probabilities is given by $w_1/w_2 = \frac{\partial}{\partial l}(S_1/H)\Big/\frac{\partial}{\partial l}(S_2/H)$. Here, l is the length along the lines of force of the magnetic field, $S_{1,2}(\varepsilon, b_H(\vec{\xi}), \vec{\xi})$ is the area of cross section of each curve at the intersection of ε = const with the surface passing through the singular points and perpendicular to $\vec{\xi}$ (l). For the case (2): $w_1/w_2 = \frac{d}{dp_H} S_1(p_H, \varepsilon_{cr}(p_H))/\frac{d}{dp_H} S_2(p_H, \varepsilon_{cr}(p_H))$, where $\varepsilon_{cr}(p_H)$ is defined on the isoenergetic surface $\varepsilon = \varepsilon_{cr}(p_H)$ which contains the singular point for a given p_H. It is found further that the time of drift through the singular point is about $T\ln\alpha$. Therefore, for the realization of this effect it is necessary that the inequality $\tau \gg T\ln\alpha$ be satisfied. It is so for $H \sim 10^4$ oersteds and a path length $\gtrsim 0.1$ cm without requiring any practical limitation on the value of α.

Card 4/5

Scattering effect of charged... S/020/61/137/003/009/030
B104/B214

In the classical considerations made here the tunnel effect is not taken into account. There are 1 figure and 1 Soviet-bloc reference.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk USSR (Institute of Physics and Technology, Academy of Sciences UkrSSR).
Institut teplofiziki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Heat Physics of the Siberian Department of the Academy of Sciences USSR)

SUBMITTED: January 2, 1961

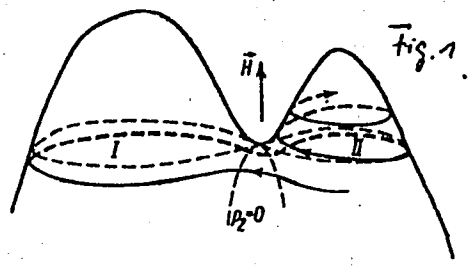

Fig. 1

Card 5/5

S/056/62/042/005/033/050
B102/B138

AUTHOR: Lifshits, I. M.

TITLE: Kinetics of ordering during phase transitions of the second kind

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 5, 1962, 1354-1359

TEXT: The kinetics of a complete structural change of an initially disordered system (e.g., a solution) is investigated. The change is due to a transition (e.g., by cooling) to a phase which is ordered in equilibrium. The first stage of this process takes place through an overall short-range order relaxation. As a result, each infinitesimal unit of volume becomes ordered in type $+\eta$ or $-\eta$ (η = coefficient of long-range order). From the macroscopic viewpoint, the process is instantaneous and is of no importance to the structural ordering. The initial state can thus be thought of as consisting of two independent equivalent structures ($\pm\eta$). It can be shown that structural reorganization is brought about, neither by uniform relaxation nor by a nucleation

Card 1/2

S/030/62/000/008/001/005
I042/I242

AUTHOR: Lifshits, I.M., Corresponding Member of AS USSR

TITLE: Theory of the solid state

PERIODICAL: Akademiya nauk SSSR. Vestnik, no.8, 1962, 23-25

TEXT: Quantum mechnics has great importance in the theoretical investigation of solid state physics. The subjects mentioned are semiconductivity, ferro- and antiferromagnetism, crystal growth and symmetry, structural defects and impurities, phase transitions, disordered structures, and statistical treatment of amorphous substances and polymers. Important considerations are the various spectra: i.e., electronic, electromagnetic, magnetic, high frequency, resonance, and optical. Of interest are the properties of substances when in the transition or critical states or when subjected to very high pressures. Recently a Scientific Council for solid state physics has been formed within the Academy of Sciences. This will give new impetus to theoretical studies that cannot be restricted to a specific section of solid state physics. The Council is expected to raise academic standards and encourage promising students in this field.

GEGUZIN, Ya.Ye.; LIFSHITS, I.M.

Mechanism and kinetics of "healing" an isolated pore in a crystalline body. Fiz. tver. tela 4 no.5:1326-1333 My '62. (MIRA 15:5)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo.

(Diffusion)
(Crystal lattices)

43438

S/053/62/078/003/002/005
B163/B104

AUTHORS: Lifshits, I. M., Kaganov, M. I.

TITLE: Some problems of the electron theory of metals. II. Statistical mechanics and thermodynamics of electrons in metals

PERIODICAL: Uspekhi fizicheskikh nauk, v. 78, no. 3, 1962, 411-461

TEXT: A review on the thermodynamical equilibrium qualities of metals at low temperatures is given, paying special attention to those effects that are sensitive to the dispersion law of the conduction electrons. The treatment is mainly based on the "gas model" in which the conduction electrons may be considered as an ideal gas of charged quasi-particles. The shape of Fermi surface in conducting crystals is discussed, especially degenerate cases where the energy surfaces have singular points or where the surfaces of equal energy belonging to neighboring zones intersect. The density of states within the energy zones, which forms the base for a thermodynamic treatment of the conduction electrons, is discussed, again with special consideration of degenerate cases. Such special cases are

Card 1/2

Some problems of the electron ...

interesting in connection with effects as treated in an earlier paper (I. M. Lifshits, ZhETF, 38, 1569, 1960): If there is a continuously variable parameter (e.g. lattice deformation under pressure) by whose variation the difference between the chemical potential of the electrons and the critical energy ε_K for which the energy surface has a singular point, goes through zero, anomalies in the thermodynamical behaviour of the electron gas will occur. In this case the topology of the Fermi surface may be changed completely by a small variation of the parameter (e.g. pressure). This may cause anomalies of such quantities as paramagnetic susceptibility, thermal and electric conductivity, sound absorption etc., which depend on the density of states and the thermodynamic variables. A detailed theoretical discussion is given of the oscillations of the magnetic susceptibility and other quantities with the magnetic field strength in strong magnetic fields at low temperatures (De Haas - van Alfvén effect, Shubnikov - de Haas effect). Among the methods to determine the energy spectrum of conduction electrons, measurements in strong magnetic fields (de Haas - van Alfvén effect, cyclotron resonance), ultrasonic absorption, galvanomagnetic effects have been most successful. There are 28 figures.

Card 2/2

LIFSHITS, I.M.; SLEZOV, V.V.

Kinetics of the diffusion sintering of porous solids. Fiz. met. i metalloved. 13 no.6:937 Je '62. (MIRA 15:7)
(Sintering)

LIFSHITS, I.M.

The theory of solids. Vest.AN SSSR 32 no.8:23-25 Ag '62. (MIRA 15:8)

1. Chlen-korrespondent AN SSSR.
(Solids)

LIFSHITS, I.M.

Kinetics of ordering in second-order phase changes. Zhur. eksp. i teor. fiz. 42 no.5:1354-1359 My '62. (MIRA 15:9)

1. Fiziko-tekhnicheskiy institut AN Ukrainskoy SSR.
(Lattice theory)

LIFSHITS, I.M.; SLEZOV, V.V.

Dynamic equilibrium of a fog cloud over a liquid surface.
Dokl. AN SSSR 146 no.4:799-802 O '62. (MIRA 15:11)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M. Gor'kogo. 2. Chlen-korrespondent AN SSSR (for Lifshits).
(Gas dynamics)

LIFSHITS, I.M.; AZBEL', M.Ya.; SLUTSKIN, A.A.

Theory of quantum cyclotron resonance in metals.
Zhur. eksp. i teor. fiz. 43 no.4:1464-1478 O '62. (MIRA 15:11)

1. Khar'kovskiy gosudarstvennyy universitet i Fiziko-tekhnicheskiy institut AN Ukrainskiy SSR.
(Cyclotron resonance)
(Quantum theory)

LIFSHITS, I. M.; KAGANOV, M. I.

Some problems in the electron theory of metals. Part 2: Statistical mechanics and the thermodynamics of electrons in metals. Usp. fiz. nauk 78 no.3:411-461 N '62. (MIRA 16:1)

(Free electron theory of metals)
(Statistical mechanics)

LIFSHITS, I.M.

Theory of diffusion viscous flow of polycrystalline bodies. Zhur. eksp. i teor. fiz. 44 no.4:1349-1367 Ap '63. (MIRA 16:4)

1. Fiziko-tekhnicheskiy institut AN Ukrainskoy SSR.
(Elasticity) (Strains and stresses)

L 10195-63 EWT(1)/BDS/EEC(b)-2--AFFTC/ASD/ESD-3--IJP(C)

ACCESSION NR: AP3000073 S/0056/63/044/005/1723/1741

57
56

AUTHOR: Lifshits, I. M.

TITLE: Structure of the energy spectrum of impurity bands in disordered solid solutions

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1723-1741

TOPIC TAGS: solid solutions, disordered, impurity bands, energy spectrum structure concentration broadening

ABSTRACT: The structure of the impurity bands in the energy spectrum of elementary excitations in disordered solid solutions is studied at small concentration under very general simplifying assumptions. The results associated with the structure of the impurity band as a whole are first obtained and studied, and the systematics of the states corresponding to an impurity band are investigated. No specific systems are discussed, and the consequences to which this sort of systematics of the states can lead are likewise not evaluated. The behavior of the spectral density near singular points in an impurity band is

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L 10195-63
ACCESSION NR: AP3000073

then determined, and the exact theory of the spreading of the levels with increasing concentration is developed for several limiting cases. Orig. art. has: 47 formulas, 5 figures.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet (Khar'kov State University)

SUBMITTED: 28Dec62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH NR REF SOV: 003 OTHER: 000

bm/ CH
Card 2/2

LIFSHITS, I.M.

Structure of the energy spectrum of impurity bands in disordered solid solutions. Zhur.eksp.i teor.fiz. 44 no.5:1723-1741 My '63. (MIRA 16:6)

1. Khar'kovskiy gosudarstvennyy universitet.
(Quantum theory) (Solutions, Solid)

KAGANOV, M.I.; LIFSHITS, I.M.

Non-threshold internal photoeffect in metals with intersecting bands. Zhur. eksp. i teor. fiz. 45 no.4:948-954 O '63. (MIRA 16:11)

1. Fiziko-tekhnicheskiy institut AN UkrSSR.

LIFSHITS, I.M. (Khar'kov)

Quantum theory of crystals. Priroda 53 no.3:68-70 '64. (MIRA 17:4)

1. Chlen-korrespondent AN SSSR.

ACCESSION NR: AP4036409 S/0030/64/000/004/0160/0163

AUTHORS: Lifshits, I. M. (Corresponding member); Kaganov, M. I. (Doctor of physico-mathematical sciences)

TITLE: The development of the solid state theory

SOURCE: AN SSSR. Vestnik, no. 4, 1964, 160-163

TOPIC TAGS: solid state theory, detector effect, transistor effect, semiconductor, quantum property, metal energy spectrum, high alloy semiconductor, superconductivity, dielectric state

ABSTRACT: This is a review of the All-Union Conference on the Solid State Theory, held in Moscow from December 2 to 12, 1963. More than 800 Soviet and 50 foreign scientists participated. The reports covered all basic developments in the solid state theory, including forecasts, discoveries and studies of such properties as the detector and transistor effects in semiconductors, coherent amplification, and frequency generation. The paper presented by the authors of this article was a summary of the methods used and the results obtained in the study of the electron energy spectrum of metals. E. A. Kaner and V. G. Skobov reported on the

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ACCESSION NR: AP4036409

existence of Bose-type particles in metals placed in a strong magnetic field. A. A. Abrikosov and L. A. Fil'kovskiy presented the results of study on energy spectra of bismuth, antimony, and arsenic. Two papers were dedicated to the development of the quantum theory of crystals containing impurities and local defects. The one written by I. M. Lifshits dealt with the energy spectrum of disordered systems; the one written by V. L. Bonch-Bruyevich dealt with high-alloy semiconductors. The Nobel prize winner, J. Bardin (USA) and L. P. Gor'kov spoke on superconductivity. Of great interest was the somewhat controversial report of V. Kohn (USA) on the theory of the dielectric state. The following members of the conference reported on electron properties of crystals: L. E. Gurevich, L. V. Keldy*sh, A. S. Davy*dov, E. I. Rashba, O. N. Krokhin, Yu. Ye. Perlin, and A. I. Aksel'm. The studies of crystals on a molecular level were reported in papers of K. B. Kolpy*to, V. L. Indenbom, A. M. Kosevich, and A. N. Orlov. G. M. Birshteyn and O. B. Ptitsin spoke on polymers, V. M. Agranovich, and J. Vanyard on the radiation damage in solids, B. Ya. Lyubov and A. A. Chernov on the crystal growth theory. The authors conclude that this conference revealed the strong bonds existing between the different branches of solid state physics and that, in spite of the highly specialised nature of most papers, it proved the

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ACCESSION NR: AP4036409

importance of "all-encompassing" conventions.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 20May64 ENCL: 00

SUB CODE: GP NO REF SOV: 000 OTHER: 000

Card 3/3

L 8455-65 EWT(1) IJP(c)/ESD(gs) S/0053/64/083/004/0617/0663
ACCESSION NR: AP4044579

B

AUTHOR: Lifshits, I. M.

TITLE: Structure of the energy spectrum and quantum states of disordered condensed systems

SOURCE: Uspekhi fizicheskikh nauk, v. 83, no. 4, 1964, 617-663

TOPIC TAGS: energy spectrum, spectrum investigation, quantum state, condensed system, disordered system, amorphous body

ABSTRACT: This is a review article dealing with the spectrum of elementary excitations in bodies whose atoms have a fixed but random distribution at equilibrium (amorphous or vitreous state, quenched solid solution). Such bodies are characterized, from the quantum-theoretical point of view, by absence of quasimomentum and accordingly by an utterly different systematics of the states. A mathematical model is presented, by which the study of the quantum states

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ACCESSION NR: AP4044579

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can be pursued along two seemingly different paths. One is to examine the motion of a single particle in a random aperiodic field due to the surrounding atoms, and the other is to investigate the vibrations of coupled oscillators in an aperiodic structure. The equivalence of the two approaches within the framework of the model is demonstrated. The article is devoted mostly to the author's original researches, many of which have been previously reported. The section headings are: 1. Introduction. Choice of model. 2. Formulation of the problem. General considerations. 3. Behavior of spectral density near the true boundary of the spectrum. 4. Behavior of the spectral density near impurity levels. Theory of concentration level broadening. 4.1. Local impurity levels. 4.2. Systematics of levels and states in the impurity band at low concentrations. 4.3. Determination of the spectral density near the impurity level. 4.4. Concentration broadening of the impurity level in the "classical" case. 5. Structure of the spectrum near the unperturbed boundary. 5.1. "Shift" and smearing of the boundary. 5.2. Smearing

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L 8455-65 0

ACCESSION NR: AP4044579

of the impurity level near the boundary of the continuous spectrum. 5.3. Spectral density to the left of E_c^* when $U_0 < 0$. 5.4. Spectral density inside the interval $0 < E < E_c^*$ when $U_0 > 0$. .5.5.Effect of ordering. 6. Structure of spectrum as a whole. 6.1. Method of expansion in powers of the concentration. General considerations and formulas. 6.2. Spectral density inside the unperturbed operator spectral band. 6.3. Spectral density outside the region of the unperturbed spectrum. Structure of the impurity band. 7. Some other models of disordered structures. Orig. art. has: 10 figures and 142 formulas.

ASSOCIATION: None

ENCL: 00

SUBMITTED: 00

SUB CODE: SS NR REF SOV: 010 OTHER: 015

Card 3/3

S/0181/64/006/006/1735/1743

ACCESSION NR: AP4039662

AUTHORS: Lifshits, I. M.; Shikin, V. B.

TITLE: Diffusion viscous flow of porous bodies

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1735-1743

TOPIC TAGS: diffusion mobility, viscous flow, porous medium, polycrystal, grain boundary

ABSTRACT: The deformation of porous bodies was investigated by studying the diffusion viscous flow mechanism of polycrystals. The boundaries of the polycrystal grains served as both a source and a drain for the diffusing vacancies. Quantity α was taken as the ratio of the average distance between the pore centers to the average grain size, and the work dealt with $\alpha \sim 1$. All pores were assumed to have an outlet to damaged boundaries. During sintering the system passed from large to small porosities. The small porosity limit of the diffusion viscosity process was investigated by studying ρ, the average density of the substance in a small element containing a large number of grains. P_{ik} is the average stress tensor with Laplacian pressures compressing each pore, and V_i is the transmission speed of the substance. The flow process leads to a determination of the dependence between the

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ACCESSION NR: AP4039662

P_{ik} and V_{ik} tensors where V_{ik} is $V_{ik}=\frac{1}{2}\left(\frac{\partial V_i}{\partial x_k}+\frac{\partial V_k}{\partial x_i}\right)$, and for a quasistatic flow P_{ik} is $\begin{cases} P_{ik}=P_0(\rho)\delta_{ik}+\alpha_{iklm}V_{lm}; \\ \rho V_{ii}=-\frac{\partial \rho}{\partial t} \end{cases}$ with the "viscous" tensor α_{iklm} determined by the size and form of the grains, $P_0 = P_0(\rho)$ is the density function. In the simplest case of an isotropic structure α_{iklm} leads to two scalers. The model studied (see Fig. 1 on the Enclosure) required consideration of the inner action of pores, which is determined by finite spacing between the pores and is characterized by the parameter $X = \frac{r_0}{R}$ (where r_0 is the average pore radius, $R^3 = V$ is the volume of the substance per pore). The total flow to a pore then is $j=j_0(1+\nu X+\ldots)$, where j_0 is the average flow to an isolated pore in an unlimited medium with the equilibrium corresponding pressure P of the vacancy concentration at infinity, and ν is a coefficient of distribution dependent on the structure of the surfaces made amorphous, on the geometry of the pores, etc. To determine ν a more exact analysis of the diffusion flows must be made by studying the potentials, which may be written in the form of the Kirchhoff potentials. Orig. art. has: 3 figures and 21 equations.

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ACCESSION NR: AP4039662

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR, Khar'kov (Physico-technical Institute, AN UkrSSR); Khar'kovskiy gosudarstvenny*y universitet (Kharkov State University)

ENCL: 01

SUBMITTED: 02Jan64

OTHER: 000

SUB CODE: SS

NO REF SOV: 005

Card 3/4

ENCLOSURE: 01

ACCESSION NR: AP4039662

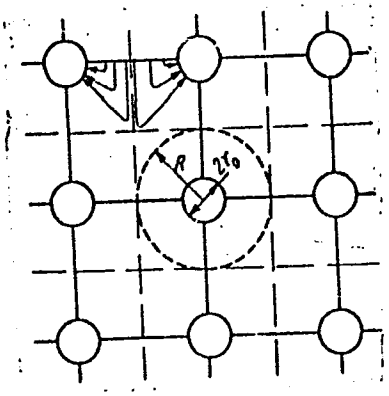

Fig. 1. Disposition of a cell, taken as a model of a porous body, with a cubic type of polycrystal.
r_0 is the pore radius, R is the external radius of a cell.
The fine dash lines are traces of membranes through which none of the substance is transported; i.e., $j_n = 0$.

Card 4/4

L 8702-65 EWT(1)/EWG(k)/EPA(sp)-2/EPA(w)-2/EEC(t)/EEC(b)-2/EWA(m)-2 Pz-6/
Pab-24/Peb IJP(c)/RAEM(t)/AS(mp)-2/ESD(gs)/ESD(t)/ASD(a)-5 AT
ACCESSION NR: AP4044945 S/0181/64/006/009/2723/2728

AUTHORS: Kaganov, M. I.; Lifshits, I. M.; Fiks, V. B. 13

TITLE: On the scattering of an electron by an impurity center

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2723-2728

TOPIC TAGS: electron scattering, impurity center, momentum transfer, dispersion relation, electron collision

ABSTRACT: The manner whereby the momentum transfer to an impurity center by a scattered electron is governed by the concrete scatterer mechanism is described for several limiting cases. 1. Quasi-classical motion of an electron with arbitrary dispersion law in the field of the impurity center; the problem then reduces to an investigation of the motion of the particle with a complex dispersion law in the defect field. 2. Particle motion with zero impact parameter (head-on collision), with scattering potential correspond-

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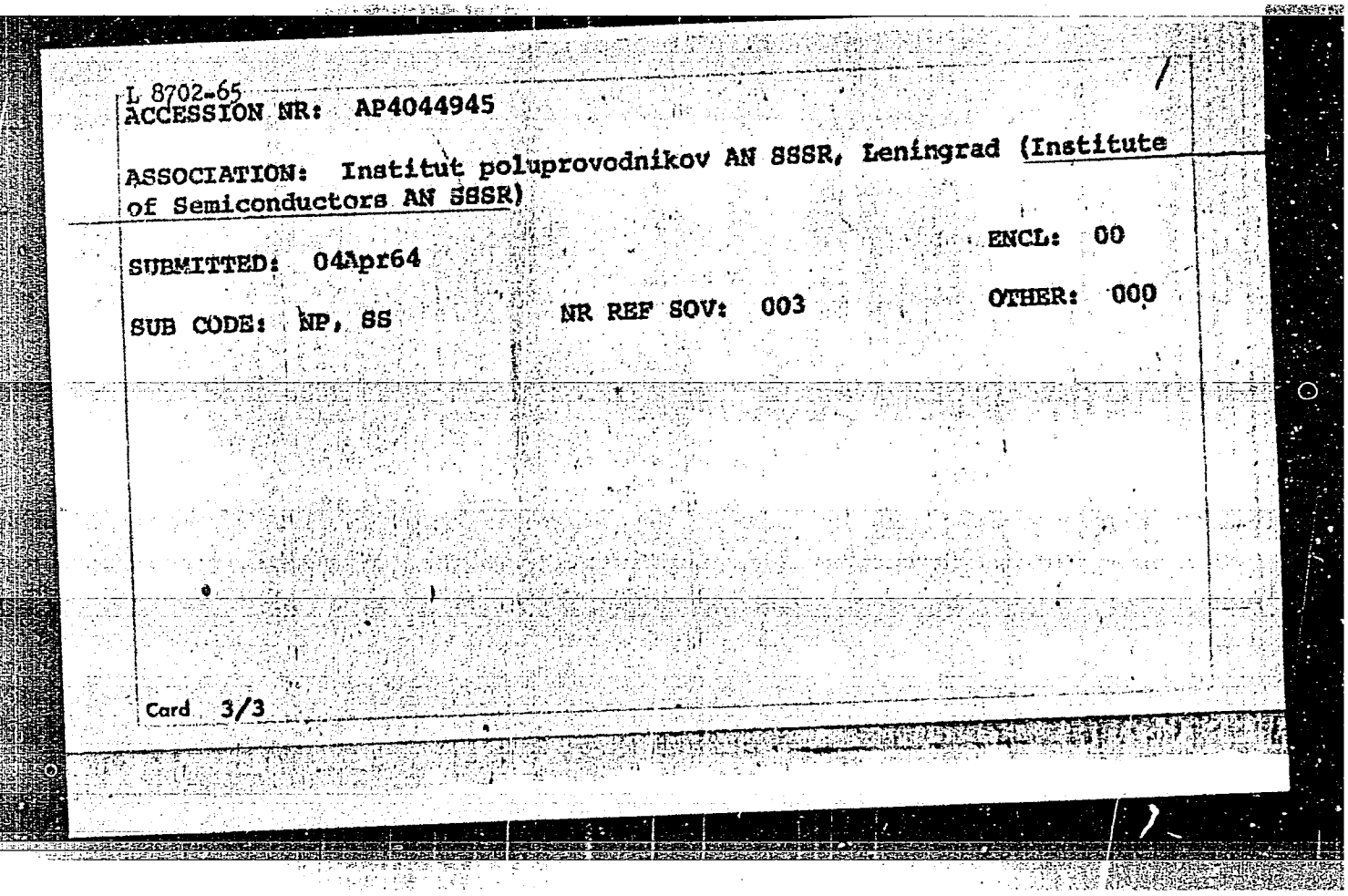
L 8702-65
ACCESSION NR: AP4044945

ing either to attraction or to repulsion. Whereas the character of motion of the electron is made quite clear by examination of head-on collisions, an analysis of more complicated cases calls for a concrete calculation of the scattering cross sections. The momentum transfer depends significantly not only on the type of the scattering potential of the initial state of the electron, but also on the electron dispersion law. In the case of scattering through small angles (large impact parameters) it is easy to obtain an analytic expression for the average momentum transferred by the electrons to the impurity center. In the case of a quantum-mechanical description of the electron motion it is shown in the Born approximation that umklapp processes, connected with the migration of the electron into not too remote reciprocal-lattice cells, can play an important role in all processes due to momentum transfer from the electron to the lattice defects. Orig. art. has: 4 figures and 8 formulas.

Card 2/3



L 8702-65
ACCESSION NR: AP4044945

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors AN SSSR)

SUBMITTED: 04Apr64 ENCL: 00

SUB CODE: NP, SS NR REF SOV: 003 OTHER: 000

Card 3/3

L 12641-65 EWT(m)/EWP(w) EM/DT

ACCESSION NR: AP4044953 S/0181/64/006/009/2780/2790

AUTHORS: Lifshits, I. M.; Shikin, V. B.

TITLE: On the theory of diffusion-viscous flow of polycrystalline bodies

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2780-2790

TOPIC TAGS: viscous flow, diffusive motion, polycrystal, stress relaxation, relaxation time

ABSTRACT: The paper is a continuation of Lifshits's earlier work (ZhETF, v. 44, 1349, 1963) on the same subject. Here the authors deal with a polycrystalline body consisting of grains in the form of infinitely long prisms of square cross section, so that only one grain need be considered. Three problems are tackled; 1) viscous flow under a constant load (two pistons applied to opposite sides of a grain compressing it and two other pistons stretching it with the

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L 12641-65
ACCESSION NR: AP4044953

same force applied to the other two sides); 2) relaxation of stresses for a given initial deformation; 3) Hertz's problem of convex bodies in contact under pressure with allowance for diffusion. The relaxation phenomena in the initial non-steady-state stages of diffusion-viscous flow are discussed and simple relationships are obtained for the relaxation rate. Orig. art. has: 2 figures, and 52 formulas.

ASSOCIATION: Khar'kovskiy gosudarstvenny*y universitet (Khar'kov State University)

SUBMITTED: 13Apr64 ENCL: 00

SUB CODE: SS NR REF SOV: 004 OTHER: 000

Card 2/2

LIFSHITS, I.M.

Structure of the energy spectrum and quantum states of disordered condensed systems. Usp. fiz. nauk 83 no.4: 617-663 Ag '64. (MIRA 17:9)

KAGANOV, M.I.; LIFSHITS, I.M.; FIKS, V.B.

Electron scattering by impurity centers. Fiz. tver. tela 6 no.9: 2723-2728 S '64. (MIRA 17:11)

1. Institut poluprovodnikov AN SSSR, Leningrad.

LIFSHITS, I.M.; SHIKIN, V.B.

Theory of diffusive-viscous flow of polycrystalline bodies.
Fiz. tver. tela 6 no.9:2780-2790 S '64. (MIRA 17:11)

1. Khar'kovskiy gosudarstvennyy universitet.

L 24912-65 EEC(b)-2/EWT(1)/EWT(m)/T/EWA(d) IJP(c)
ACCESSION NR: AP5003414 S/0181/65/007/001/0062/0074

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19
B

AUTHORS: Lifshits, I. M.; Geguzin, Ya. Ye.

TITLE: Surface phenomena in ionic crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 1, 1965, 62-74

TOPIC TAGS: ionic crystal, surface property, vacancy distribution, charge distribution, potential distribution

ABSTRACT: The author analyzes consecutively the distribution of charge and potential near the surface of an ionic crystal. This includes the equilibrium distribution of anion and cation vacancies near the surface, based on a study of the equilibrium concentration of vacancies in an ordered two-component structure. The width of the double electric layer near the surface, resulting from the accumulation of vacancies of a definite sign or of other charged impurities on the surface, is calculated. The stationary distribution

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L 24912-65
ACCESSION NR: AP5003414

of the vacancies in the presence of diffusion currents is considered, when the equilibrium concentrations of the vacancies near the different surfaces are not the same, owing to differences in applied voltages. By way of an example, the distribution is determined of the vacancies near an isolated spherical pore whose surface is under a Laplace pressure. The charge that concentrates around the isolated pore and the conditions for its compensation are calculated. The compensation of charges in an ionic-crystal region containing an ensemble of pores is also discussed. The effect of surface curvature or abrupt discontinuities in the surface is pointed out. Orig. art. has: 2 figures and 46 formulas.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet (Khar'kov State University)

SUBMITTED: 18Jun64 ENCL: 00 SUB CODE: SS

NR REF SOV: 001 OTHER: 002

Card 2/2

LIFSHITS, I. M.

"Excitations and spin waves."

report submitted for Intl Conf on Magnetism, Nottingham, UK, 6-13 Sep 64.

Physico-Technical Inst, Kharkov.

LIFSHITS, I.M.; GEGUZIN, Ya.Ye.

Surface phenomena in ionic crystals. Fiz. tver. tela 7 no.1:62-74 Ja '65. (MIRA 18:3)

1. Khar'kovskiy gosudarstvennyy universitet imeni Gor'kogo.

ARTSIMOVICH, L.A., akademik; KELDYSH, M.V., akademik; KAPITSA, P.L., akademik; VUL, B.M.; VERESHCHAGIN, L.F.; PISTOL'KORS, A.A.; SHCHUKIN, A.N., akademik; SKOBEL'TSYN, D.V., akademik; ALEKSANDROV, A.P., akademik; AMBARTSUMYAN, V.A., akademik; ZEL'DOVICH, Ya.B.; SEMENOV, N.N., akademik; KOTEL'NIKOV, V.A., akademik; LIFSHITS, I.M.; VEKSLER, V.I., akademik; GINZBURG, V.L.; MILLIONSHCHIKOV, M.D., akademik

Some problems in the development of modern physics; discussion of the work of the Department of General and Applied Physics. Vest. AN SSSR 35 no.2:3-46 F '65. (MIRA 18:3)

1. Chleny-korrespondenty AN SSSR (for Vul, Vereshchagin, Pistol'kors, Lifshits, Ginzburg).

L 10264-66 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) JD

ACC NR: AP5028689 SOURCE CODE: UR/0053/65/087/003/0389/0469

AUTHOR: Lifshits, I. M.; Kaganov, M. I.

ORG: none

TITLE: Certain problems in the electronic theory of metals

SOURCE: Uspekhi fizicheskikh nauk, v. 87, no. 3, 1965, 389-469

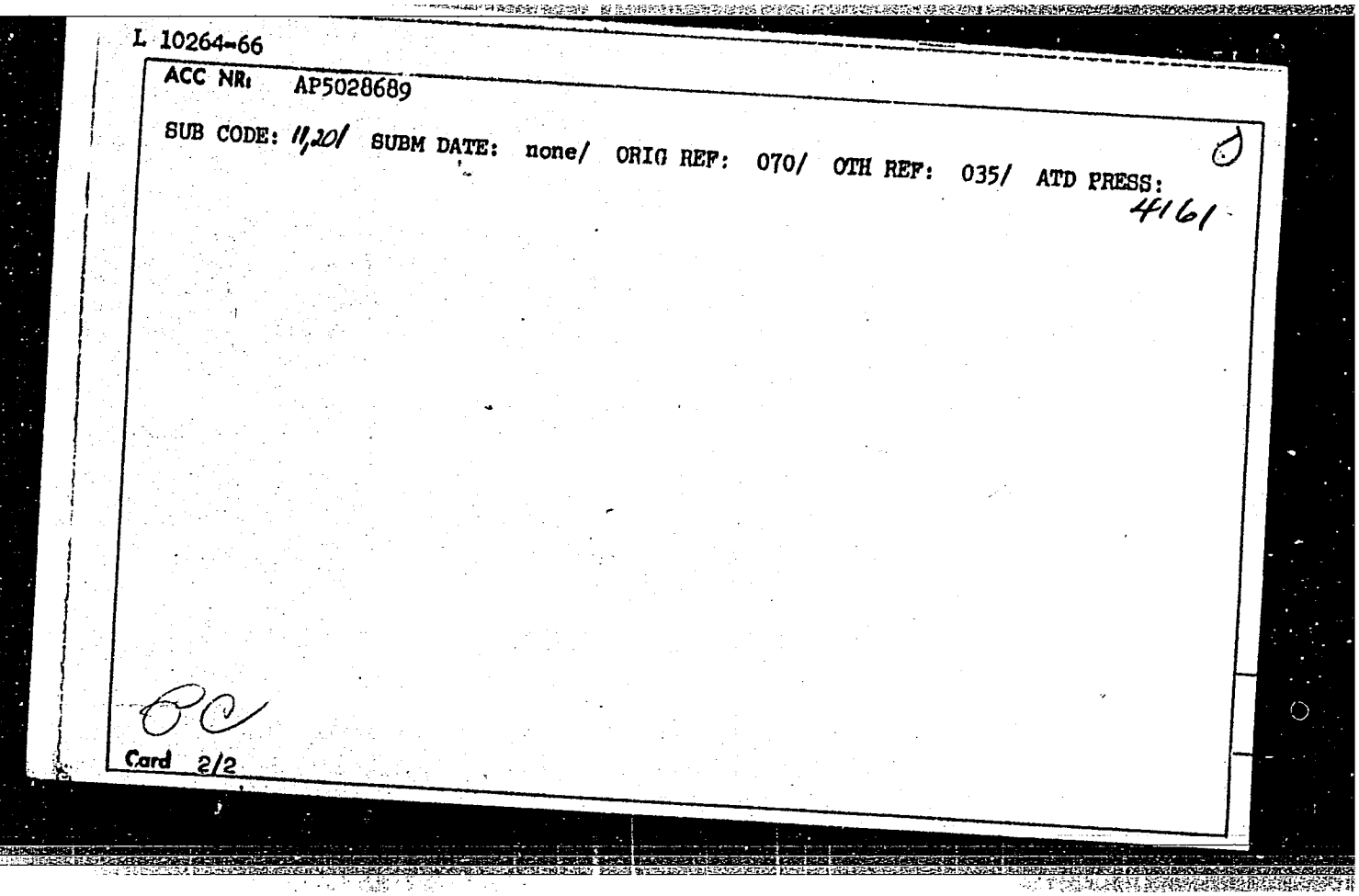
TOPIC TAGS: metal, free electron, Boltzmann equation, Ohms law, electric conductivity, thermal conductivity, galvanomagnetic effect, thermoelectric effect, skin effect, metal property

ABSTRACT: The present paper is the third part of an extensive analysis of certain problems in the electronic theory of metals (the first two installments appeared in Uspekhi fizicheskikh nauk, v. 69, no. 3, 1959, p. 419 and v. 78, no. 3, p. 411). The latest article deals with the kinetic properties of metals primarily at low temperatures. The main emphasis is placed on the properties and effects affected by the dispersion of the conduction electrons, which are analyzed by means of Boltzmann's equation. Since the review is devoted to static and quasi-static properties, the gas approximation is used (the Fermi-liquid interaction does not affect the final formulas). The paper consists of 10 sections dealing with the various aspects of electrical conductivity, thermal conductivity and thermoelectric effects; galvanomagnetic effects, normal and anomalous skin effects, and ultrasound absorption. The bibliography consists of 128 cited sources, about 30% of which are Russian. Orig. art. has: 283 formulas and 30 figures.

[CS]

Card 1/2 UDC: 530.145+537.311.33

Card 2/2



L 10264-66

ACC NR: AP5028689

SUB CODE: 11,20/ SUBM DATE: none/ ORIG REF: 070/ OTH REF: 035/ ATD PRESS: 4161

Card 2/2

LIFSHITS, I. N.

PA 2/49T24

USSR/Engineering
Power Plant, Diesel Electric
Engines, Diesel

Jun 48

"Use of Type-D6 High-Speed Diesel Motor in Municipal Power Plant," Ye. L. Lisanskiy, I. N. Lifshits, MosObElektro, 4½ pp

"Energet Byul" No 6

Recently, type-MAN 200-hp Diesel was installed in a power plant in Moscow Oblast. Installation and tuning required 35 - 40 days, during which a type-D6 Diesel motor was used to supply power to the neighboring community. Describes installation and performance of the D6.
LC

2/49T24

LIFSHITS, I. V.

Coal mines and mining-accounting

Experience in organizing mine accounting. Ugol' 27 No. 9, 1952.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

LIFSHITS, I.Ya.

Special form of suppurative inflammation of the middle ear caused by BCG vaccine in nursing infants. Zhur.ush.,nos.i gorl.bol. 22 no.4:61-64 Jl-Ag '62. (MIRA 16:2)

1. Iz kliniki bolezney ukha, gorla i nosa (zav. - prof. I.I. Potapov) TSentral'nogo instituta usovershenstvovaniya vrachey.
(BCG VACCINATION) (EAR--INFLAMMATION)
(INFANTS--DISEASES)

ROSLAVTSEV, A.V.; URMAKHER, L.S.; LIFSHITS, I.Ye.

Device for infrared biomicroscopy of the eye. Med.prom. 16 no.4:47-48 Ap '62. (MIRA 15:8)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut glaznykh bolezney imeni Gel'mgol'tsa.
(EYE--EXAMINATION) (INFRARED APPARATUS AND APPLIANCES)

L 61193-65

ACCESSION NR: AP5015521 UR/0286/65/000/008/0057/0057

535.8

AUTHOR: Fuks-Rabinovich, S. I.; Lifshits, I. Ye.; Vasil'yev, B. I.; Roslavtsev, A. V.; Urmakher, L. S.; Krol', D. S.

TITLE: Device for investigating fundus oculi in infrared light. Class 42, No. 170182

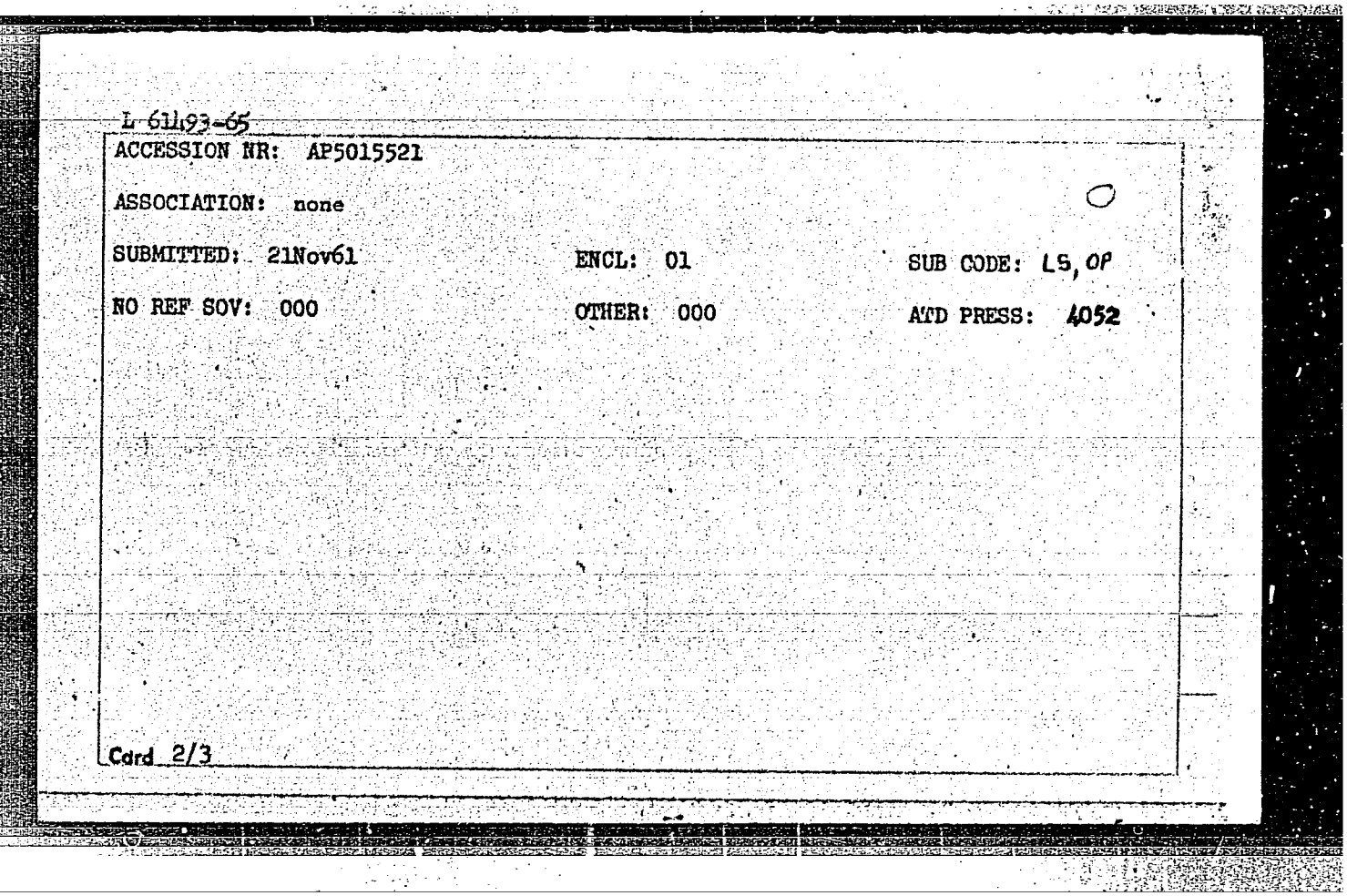
SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 57

TOPIC TAGS: eyeball, fundus oculi, infrared light

ABSTRACT: A device for investigating the fundus oculi in infrared light consists of an illuminating part which contains the light source, a condenser, and a system of prisms or mirrors to alter the path of the light rays (see Fig. 1 of the Enclosure). An opthalmoscopic lens is used to separate the path of the incident light from the path of the reflected light. To investigate the fundus oculi, an infrared filter, which cuts down the visible spectrum to 760 mm, is introduced into the illuminating system. The viewing system contains an electron-optical converter to produce a visible image of the fundus oculi and an eyepiece to observe this image. [TS]

Orig. art. has: 1 figure.

Card 1/3



L 61193-65

ACCESSION NR: AP5015521

ASSOCIATION: none

SUBMITTED: 21Nov61 ENCL: 01 SUB CODE: LS, OP

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4052

Card 2/3

L 61493-65

ACCESSION NR: AP5015521 ENCLOSURE: 01

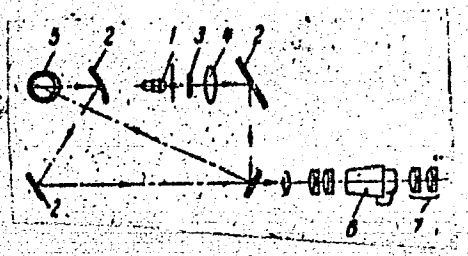


Fig. 1. Device for investigating fundus oculi

1 - Light source; 2 - mirrors; 3 - infrared filter; 4 - condenser; 5 - the eye; 6 - electron-optical converter; 7 - eyepiece.

Card 3/3

BOGATSKIY, V.V., otv. red.; GOR'KIY, Yu.I., red.; DOBROVOL'SKIY, M.N., red.; KOROPETS, I.P., red.; KURTSERAYTE, Sh.D., red.; PEL'TEK, Ye.I., red.; FAYNBERG, F.S., red.; KHAZAGAROV, A.M., red.; SHESTAKOV, Yu.G., red.; LIFSHITS, L., red.

[Geology and geochemistry of the mineral resources of Krasnoyarsk Territory] Geologiia i geokhimiia poleznykh iskopaemykh Krasnoiarskogo kraia; sbornik statei. Krasnoiarsk, Krasnoiarskoe knizhnoe izd-vo, 1964. 197 p. (MIRA 18:9)

1. Krasnoyarskaya kompleksnaya ekspeditsiya.

LIFSHITS, L., inzh.

"No defects," says the automatic machine. IUn.tekh. 7 no.11: 27-31 N '62. (MIRA 15:12)
(Magnetic testing) (Automatic control)

LIFSHITS, L., inzh.

Ray that hardens. Znan.-sila 37 no.11:10-11 N '62. (MIRA 16:1)
(Metals, Effect of radiation on)

LIFSHITS, L., inzh.

Flaming spear. Znan.-sila 38 no.5:15 My '63. (MIRA 16:11)

LIFSHITS, L., inzh.

Electric slag melting for the treatment of steel. Nauka i tekh mladezh 15 no.9:4-6 S'63.

LIFSHITS, L. G., inzh.

Electric current saves ships from deterioration. IUn.tekh. 6 no.3:33-36 Mr '62. (MIRA 15:4)
(Ships--Cathodic protection)

LIFSHITS, L., inzh.

Engineering laws... and their violators. Tekh. mol. 31 no.8:6-8 '63. (MIRA 16:11)

1. Chlen literaturnogo ob"yedineniya zhurnala "Tekhnika molodezhi".

LIFSHITS, L.

Not forged, not turned and not cast. Znan.-sila 38 no.3:8 Mr '63. (MIRA 16:10)

KOPIT, B.S.; MIKHAYLOV, A.V.; CHLENOV, A.F.; IDOV, P.I.; YUKHNOV, I.I.; TSARSKIY, S.V.; BARAUSOV, V.A.; PETROV, A.I.; LIFSHITS, L.Z.; ABATUROV, K.I.; SOKOL'SKAYA, Zh.M.; MEZHEVICH, V.N.; DAVYDOV, L.I.; VLASIKHIN, A.V.; CHEKALOV, L.N.; STARICHKOV, T.I.; KHUBLAROV, A.Ye., red.; PITERMAN, Ye.L., red.izd-va; PARAKHINA, N.L., tekhn.red.

[Our beacons; collection of articles on progressive workers in lumber, paper, woodworking industries and forestry] Nashi maiaki; sbornik ocherkov o peredovykh liudiakh lesnoi, bumazhnoi i derevo-obrabatyvaiushchei promyshlennosti i lesnogo khoziaistva. Moskva, Goslesbumizdat, 1961. 125 p. (MIRA 15:2)
(Forests and forestry) (Wood-using industries)

LIFSHITS, IZRAIL' YAKOVLEVICH

GINZBURG, Lev Natanovich, professor, doktor tekhnicheskikh nauk; SAL'MAN, Semen Il'ich, kandidat tekhnicheskikh nauk; TARASOV, Sergey Vladimirovich, kandidat tekhnicheskikh nauk; LAZAREVA, Sof'ya Yefremovna, kandidat tekhnicheskikh nauk; FRIDMAN, Boris Nikolayevich, kandidat tekhnicheskikh nauk; LIFSHITS, Izrail' Yakovlevich, inzhener; SOBOLEV, G.A., retsenzent; SOKOLOVA, V.Ye., redaktor; MEDVEDEV, L.Ya., tekhnicheskiy redaktor

[Handbook on flax spinning] Spravochnik po priadeniiu l'na. Pod red. L.N.Ginzburga. Moskva, Gos.nauchno-tekhn.izd-vo M-va legkoi promyshl. SSSR, 1957. 667 p. (MLRA 10:8)

1. Moscow, TSentral'nyy nauchno-issledovatel'skiy institut promyshlennosti lubyanykh volokon.
(Linen) (Spinning)

LIFSHITS, L.

KIRENSKIY, Leonid Vasil'yevich, doktor fiziko-matematicheskikh nauk; DROKIN, Aleksandr Ivanovich, kandidat fiziko-matematicheskikh nauk; LIFSHITS, L., redaktor; KOKOULINA, A., tekhnicheskiy redaktor.

[Atomic energy and its utilization]Atomnaia energiia i ee primenenie. [Krasnoiarsk] Krasnoiarskoe knizhnoe izd-vo 1955. 46 p. [Microfilm] (MLRA 10:5)

(Atomic power)

ROZHANSKIY, V.I., otv. red.; LIFSHITS, L., red.; GIL'DEBRANT, Ye., tekhn. red.

[Problems in the biophysics, biochemistry, and pathology of erythrocytes] Voprosy biofiziki, biokhimii i patologii eritrotsitov. Krasnoiarsk, 1960. 505 p. (MIRA 15:3)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut fiziki, laboratoriya biofiziki.

(ERYTHROCYTES)

LIFSHITS, L.

Our special correspondent makes a report from the rocket launching site. Tekh. mol. 31 no.3:29 '63. (MIRA 16:6)

(Rockets--Models)

ROMADAN, P.F., EL'KINSON, P.Z.; LIVSHITS, L.A., nauchnyy redaktor; GLADYSHEVA, S.A., redaktor; GLADKIKH, N.N., tekhnicheskiy redaktor.

[Work practices of the Kuybyshev ceramic materials factory] Opyt raboty Kuibyshevskogo zavoda stritel'noi keramiki. Moskva, Gos.izd-vo lit-ry po stroit.materialam, 1956. 36 p. (MLRA 10:4)
(Kuybyshev--Ceramic industries)

5(1)

AUTHOR: Lifshits, L. A., Engineer

SOV/67-58-6-10/22

TITLE: Experience in Oxygen Production in Czechoslovakia (Iz opyta kislorodnogo proizvodstva v Chekhoslovakii)

PERIODICAL: Kislorod, 1958, Nr 6, pp 33 - 35 (USSR)

ABSTRACT: The topics dealt with are 1) an annular rectifier plate, the construction of which is described. It has been worked out by the Khemoproyekt (Chemoprojekt) at Ostrava. It consists mainly of an internal funnel-shaped container with a hydraulic seal and a number of concentric rings soldered at its upper rim. Between the individual rings there are annular chambers with apertures, through which vapor passes through a liquid layer which moves from the periphery towards the center. The separability of these plates may be seen from the working data of the nitrogen plant of the Ostrau Nitrogen Factory. Nitrogen of a purity degree of 99.99% N_2 is obtained at a rate of 1600 m^3 per hour, and oxygen of a purity degree of 97% O_2 at a rate of 450 m^3 per hour. The argon fraction derived consists of 10-14% Ar, 3% N_2 and 80 - 85% O_2.

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2) Steel for regenerators. This is Martin steel of the IZETT trade-mark (steel 11368). Its secondary components are 0.10% C, 0.50% Mn, 0.20% Cr and 0.30% Ni+Cr. Its mechanical properties are: Breaking point under stress lies at 35 ÷ 45 kg/mm^2. Linear expansion 25.5+21%, shock absorption 9 ÷ 12 kgm/cm^2. The investigations were carried out in Prague at the Institute for Materials and Technology.
3) Determination of small quantities of oxygen in gases. The method worked out by the Dr. Jiří Hrubý (Ostrava Nitrogen Factory) is based on the adsorption of oxygen by $CrCl_2$ in acid medium. A scheme of the plant is given. Measuring accuracy is ± 0.0001%. There are 3 figures.

15(2)
AUTHOR: Lifshits, L. A. SOV/12-59-8-9/17

TITLE: Furnace Economy of the Plants for Sanitary Ceramics (Obzhigovoye khozyaystvo zavodov sanitarnoy keramiki)

PERIODICAL: Steklo i keramika, 1959, Nr 8, pp 22-27 (USSR)

ABSTRACT: The furnace installations of the plants for sanitary ceramics are characterized by a great variety, as can be seen from table 1. Of a total production of 2,370,000 large items in 1958, 47% were produced in periodic furnaces. Furthermore the basic differences in tunnel furnace designs and operation to be found in the different plants are stressed. The different production figures of tunnel furnaces are given in table 2. The increasing use of burning without saggers both in continuous and periodic furnaces resulted in an improvement of the production volume. Furnace lorries are protected by plates from contact of the products with the fuel oil waste gases, as can be seen from the paper by V. I. Dobuzhinskiy, R. M. Zayonts and N. N. Nizhegorodov (Footnote 1). At the Slavyansk plant burning without saggers is carried out by means of furnace lorries shown in the figure, in which case 60% of the tunnel height is wasted. Regardless of the drawbacks in connection with the transition

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to burning without saggers, specific output and gross production have been increased by 20-25% and the specific fuel consumption has decreased accordingly. B. N. Ol'shevskiy, I. M. Leybman, V. A. Dudinov, N. V. Arapov (Footnote 2) reported on the introduction of burning without saggers at the Leningrad plant of sanitary ceramics. The system according to which products are piled in the furnace niches was described by A. S. Menyaylenko (Footnote 5). The production volume of periodic furnaces has also been increased by burning without saggers, as is shown by table 3. As far as the quality is concerned, however, the picture is less favorable. Hardly 50% of the production are first class, while first class products amount to more than 60% in foreign countries. GOST 5400-50 requirements are high but are not met. Conclusions: The production branch of sanitary ceramics, which has been in existence for 10-15 years, has not yet at its disposal a furnace entirely suited to burning without saggers since so far the main objective of development work has been the intensification of burning. The tunnel furnaces now in use do not live up to the quality requirements. The planning organizations continue to insist on the use of tunnel flame furnaces and

Furnace Economy of the Plants for Sanitary Ceramics SOV/72-59-8-9/11

reject the use of muffle furnaces as they are common in foreign countries. In the east of the country it is rendered possible by the abundance of inexpensive electricity to build tunnel furnaces heated electrically. 20 new tunnel furnaces will have to be built to meet the 7-Year Plan requirements. The State Planning Offices of the USSR and the Union Republics, the Nauchno-tekhnicheskiy komitet pri Sovete Ministrov SSSR (Scientific -technical Committee of the Council of Ministers USSR) are to examine the question of the most economical type of furnace and are to initiate concrete measures. There are 1 figure, 5 tables, and 5 Soviet references.

Card 3/3

15 (2)

AUTHOR: Lifshits, L. A.

SOV/72-59-9-7/16

TITLE: The Quality of the Fluxing Material Processing Must Be Improved

PERIODICAL: Steklo i keramika, 1959, Nr 9, pp 30 - 31 (USSR)

ABSTRACT: A group of collaborators of the PKB NIIStroykeramika checked the factories of sanitary ceramics in 1958. It was established on this occasion that feldspar and pegmatite delivered by the contractors, the Chupa (Karel'skaya oblast'), and the Yeliseyevskoye (UkrSSR) quarry administrations is unsorted and contaminated by inclusions of iron oxides, in violation of the Standards GOST 7030-54. This deteriorates the quality of the products, and approximately 20 to 22% of the production are second and third choice. The starting of centralized dressing plants in the Murmansk and Krasnoyarsk sovnarkhozes, based on the Chupinskoye and Barginskoye deposits, has been expected for many years, but at neither will their production meet all requirements, also they are situated at a distance of some thousands of kilometers from some already existing and newly built works. The dressing of the fluxing materials at the individual works must, therefore, be improved as quickly as possible. The preliminary annealing of the fluxing materials up to a temper-

Card 1/2

ature of 700° must be reintroduced, in order to facilitate their crushing. Besides, the works must be provided with conical ball mills and electromagnetic separators. This makes it possible to improve the quality of the products and to use local raw materials. There is 1 Soviet reference.

15(2)
AUTHOR: Lifshits, L. A.

SOV/72-59-11-14/18

TITLE: Ceramic Pastes in the USA
According to Material of "DKG", 1958, Nr 3, pp 78-82

PERIODICAL: Steklo i keramika, 1959, Nr 11, pp 44-46 (USSR)

ABSTRACT: In the present paper, which is based upon material from "DKG", 1958, Nr 3, pp 78-82, the problem of ceramic raw materials and their treatment in the USA is dealt with in detail, and explained by means of 8 tables. There are 8 tables.

Card 1/1

LIFSHITS, L.

Steel without cast iron. IUn.tekh. 4 no.7:16-17 Jl '60.
(MIRA 13:9)

(Steel--Metallurgy)

LIFSHITS, L.

Blast furnace produces cast iron and...cement. IUn.tekh. 5 no.9: 32 S '60. (MIRA 13:10)

(Slag cement)

LIFSHITS, L., inzh.

Substituting for asphalt and concrete. IUn.tekh. 6 no.9:46 S '61. (MIRA 14:10)
(Road machinery) (Soil mechanics)

S/056/62/043/004/020/061
B102/B180

AUTHORS: Lifshits, L. D., Genshaft, Yu. S., Markov, V. K.

TITLE: The cerium constitution diagram in the range from 20 to 350°C under pressure up to $80 \cdot 10^3$ kg/cm^2

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 4(10), 1962, 1262 - 1267

TEXT: Aim of the present investigations was direct observation of the $\gamma \rightleftarrows \alpha$ phase transitions predicted by Ye. S. Itskevich (ZhETF, 42, 1173, 1962) at high pressures and temperatures. Cubic face-centered cerium samples 0.5·0.5 mm^2 were used, with initial resistivity of 0.1 - 0.4 ohms. For the measurements up to $30 \cdot 40^3$ kg/cm^2 the device described in FMM, 9, 726, 1960 was used; at higher pressures the sample was heated directly by the measuring current. The phase transition was determined from the jump in resistivity. Its pressure dependence varied greatly at different temperatures and at rising and falling pressures. The height of the jump fell from 32-40% at room temperature to 10% at 200°C and 5-7% at 200-350°C. The

The cerium constitution diagram

S/056/62/043/004/020/061
B102/B180

γ-α phase boundary deviates from p-T linearity at above 200°C (Fig. 4). The time dependence of the relative variation of resistivity, $\Delta R/R$, is nonlinear above 180°C, making extrapolations impossible, beyond this region. The results do not confirm the existence of a critical point below 350°C, they only show the existence of a minimum in the R(p) diagram above $50 \cdot 10^3$ and of a maximum above $70 \cdot 10^3$ kg/cm^2. There are 5 figures.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: May 22, 1962

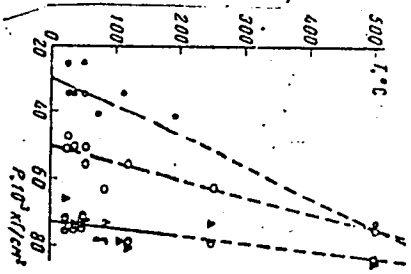

Fig. 5. Diagram of position of resistivity maximum (▲,●) and minimum(○,●); ●,○: pressure is raised; ▲,● : pressure is reduced.

Card 2/2

S/734/61/000/000/003/003
I060/I260

AUTHORS: Lifshits, L.I. and Boguslavskaya, B.I.

TITLE: Use of gas analyzer of infrared absorption for analysis of acetylene and its derivatives

SOURCE: Leningrad. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka. Fiziko-khimicheskiye metody analiza i issledovaniya produktov proizvodstva sinteticheskogo kauchuka. Leningrad, 1961. 101-112

TEXT: The purpose of this work was to develop a method of continuous automatic analysis of reactor and return gases in synthetic rubber industry. Return gas which is a bi-component mixture, can be analyzed without any difficulty by infrared spectrophotometry in an analytical chamber 300 mm long. Experiments of analysis by infrared spectrophotometry of reactor gases have shown that no differential determination is possible of vinylacetylene in acetylene in the presence of divinylacetylene by the integral method of absorption of energy of infrared radiation. It is possible, however, in some

Card 1/3

Use of gas analyzer,...

cases to analyze reactor gases for summary conversion. This can be done by chosing a correct length of the analytic chamber. It has been proved that by replacing certain amounts of vinylacetylene by divinylacetylene, provided that the concentration of vinylacetylene in the analyzed gas is lower than 10%, the results remain constant, i.e. a summary determination of concentration of both components is possible. The paper deals with analysis of discharge gases by infrared spectrophotometry. This method produces satisfactory results for mixtures acetylene-nitrogen, so that losses of hydrocarbons in discharge gases can be determined with sufficient precision. The authors conclude that:
1. Gas analyzers for infrared absorption, designed for continuous automatic control of gas mixtures containing acetylene and its derivatives, produce satisfactory results in industrial conditions.
2. Discharge gases can be analyzed for acetylene content and for small impurities of divinylacetylene by means of a gas analyzer of infrared absorption model ГИП -4 (GIP-4).

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S/734/61/000/000/003/003
I060/I260

Use of gas analyzer...

3. By using the above described instruments it is possible to apply automatic control of processes in plants manufacturing synthetic rubber on the basis of acetylene.
There are 6 figures and 4 tables.

Card 3/3

L 20959-66 EWT(l)/EWT(m)/EWP(j)/T/EWA(h)/ETC(m)-6 WW/RM

ACCESSION NR: AP5021567 UR/0286/65/000/013/0036/0036
621.97.04

AUTHORS: Pronin, I. S.; Monakov, V. A.; Koryagina, T. I.; Lifshits, L. I.; Ostryakov, I. A.; Shutova, N. M.

TITLE: Method of producing absorbing sheets for superhigh frequency attenuators. Class 21, No. 172382

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1965, 36

TOPIC TAGS: SHF, SHF attenuator, attenuator component

ABSTRACT: This Author Certificate introduces a method of producing absorbing sheets for superhigh frequency attenuators, based on the compression of conducting compositions. To increase the mechanical strength of the screens, to increase the stability of their parameters, and to simplify the production technology, a mixture (in parts by weight) of 75-85 of powdered polypropylene, 15-25 of emulsified polystyrol, and 30-40 of acetylized carbon black is used as the conducting composition. The sheets are reinforced in the process of compression by one or several layers of glass cloth. [04]

ASSOCIATION: none

SUBMITTED: 24Sep63 ENCL: 00 SUB CODE: EC

NO REF SOV: 000 OTHER: 000 ATD Press: 4084

Card 1/1

ACC NR: AR6028418 SOURCE CODE: UR/0196/66/000/005/B003/B003

AUTHOR: Ostryakov, I. A.; Lifshits, L. I.; Knyazeva, V. P.; Bykov, A. S.; Fribolin, G.G.

TITLE: Controlling the temperature coefficient of resistance (TCR) of conducting polymer materials

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 5B13

REF SOURCE: Nauchno-issled. tr. Vses. n.-i. in-t plenok i iskusstv. kozhi. sb. 16, 1965, 135-148

TOPIC TAGS: semiconductor polymer, rubber, polymer, plastic base polymer, filler

ABSTRACT: Specimens of rubber-base polymers with a conducting filler and with embedded contacts were heated in a thermostat or by passing a current up to a maximum temperature determined by the polymer characteristics. After the first cycle of heating and cooling, the initial electric resistivity abruptly fell off. After 3--4 cycles, the electrical properties became stabilized. The effect of mollifiers on the TCR of polymers was investigated. Ten parts by weight of mollifier were added to 100 parts of the polymer. The TCR was negative when dibutyl phthalate and vaseline were added; it was positive when rubrax was added. The amount of rosin (as a mollifier) should not exceed 15-17 parts by weight per 100 parts of the polymer; otherwise, the physico-mechanical and electrical properties of polymer are impaired. The tested polymer rubber-base compositions have a TCR near zero within 40--100C.

Card 1/2

UDC:621.315.5

ACC NR: AR6028418

Their electrical properties can be stabilized by a preheating whose duration depends on the type of rubber used. Also, the properties of conducting polymer plastic-base compositions were investigated. These compositions do not require additional thermal treatment. The above tests showed that the TCR considerably depends on the regularity of molecular structure of the source polymer. The TCR can be controlled by adding mollifiers and by proprotioning polymer compositions. Ten figures. Bibliography of 10 titles. V. Brezinskiy [Translation of abstract]

SUB CODE: 09, 11

Card 2/2

LIFSHITS, LAZAR' IZRAILEVICH

LIFSHITS, Lazar' Izrailevich, inzh.; UDAL'TSOV, A.N., glavnyy red.; SHTEYNBOK, G.Yu., inzh.red.

[Using an infrared absorbing gas analyzer in the synthetic rubber industry] Primenenie gazoanalizatora infrakrasnogo pogloshcheniia v promyshlennosti sinteticheskogo kauchuka. Moskva, In-t tekhniko-ekon.inform., 1956. 9 p. (Pribory i stendy. Tema 4, no.P-56-503) (MIRA 11:2)
(Rubber industry)
(Infrared rays--Industrial applications)
(Gases)

LIFSHITS, Lazar' Izrailevich; MIKHAYLOV, I.G., red.; FREGER, D.P., red. izd-va; GVIRTS, V.L., tekhn. red.

[Hydrodynamic vibrator with a contilever support used for obtaining emulsions] Gidrodinamicheskii vibrator s konsol'nym krepleniem i ego primenenie dlia polucheniia emul'sii. Leningrad, 1961. 19 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Elektricheskie metody obrabotki materialov, no.3)
(MIRA 15:5)

(Vibrators) (Emulsions)

ACCESSION NR: AP4015258 S/0106/64/000/002/0041/0046

AUTHOR: Kushch, V. N.; Lifshits, L. M.; Morkin, K. F.

TITLE: Temperature stabilization of crystal-driver frequency

SOURCE: Elektrosvyaz', no. 2, 1964, 41-46

TOPIC TAGS: frequency temperature stabilization, crystal driver, crystal oscillator, crystal driver frequency, crystal driver frequency stabilization, peripheral radio communication, radio communication

ABSTRACT: The requirements of drivers used in single-band peripheral radio communication operating without a pilot signal are considered. For ranges over 30-60 km, frequencies up to 10 mc (sometimes up to 20 mc) have been used, requiring a frequency stability of better than $\pm (2.5\text{-}4) \times 10^{-6}$. A brief survey of the thermostatic-control theory with special attention to heater-type thermostats is submitted. A special diphenyl-filled thermostat (see Enclosure 1) was

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ACCESSION NR: AP4015258

designed in which partially melted expanding diphenyl, in a sylphon, breaks the contacts of the heater circuit, thereby stopping further melting. After the latent heat of fusion has been spent in heating the ambient medium, the diphenyl charge solidifies, contracts, and closes the contacts again. It is claimed that a temperature variation of $\pm$ 0.2 or $\pm$ 0.3C was observed inside the thermostat when the outside temperature varied within -50+50C. The above thermostat used in a 1Zh24B-tube 50-8,500-kc oscillator reportedly ensured a frequency stability of within $(0.3\text{-}0.6) \times 10^{-4}$. Orig. art. has: 4 figures, 3 formulas, and 2 tables.

ASSOCIATION: none

SUBMITTED: 26Jun63	DATE ACQ: 12Mar64	ENCL: 01
SUB CODE: CO, GE	NO REF SOV: 004	OTHER: 000

Card 2/2

LIPOTROPHY

"Therapeutic Effect of Oatmeal in Acute Parenchymatous Hepatitis (Botkin's Disease)," by L.S. Lifshits, 12th City Hospital (Head Physician - A.I. Kirichenko), Khar'kov, Voprosy Pitaniya, No 3, May-June 1957, pp 21-23

This article deals with the clinical observation and laboratory investigations concerning the comparative value of curds, glucose and oatmeal in the treatment of patients with acute parenchymatous hepatitis. A number of hospitalized patients (54) were given, during a period of 12-14 days, daily portions of 400 g. of gruel made of 100 g. of oatmeal, boiled in 300 ml. of water with the addition of 100 g. of milk, 10 g. of butter and 10 g. of sugar.

To a control group of 20 other patients there was administered intravenously 20 cc. of a 40% glucose solution daily which, as previous examinations have shown, produced the same effect as curds. The therapeutic results in patients treated with oatmeal were better than those treated only with glucose. Comparative data of the study are presented in 3 tables.

According to S.M. Leytes, curds, wheat, rice and oats have lipotrophic properties, but their highest value is found in oatmeal. Leytes showed that the quantitative correlation of amino acids (Methionine, tyrosine, valine, and phenilalanine) in oatmeal, closely approximates that of casein. The inclusion of oatmeal in the diet of animals affects the metabolism and completely prevents the deposit of liver fat in experimental hepatitis.

LIFSHITS, L.S., dotsent; GREDITOR, Ye.M.

Case of systemic vasculitis. Vrach.delo no.6:633-635 Je '60.
(MIRA 13:6)

1. 12-ya gorodskaya bol'nitsa Khar'kova.
(BLOOD VESSELS--DISEASES)

SUKHOVOL'SKIY, A.Ya., inzh.; LIFSHITS, L.S., inzh.; RASSINSKIY, I.V., inzh.

Preparing prestressed reinforced concrete beams for roofs of industrial buildings. Transp. stroi. 14 no.7:20-23 Jl '64.
(MIRA 18:1)

LIFSHITS, L. S., Engr

USSR/Electricity- Transmission Lines Hydroelectric Power Stations Nov 50

"Super-Long-Distance Power Lines," M. Yakovlev

"Nauka i Zhizn'" No 11, pp 42, 43

The 1st operating model of the Kuybyshev hydroelec power station, consisting of 2 turbines, 2 generators, and a long-distance transmission line (represented by coils and capacitors), has been built at the Hydroelec Power Eng Lab, (director - Prof T. L. Zolotarev, Dr Tech Sci) of the Moscow Power Eng Inst. The work was directed by V. A. Venikov, Cand Tech Sci, and A. V. Ivanov-Smolenskiy, Cand Tech Sci, and Engineers L. S. Lifshits and O. I. Zeegofer participated. The 2d model, when completed, will be connected into the Moscow Power System in order to study the operating conditions of the Kuybyshev station more thoroughly.

PA 221T39

LIFSHITS, L.S.

124-57-2-1926 D

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 2, p 64 (USSR)

AUTHOR: Lifshits, L.S.

TITLE Problems of the Simulation of Hydraulic Turbines in Dynamic Models of Power Systems (Voprosy modelirovaniya gidroturbin v dinamicheskikh modelyakh energeticheskikh sistem)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Candidate of Technical Sciences, presented to the Mosk. energ. in-t (Moscow Power Institute), Moscow, 1956.

ASSOCIATION: Mosk. energ. in-t (Moscow Power Institute), Moscow

1. Turbines--Simulation 2. Power plant models

Card 1/1

LIFSHITS, L. S.

112-1-397, D

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 1, p. 64 (USSR)

AUTHOR: Lifshits, L. S.

TITLE: Problems of Modeling Water Wheels in Dynamic Models of Power Systems (Voprosy modelirovaniya gidroturbin v dinamicheskikh modelyakh energeticheskikh sistem)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Candidate of Technical Sciences presented to the Moscow Power Engineering Institute, (Mosk. energ. in-t) Moscow, 1956.

ASSOCIATION: Moscow Power Engineering Institute (Mosk. energ. in-t, Moscow)

Card 1/1

SOV/112-57-9-18584

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 9, p 68 (USSR)

AUTHOR: Lifshits, L. S.

TITLE: Simulating the Prime Movers of High-Power Hydroelectric Stations in Studying the Electrical Part of a Power System (Modelirovaniye pervichnykh dvigateley moshchnykh gidroenergeticheskikh stantsiy pri izuchenii elektricheskoy chasti energeticheskikh sistem)

PERIODICAL: Tr. Mosk. energ. in-ta, 1956, Nr 19, pp 30-41

ABSTRACT: Accurate simulating of hydromechanical processes is difficult because it necessitates a geometrical similitude for the hydromechanical part of the model to fully duplicate physical phenomena found in nature. For that reason, an accurate model is possible only for a definite type of the turbine. In studying electrical systems, however, no accurate simulation of hydraulic parts is required; it is sufficient, with a unity time scale, to have similar torque characteristics and equal time constants; for that reason, high-power hydroturbines can be simulated by small turbines or by a special electric drive. In

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Simulating the Prime Movers of High-Power Hydroelectric Stations in Studying . . . .

most cases, it is sufficient to have a similarity within that part of the turbine characteristic which is relevant to electrical transients. Turbine torque characteristics for specified initial conditions can be constructed on the basis of universal characteristics of the model water wheels. In the case of a Kaplan turbine, universal torque characteristics should be graphed for each set of runner conditions. A summary of parameters of model runners is presented that gives torque-characteristic ranges for principal types of runners built by (Soviet) industry. The summary helps to select the model runner type most closely simulating the processes in the original. The above methods and graphs help to approach correctly the problem of simulating the hydro part in the projects of physical simulation of electrical systems.

Yu.M.G.

LIFSHITS, L.S.

Adjustment of dynamic models during the study of the performance of hydroelectric power stations in large power systems. Nauch.dokl. vys.shkoly; energ. no.4:207-214 '58. (MIRA 12:5)

1. Rekomendovana kafedroy gidroenergetiki Moskovskogo energeticheskogo instituta.
(Hydroelectric power stations--Models)

ZOLOTAREV, T.L.; LIFSHITS, L.S.; RUDNEV, A.K.; TARASENKO, Yu.M.

Increasing the dynamic stability of electric power systems. (MIRA 11:7)
Inzh.-fiz. zhur. no. 6:77-84 Je '58.

1. Energeticheskiy institut, Moskva.
(Electric power plants)