LEVIN, A.M.; SMIRNOV, V.A.; CHERKASOVA, A.Ya.; KUVSHINOVA, V.I.

Using electronic computers for calculating multicircular urban gas systems. Gaz. prom. 6 no.11:33-34 '61. (MIRA 15:1)
(Gas distribution) (Electronic calculating machines)

SMIRNOV, V.A., kand. tekhn. nauk; ADSKAYA, I.N., inzh.; BAGRAMYAN, L.A., inzh.; CHERKASOVA, A.Ya., inzh.

Optimum distribution of differential pressure in l-p annular systems. Ispol'. gaza v nar. khoz. no.2:133-138 '63. (MIRA 18:9)

1. Laboratoriya tekhniko-ekonomicheskikh izyskaniy Saratovskogo gosudarstvennogo nauchno-issledovatel'skogo i proyektnogo instituta po ispol'zovaniyu gaza v narodnom khozyaystve.

CHERKASOVA, G.I.

Plants associated with the chalk outcrops of the European part of the U.S.S.R. in the Botanical Garden of the Moscow University. Vest. Mosk. un. Ser. 6: Biol., pochv. 15 no. 5:28-41 S-O '60. (MIRA 13:12)

1. Botanicheskiy sad Moskovskogo universiteta.
(Moscow--Calciphiles)

KHADZHAY, Ya.I.; CHARMASOVA, I.N.

Biological evaluation of substances dilating the coronary vessels. Farm. i toks. 25 no.5:573-578 S-O '62 (MIRA 18:1)

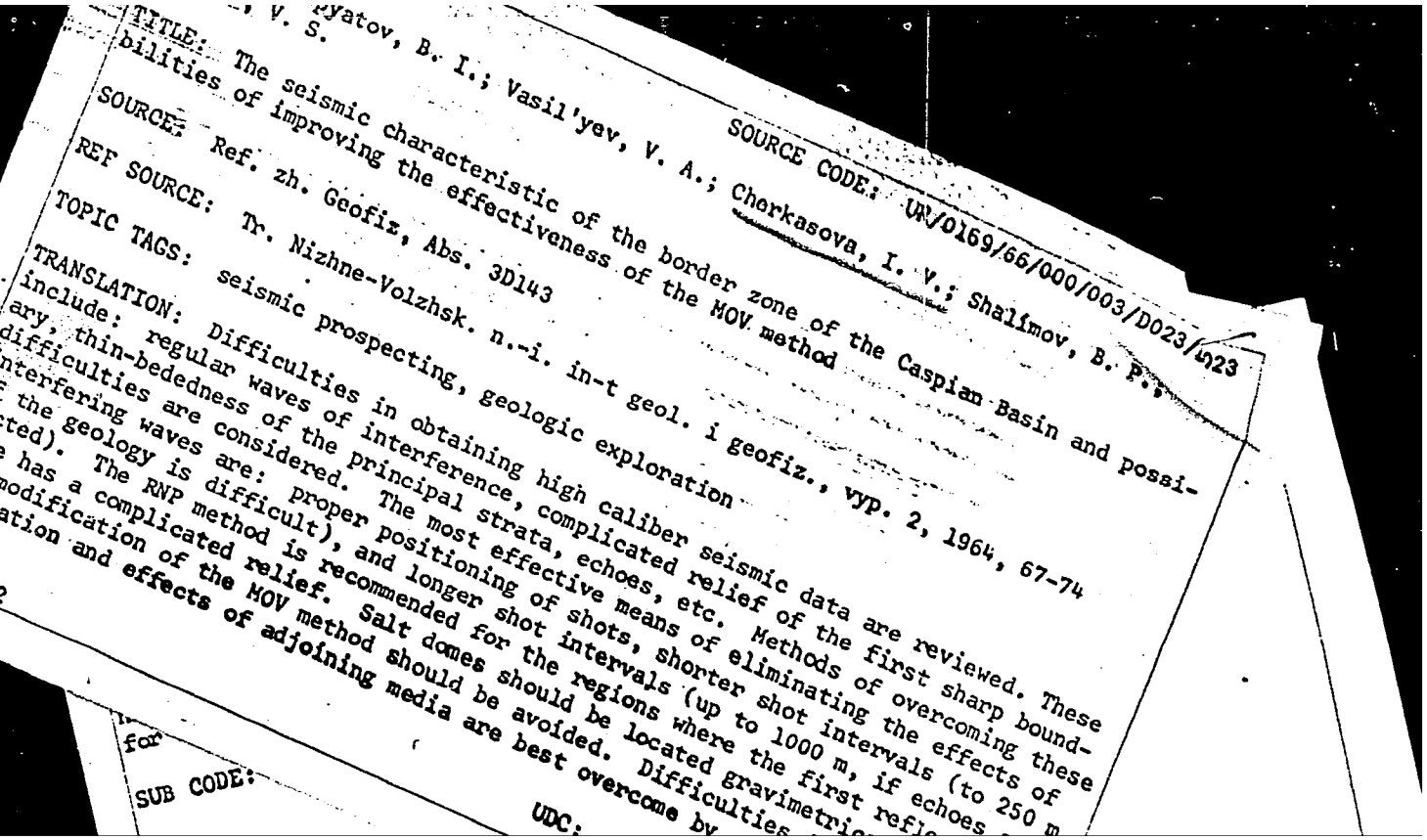
1. Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut.

CHERKASOVA, I.S.

EXCERPTA MEDICA Sec.12 Vol.10/12 Ophthalmology Dec 56

1887. TCHERKASSOVA I.S. Filatov's Ukrainian Exp. Inst. of Eye Dis., Odessa, USSR. *The tissue therapy of traumatic iridocyclitis in children (Russian text) PROC. FILATOV UKRAINIAN EXP. INST. EYE DIS. 1955, 3 (95-98)

The majority of the children sought medical advice on the 4th-6th day after the eye injury. All of them showed distinct signs of iridocyclitis. In nearly 50% of the patients lesions of the lens were noticed, which, as is known, aggravate considerably the course of the injury process. Haemorrhages in the anterior chamber were found in 22.5%, and in the vitreous body in 12.5%. Patients with exudate and dimness of the vitreous body were seen in 30% of the total. In 32.5% a prolapse of the iris was seen. In 20% of the injured eyes intra-ocular foreign bodies were discovered; the overwhelming majority of these were not attracted by a magnet. The acuity of vision was considerably diminished in all the patients when admitted. The tissue treatment was commenced on the 1st day of admission and was carried on until clinical cure was achieved. The majority of the patients had treatment with aloe extract injections. Each patient received, besides the injections, treatment with implantations (2-3) of preserved, autoclaved hetero- or homotissue. As the result of the treatment the inflammatory lesions were arrested in only 17.5% of the patients, which necessitated the enucleation of the eye. In the rest of the patients, notwithstanding the gravity of the lesion process, a therapeutic effect was obtained both as regards the preservation of the eye and regarding the improvement or restoration of the visual functions. Bibliography - 6 titles. Tcherkassova - Odessa



...yatov, B. I.; Vasil'yev, V. A.; Cherkasova, I. V.; Shalimov, B. P.; V. S.

SOURCE CODE: UR/0169/66/000/003/D023/D023

TITLE: The seismic characteristic of the border zone of the Caspian Basin and possibilities of improving the effectiveness of the MOV method

SOURCE: Ref. zh. Geofiz, Abs. 3D143

REF SOURCE: Tr. Nizhne-Volzhsk. n.-i. in-t geol. i geofiz., vyp. 2, 1964, 67-74

TOPIC TAGS: seismic prospecting, geologic exploration

TRANSLATION: Difficulties in obtaining high caliber seismic data are reviewed. These include: regular waves of interference, complicated relief of the first sharp boundary, thin-bededness of the principal strata, echoes, etc. Methods of overcoming these difficulties are considered. The most effective means of eliminating the effects of interfering waves are: proper positioning of shots, shorter shot intervals (up to 1000 m, if echoes the geology is difficult), and longer shot intervals (to 250 m ted). The RNP method is recommended for the regions where the first refle has a complicated relief. Salt domes should be avoided. Difficulties modification of the MOV method should be located gravimetri ation and effects of adjoining media are best overcome by

for

SUB CODE:

UDC:

ALIYEVA, F.Z.; VASIL'YEVA, N.S.; [illegible], [illegible]; [illegible], A.A.

Study of semiconductor thermistors. Nov. nauch.-issl. rab. po metr. VNIIM no.3:12-14 '64 (MIRA 18:2)

S/207/61/000/006/022/025
A001/A101

24.4300

AUTHOR: Cherkasova, K. P. (Khar'kov)

TITLE: On the problem of splitting of non-evolutional shock waves

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 6, 1961, 169-171

TEXT: The purpose of the present investigation was to prove the following statement: an evolutional shock wave cannot split, whereas a non-evolutional shock wave splits always, at an arbitrary direction of the magnetic field and arbitrary amplitude of the shock wave, if the Alfvén velocity is considerably less than velocity of sound. The author derives equation for the amplitudes of seven magnetohydrodynamical quantities (v_x, v_y, v_z, H_y, H_z, ρ, p) starting from the condition that the sum of jumps of each of these quantities must be equal to the initial jump. The analysis of the equations leads to the following conclusions: the evolutional shock wave does not split in any approximation; the non-evolutional shock wave splits, which results in all possible discontinuities with exception of the Alfvén discontinuity oriented into direction opposite to the motion of the initial wave. The formulae are derived in the first non-

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S/207/61/000/006/022/025
A001/A101

vanishing approximation, for the jumps of density (amplitude) in all waves formed as a result of splitting. The following Soviet-bloc personalities are mentioned: A. I. Akhiyezer, R. V. Polovin and G. Ya. Lyubarskiy. The author thanks the first two of them for advices and discussions. There are 5 references, 4 of which are Soviet-bloc.

SUBMITTED: June 30, 1960

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S/056/61/041/001/018/021
B102/B231

AUTHORS: Polovin, R. V., Cherkasova, K. P.

TITLE: Disintegration of non-evolutional shock waves

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 1(7), 1961, 263 - 266

TEXT: Subject of the present work is a mathematical study of the disintegration of a magnetohydrodynamical shock wave with a small density discontinuity. For the existence of a magnetohydrodynamical shock wave it is not sufficient that the boundary conditions at the discontinuity surface are satisfied and that entropy increases; the so-called conditions of evolution (the number of divergent waves must be equal to the number of independent boundary conditions at the discontinuity surface) must be satisfied as well. Otherwise the problem of small perturbations of the shock wave has no solution, which means that the initial shock wave disintegrates. The theorem stating that the region of non-evolutionality coincides with those regions within which a primary shock wave might disintegrate, has hitherto been verified for one particular case only

(shock-wave velocity is close to the Alfvèn velocity; $\vec{H}$ encloses a small angle on both sides of the shock wave with the perpendicular to the discontinuity surface). The present work furnishes proof for another particular case: that of a shock wave with a small jump of density. The case of this wave being non-evolutional has already been investigated by J. Bazer and W. B. Ericson (Ref. 3: Astrophys. J., 129, 758, 1959; Phys. Fluids, 3, 631, 1960). Here, use is made of a result obtained by G. Ya. Lyubarskiy and R. V. Polovin (Ref. 4: ZhETF, 35, 1291, 1958) who found the amplitudes of such waves as originate in the process of disintegration of the small discontinuity to be given by

$$\Delta_x^{(\varepsilon)}\rho = \pm\frac{1}{2R}\left\{\varepsilon\frac{U_y^2 c^2\left[\Delta\rho - (\partial\rho/\partial s)_p\,\Delta s\right]}{U_\pm^2 - U^2} - \varepsilon\frac{\Delta H_y^2}{8\pi} + \frac{\rho U_x^2}{U_\pm}\left[\frac{H_y\Delta v_y}{H_x} + \frac{U_y^2\Delta v_x}{U_\pm^2 - U_x^2}\right]\right\}. \quad (1)$$

Здесь

$$U \equiv H/\sqrt{4\pi\rho}, \qquad U_\pm = \left[(U^2 + c^2 \pm R)/2\right]^{1/2}, \qquad R = \left[(U^2 + c^2)^2 - 4c^2U_x^2\right]^{1/2};$$

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$\Delta\rho$, Δs, Δv, and ΔH_y denote the jumps of density, entropy, velocity and transverse magnetic field, respectively; c is the velocity of sound; $\pm$ indicates fast and slow magnetoacoustic waves. For waves propagating in the positive x-direction relative to the medium, ε is equal to +1, whereas for waves propagating in opposite direction $\varepsilon = -1$. x is perpendicular to the discontinuity. The shock wave corresponds to $\Delta_{\pm}^{(\varepsilon)}\rho > 0$, and the progressing wave to $\Delta_{\pm}^{(\varepsilon)}\rho < 0$. The jumps of the magnetohydrodynamic quantities are interrelated by

$$\Delta v_x/\Delta\rho = \varepsilon U_{\pm}/\rho, \quad \Delta v_y/\Delta\rho = -\varepsilon H_x H_y U_{\pm}/4\pi\rho^2(U_{\pm}^2 - U_x^2),$$
$$\Delta H_y/\Delta\rho = U_{\pm}' H_y/\rho(U_{\pm}' - U_x^2), \quad \Delta p/\Delta\rho = c^2. \qquad (2).$$

Considering the concrete case $\varepsilon = -1$, the following is obtained: $\Delta_{\pm}^{(-)}\rho = \Delta_{\pm}\rho$, $\Delta_{\pm}^{(-)}\rho = \Delta_{\pm}^{(+)}\rho = \Delta_{\mp}^{(+)}\rho = 0$. This means that it is impossible for a weak evolutional shock wave to disintegrate. In the following, the

case of a non-evolutional shock wave exhibiting a small $\Delta\rho$ is examined. The jumps of the magnetohydrodynamic quantities are in this case interrelated by

$$\Delta v_x = -U_{1x}\rho_1^{-1}\Delta\rho, \qquad \Delta p = \left[a_1^2 + (\gamma-1)U_{1y}^2\right]\Delta\rho,$$
$$\Delta H_y = -2H_{1y}\left[1 + \frac{U_{1x}^2 - c_1^2 - (\gamma-1)U_{1y}^2}{2U_{1y}^2}\frac{\Delta\rho}{\rho_1}\right],$$
$$\Delta v_y = -2U_{1y}\left[1 + \frac{U_{1x}^2 - c_1^2 - \left(\gamma-\frac{1}{2}\right)U_{1y}^2}{2U_{1y}^2}\frac{\Delta\rho}{\rho_1}\right]. \qquad (3).$$

The index 1 indicates that the region in front of the shock wave is concerned. This primary shock wave may disintegrate into seven waves: three of them propagating to the right, three to the left (fast magnetoacoustic wave, Alfvèn discontinuity, slow magnetoacoustic wave), and the discontinuity establishing contact between them, resting relative to the medium. For the Alfvèn discontinuities one finds

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Disintegration of non-evolutional ...

$\Delta_A^{(\varepsilon)}H_y = H_{1y}(\eta_\varepsilon - 1)$; $\Delta_A^{(\varepsilon)}v_y = \varepsilon u_{1y}(1 - \eta_\varepsilon)$. The jumps of the other quantities are equal to zero. The amplitudes of the magnetoacoustic waves and of the contact discontinuity are given by

$$\Delta_k\rho = -(\gamma-1)c_1^{-2}U_{1y}^2\Delta\rho, \qquad \Delta_+^+\rho = \left[\frac{U_{1x}^2+U_{1-}^2}{2(U_{1x}^2-U_{1-}^2)} + \frac{U_1^2-c_1^2-\gamma U_{1y}^2}{U_{1y}^2} - b_+\left(\frac{U_{1x}U_{1+}}{U_{1x}^2-U_{1-}^2} + \frac{U_{1+}^2+U_{1x}^2-U_{1+}U_{1x}}{U_{1-}^2-U_{1x}^2}\right)\right]\frac{\Delta\rho}{a}$$

$$\Delta_+^-\rho = \left[\frac{U_{1x}^2+U_{1-}^2}{2(U_{1x}^2-U_{1-}^2)} + \frac{U_1^2-c_1^2-\gamma U_{1y}^2}{U_{1y}^2} + \frac{U_{1+}Rb_+}{U_{1x}U_{1y}^2}\right]\frac{\Delta\rho}{a}, \qquad (5).$$

$$\Delta_-^{(\varepsilon)}\rho = \left[\frac{U_{1+}^2}{2(U_{1+}-U_{1x})} - \frac{U_{1x}^2}{2(U_{1+}+U_{1x})} - \frac{U_{1+}(U_1^2-c_1^2-\gamma U_{1y}^2)}{U_{1y}^2} + \frac{1}{2}\frac{U_{1+}-U_{1x}}{U_{1+}+U_{1x}}U_{1+}b_+\right]\frac{\Delta\rho}{U_{1-}a} - \frac{eb_-}{2}\Delta\rho,$$

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Disintegration of non-evolutional ...

$$R = \sqrt{(U_1^2 + c_1^2)^2 - 4c_1^2 U_{1x}^2},$$

$$\alpha = (U_{1+}^2 + U_{1x}^2)/(U_{1+}^2 - U_{1x}^2) + 2U_{1x}U_{1+}/(U_{1x}^2 - U_{1-}^2),$$

$$b_\pm = \pm \frac{U_{1y}^2}{R}\left[\frac{U_1^2 - c_1^2 - \gamma U_{1y}^2}{U_{1y}^2} - \frac{c_1^2 + (\gamma - 1)U_{1y}^2}{U_{1\mp}^2 - U_1^2}\right].$$

The authors thank A. I. Akhiyezer for discussions. There are 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: February 17, 1961

Card 6/6

11717
S/207/62/000/005/006/012
B125/B102

24.2120
26.1410

AUTHOR: Cherkasova, K. P. (Khar'kov)

TITLE: Magnetohydrodynamic evolution flows

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1962, 144-145

TEXT: Limitations to the possible types of continuous magnetohydrodynamic flows by the evolution conditions are studied. The change in the area S of the channel cross section is assumed to be the only external effect. The set of equations of a quasi-linear magnetohydrodynamic flow in a channel with infinite conductivity is

$$(u^2-u_-^2)(u^2-u_+^2)\frac{d\ln u}{dx}=\frac{d\ln S}{dx}(u^2c^2-V_x^2c^2+V_xV_yuv),\quad \frac{d\ln H_x}{dx}=-\frac{d\ln S}{dx}$$

$$(u^2-u_-^2)(u^2-u_+^2)\frac{d\ln\rho}{dx}=-\frac{d\ln S}{dx}(u^4-u^2V^2+V_xV_yuv) \qquad (2).$$

$$(u^2-u_-^2)(u^2-u_+^2)\frac{d\ln H_y}{dx}=-\frac{d\ln S}{dx}\left[u^2c^2+\frac{uvV_x}{V_y}(u^2-c^2)\right]$$

$$(u^2-u_-^2)(u^2-u_+^2)\frac{d\ln v}{dx}=-\frac{d\ln S}{dx}\left[V_x^2(u^2-c^2)+\frac{uc^2V_xV_y}{v}\right]$$

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Magnetohydrodynamic evolution ...

The flow parameters are averaged over the cross section (perpendicular to the axis). The velocity and the magnetic field may have arbitrary orientation. The x-axis has the direction of the channel axis, u and v are the velocity components along the axes x and y, $V = H/\sqrt{4\pi\varrho}$ is the Alfvén velocity, the propagation rates $u_{\pm}$ of the fast or slow magneto-acoustic waves are the critical velocities. When the quantities $M_x = u/V_x$ and $N = v/V_x$ are introduced the system of equations

$$\begin{aligned}(M_-^2-1)(M_+^2-1)\frac{d\ln M_{\pm}}{dx} &= \frac{d\ln S}{dx}F_{\pm}(M_+, M_-, M_x, N)\\ (M_-^2-1)(M_+^2-1)\frac{d\ln M_x}{dx} &= \frac{d\ln S}{dx}G(M_+, M_-, M_x, N)\\ (M_-^2-1)(M_+^2-1)\frac{d\ln N}{dx} &= \frac{d\ln S}{dx}E(M_+, M_-, M_x, N)\end{aligned} \qquad (3)$$

follows for the values $M_{\pm}$, M_x, N. The Mach number $M = M_-M_+/M_x$ as well as $F_{\pm}$, G, E and M_y^2 are rather complex functions. The $M_{\pm}$ are singular points of the equations (3) at which either $dS/dx = 0$ or $F_{\pm} = 0$. The flow for

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which $M_+ = 1$ or $M_- = 1$ is an evolution flow on condition that $dM_{\pm}/dx > 0$ for $M_{\pm} = 1$. A. I. Akhiyezer and R. V. Polovin are thanked for discussions. Reference to C. L. Longmire, Plasma Accelerators, The Use of Plasma for Propulsion of Interplanetary Rockets, Stanford University Press, 1961.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR (Physicotechnical Institute AS UkrSSR)

SUBMITTED: March 10, 1962

Card 3/3

ACCESSION NR: AT4036056 S/2781/63/000/003/0179/0183

AUTHORS: Polovin, R. V.; Cherkasova, K. P.

TITLE: Thermodynamic characteristics in a plasma

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3, Kiev, Izd-vo AN UkrSSR. 1963, 179-183

TOPIC TAGS: thermodynamic characteristic, entropy, plasma heating, thermal conductivity, Maxwell equation, equation of state, charged particle, plasma physics

ABSTRACT: The behavior of a plasma consisting of several species of charged and neutral particles is described by means of the hydrodynamic equations of motion of each of the components to which are add-

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ACCESSION NR: AT4036056

ed the continuity equation, Maxwell's equations, and the energy balance equation. Neglecting kinetic effects, the authors derive on the basis of the second law of thermodynamics the change in entropy of each component, the internal change in the entropy per unit volume of the plasma, and the quantity of heat released per unit volume and per unit time. The expression for the quantity of heat includes the heat flux carried together with the particle, the heat released because of thermal conductivity, the heating collisions, and the thermoelectric effects. "The authors are grateful to A. I. Akhiyezer and L. I. Sedov for valuable advice and discussions." Orig. art. has: 22 formulas.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 21May64 ENCL: 00

SUB CODE: ME, TD NR REF SOV: 002 OTHER: 005

Card 2/2

L 43915-66 EWI(1) IJP(c) AT/GD
ACC NR: AT6020402 (N) SOURCE CODE: UR/0000/65/000/000/0061/0068

AUTHOR: Cherkasova, K. P.; Khizhnyak, N. A.

ORG: none

58
B+1

TITLE: Coefficients of mutual inductance of coaxial spheroidal plasmoids

SOURCE: AN UkrSSR. Issledovaniye plazmennykh sgustkov (Study of plasma clusters). Kiev, Naukova dumka, 1965, 61-68

TOPIC TAGS: plasmoid, plasma magnetic field, plasma interaction, electric inductance

ABSTRACT: The method of flexible current loop for the analysis of interaction between plasmoids and specified magnetic fields, developed by the author earlier (in: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza, v. 4, Naukova dumka, Kiev, 1965) is extended in this paper to describe the interaction between extended plasmoids with external magnetic fields. The extended plasmoid is represented in the form of a chain of coaxial cylindrical plasmoids which interact with one another. The individual links of the chain are chosen sufficiently small to be able to neglect the variation of the external magnetic field. The problem consists essentially of writing out the equation for the electric equilibrium for each of the individual plasmoids and determining the coefficients of mutual inductance and their behavior as functions of the plasmoid dimensions and the distances between their centers, since these coefficients are contained in the equation for the electric equilibrium. It is assumed in the determination of the inductance coefficients that only elec-

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tronic currents are excited in the plasmoid. The mutual inductance coefficient is first obtained for two spherical plasmoids, followed by calculation for oblate and prolate spheroids. The effect of certain approximations on the calculations are briefly discussed. Orig. art. has: 18 formulas.

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 003/ OTH REF: 001

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APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308420010-3"

L 9419-66 EWT(1)/EWP(m)/EWA(d)/FCS(k)/EWA(h)/EWA(c) IJP(c) WW

ACC NR: AP5026935 SOURCE CODE: UR/0373/65/000/005/0146/0148

AUTHOR: Cherkasova, K. P. (Khar'kov)

ORG: none

TITLE: On the separation of a nonevolutionary shock wave

SOURCE: AN SSSR. Izvestiya. Mekhanika, no. 5, 1965, 146-148

TOPIC TAGS: shock mechanics, shock reflection, shock front, shock wave analysis

ABSTRACT: The author studies the phenomenon of the separation of a nonevolutionary shock wave in a magnetic field. Reference is made to an earlier article by K. Dolder and R. Hide (Experiments on the Passage of a Shock Wave through a Magnetic Field, Rev. Mod. Phys., 1960, vol. 32, No. 4) wherein the separation problem was not given full consideration. It is shown that if the magnetic field is slightly inclined with respect to the direction of propagation of the shock wave, then an actual split of the wave occurs. The region of evolution of a parallel shock wave is represented in Figures 1 and 2. Figure 1 gives the case where $U_{1x} < c_1$ and the parallel shock wave is always evolutionary. In Figure 2, $U_{1x} > C_1$ and the line $U_{2x}(v_{1x})$ and the vertical line $v_{1x} = U_{1x}$ separate the nonevolutionary sector 3 at the line $v_{2x}(v_{1x})$. Axis x is along the direction of wave propagation, c is the speed of sound, $U = H / \sqrt{4\pi\rho}$.

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6

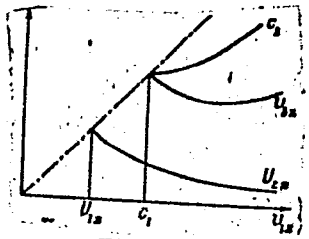

Fig. 1.

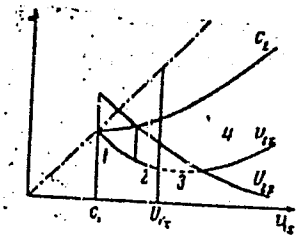

Fig. 2.

where H is the magnetic field vector, ρ is the density of the medium, and v is the velocity of propagation. The subscript 1 refers to values ahead of the shock wave and 2 -- behind the wave. Some means of generating nonevolutionary shock waves are discussed and are described with respect to critical values of Mach number corresponding to conditions of separation of one wave into two evolutionary shock waves. The separation of the wave into waves which move at different speeds is caused by an inclined magnetic field (inclined with respect to the normal to the shock surface). The separation of the wave is modeled mathematically, and the ensuing formula may be used to define the direction of the magnetic field in the region between the waves. The author thanks A. I. Akhiyezer and R. V. Polovin for their valuable advice and discussions. Orig. art. has: 5 equations and 2 figures.

44,55 44,55

SUB CODE: 20/ SUBM DATE: 06Feb64/ ORIG REF: 004

L 34478-66 EWT(1)/EWP(m)/T-2 IJP(c)

ACC NR: AP6014161 SOURCE CODE: UR/0053/66/088/004/0593/0617

AUTHOR: Polovin, R. V.; Cherkasova, K. P.

ORG: Physicotechnical Institute, AN UkrSSR, Khar'kov (Fiziko-tekhnicheskiy institut AN UkrSSR)

TITLE: Magnetohydrodynamic waves

SOURCE: Uspekhi fizicheskikh nauk, v. 88, no. 4, 1966, 593-617

TOPIC TAGS: magnetohydrodynamics, mhd flow, mhd instability, mhd shock wave, plasma wave, detonation wave, oblique shock wave, shock induced combustion

ABSTRACT: This is a review article reporting on the latest results of research on magnetohydrodynamic waves in homogeneous media with special attention to stability of the magnetohydrodynamic currents and its relation to the evolutionality conditions. Only qualitative results and simple formulas are presented, reference being made to the original sources for more complicated formulas and derivations. Detailed descriptions are presented of the seven possible magnetohydrodynamic waves that can exist in a stationary homogeneous medium (two fast magnetosonic waves, two slow magnetosonic waves, two Alfven waves, entropy wave) together with their appropriate group and phase polars and their characteristic equations; the possible flows that can exist in such a medium (slow, pre-Alfven, super-Alfven, and fast); the changes of the longitudinal and transverse velocities, density, pressure, and magnetic field in the different waves; the effects of ionization, detonation, combustion, shock, and

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ACC NR: AP6014161

rarefaction waves; and splitting of various waves and possible combustion and detonation modes. The subject headings are: Introduction. 1. Linear waves. 2. Characteristics. 3. Transonic flow. 4. Self-similar plane waves. 5. Discontinuities. 6. Conditions for evolutionality of discontinuities. 7. Exothermal and endothermal discontinuities. 8. Sequence of occurrence of waves. 9. Decay of discontinuity. 10. Self-similar stationary waves. 11. Oblique shock waves. Orig. art. has: 9 figures and 48 formulas.

SUB CODE: 20/ SUBM DATE: 00 ORIG REF: 074/ OTH REF: 077

Card 2/2

CHERKASOVA, L.A.; BAL'YAN, Kh.V.; PETROV, A.A.

Reactions of unsaturated compounds with allyl halides. Part 2: Telomerization of olefins with piperylene hydrobromide. Zhur. ob. khim. 34 no.9:2917-2925 S '64.

Reactions of unsaturated compounds with allyl halides Part 3: Addition of piperylene hydrobromide to styrene and phenylacetylene. Ibid.:2926-2930

(MIRA 17:11)

1.Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

CHERKASOVA, L.A.

Particular aspects of the development of chemical industry monopolies in present-day England. Vest.Mosk.un. 12 no.2:35-43 '57. (MLRA 10:7)
(Great Britain--Chemical industries)
(Great Britain--Monopolies)

SPIRIDONOVA, N.S., otv. red.; SUVOROVA, M.I., red.; CHERKASOVA, L.A., red.; OZIRA, V.Yu., red.; LAZAREVA, L.V., tekhn. red.

[Lecture course in the economics of presocialist formations] Kurs lektsii po politicheskoi ekonomii; dosotsialisticheskie formatsii. Moskva, Izd-vo Mosk. univ., 1963. 655 p. (MIRA 16:4)

1. Moscow. Universitet. Kafedra politekonomiki yestestvennykh fakul'tetov.
(Economics)

CHERKASOVA, L. A.; BAL'YAN, Kh.V.; ZUBRITSKIY, L. M.

Reactions of unsaturated compounds with halides of the allyl type. Part 1: Telomerization of piperylene and isoprene hydrobromides with diene hydrocarbons. Zhur. ob. Khim. 34 no.6:1917-1925 Je '64. (MIRA 17:7)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

ORLOVA, G.A. [Orlova, H.A.]; CHERKASOVA, L.I.; SHESTERIKOVA, O.I.; SERGEYEVA, M.M.; TARASOVA, M.Kh.; KARUNSKIY, V.G. [Karuns'kyi, V.H.]; MISHINA, Z.D.; LEBEDEVA, T.V.; ROZDYALOVSKIY, B.V. [Rozdialovs'kyi, B.V.]; DYMSHITS, L.S.; ZAYTSEV, A.B., glavnyy red.; SERGEYEV, N., otv. za vypusk; SERGEYEV, M.F., red.; BERGER, F., tekhn.red.

[Economy of Volyn' Province; a statistical manual] Narodne hospodarstvo Volyns'koi oblasti; statystychnyi zbirnyk. L'viv, Derzhstatvydav, 1958. 211 p. (MIRA 12:12)

1. Volyn' (Province) Statystychne upravlinnia. 2. Statisticheskoye upravleniye Volynskoy oblasti (for all, except Sergeyev, N., Sergeyev, M.F.) 3. Nachal'nik Statisticheskogo upravleniya Volynskoy oblasti (for Zaytsev).
(Volyn' Province--Statistics)

CHERKASOV, L.M.

2465. OPERATION OF A PYRIDINE PLANT. Cherkasov, L.M., Yaroslavskaya, T.A., and Gordt, M.S. (Koks i Khim. (Coke & Chem., Moscow), 1956, 1956, (8), 40-44; abstr. in Chem. Abstr., 1957, vol. 51, 6122). In the standard procedure, mother liquors from the ammonia saturator are neutralised with ammonia to hydrolyze the pyridine sulphate they contain. Vapours of pyridine, ammonia, and steam pass to the dephlegmator, condenser, and separator, while the bottom liquors containing the cyanides, both simple and complex, are routed to a separate plant. Substitution of a reflux column for the dephlegmator in a new design improves the quality of the products and raises the steam economy.

1. Nizhne-tagil'skiy Koksokhimicheskiy zavod.
(Coke industry - equipment and supplies)
(Pyridine)

SOV/68-59-6-12/25

AUTHORS: Pozdeyeva A.G., Cherkasov N.Kh., Grigorova G.I., Cherkasova L.M. and Yaroslavskaya T.A.

TITLE: The Preparation of Balances of Pyridine Bases on Coking Works Using a Polarographic Method of Analysis (Sostavleniye balansa piridinovykh osnovaniy na koksokhimicheskikh zavodakh s pomoshch'yu polyarograficheskogo metoda analiza)

PERIODICAL: Koks i Khimiya, 1959, Nr 6, pp 49-51 (USSR)

ABSTRACT: The application of differential polarographic method for the determination of pyridine bases in spent mother liquor, ammonium sulphate and raw pyridine bases, is described. As a background a 0.1 m aqueous solution of calcium chloride and as a standard an aqueous solution of pyridine bases isolated from raw pyridine bases through sulphates were used. A similar method of determining pyridine bases in the raw and debenzolised gas, ammonia and mother liquor was previously described (A.G. Pozdeyeva, Bulletin of Scientific-Technical Information, VUKhIN, 1956, Nr 1, p 68). Using the above methods a balance of pyridine bases on the N.-Tagil' Coking Works was carried out (given in the

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The Preparation of Balances of Pyridine Bases on Coking Works Using a Polarographic Method of Analysis

table). It is considered that after some additional testing the method may be used for the control of production.
There is 1 table.

ASSOCIATION: N.-Tagil'skiy metallurgicheskiy kombinat (N.-Tagil' Metallurgical Combine) (Cherkasov, Chernosova Grigoreva and Yaroslavskaya); and VUKhIN (Pozdeyeva).

S/068/60/000/007/001/001
E071/E233

AUTHORS: Privalov, V.Ye., Potashnikov, M.M., Cherkasova, L.M., and Cherkasov, N.Kh.

TITLE: Production of "Distilled Naphthalene" for the Manufacture of Phthalic Anhydride.

PERIODICAL: Koks i Khimiya, 1960, No. 7, pp. 50-56 (U.S.S.R.)

TEXT: The development of a new method of producing naphthalene suitable for the manufacture of phthalic anhydride is described. It is pointed out that the naphthalene for the above purpose could contain those compounds which do not interfere with the production of anhydride (methylnaphthalenes, thionaphthene) and free from organic non-volatile residues, ash and unsaturated compounds. Of the latter, unsaturated compounds are particularly harmful as their polymerisation products cause choking of air-naphthalene mixture pipe-lines in the anhydride plant. A study of the content of unsaturated compounds and non-volatile organic residue in naphthalene raw and finished products, summarised in Table 1, indicated that even in crystalline naphthalene the

Card 1/5

S/068/60/000/007/001/001
E071/E233

Production of "Distilled Naphthalene" for the Manufacture of Phthalic Anhydride

content of unsaturated compounds amounted to 0.33-0.45%. A study of the distribution of unsaturated compounds in the process of pressing naphthalene (Table 2) indicated that the main part of unsaturated compounds is transferred into the filtrate. The transformation of unsaturated compounds in various naphthalene products into non-volatile residue was investigated by retaining various naphthalene products in laboratory at 20°C over a period of one month and determining periodically the content of naphthalene, unsaturated and organic non-volatile residue (Table 3). The results obtained indicate a slow transfer of unsaturated compounds into resins. The process will be obviously much faster under oxidising conditions and elevated temperatures prevailing in the air-naphthalene pipe lines of an anhydride plant. The authors proposed to produce "distilled naphthalene" by redistilling washed naphthalene fraction. The washing process consists of treatment with 20% sodium hydroxide, 25% sulphuric acid and 93-94% concentrated acid with subsequent neutralisation with a 20%

Card 2/5

Production of "Distilled Naphthalene" for the Manufacture of Phthalic Anhydride

sodium hydroxide. In this way the main part of phenols is extracted, nitriles saponified and unsaturated compounds are polymerised. On subsequent redistillation the organic non-volatile residue including the products of polymerisation and mineral admixtures are left in still residues and the distillate will consist mainly of naphthalene and methylnaphthalenes. The method was tested on laboratory and industrial scales. The results of laboratory experiments are shown in table 4 and of industrial production in tables 5 and 6. The washing scheme in the industrial production was as follows: purification of dephenolised and depyridinised fraction from unsaturated was done with 93.5% sulphuric acid: mixing of the fraction with acid - 1 hour (stirring by bubbling air) settling 30 minutes, washing with hot water - 30 minutes. The results obtained indicated that with about 5% (by weight) of concentrated acid the main content of unsaturated compounds was removed. The wash losses amounted to 3-4% and included not only losses due to sulphonation of naphthal-

S/068/60/000/007/001/001
E071/E233

Production of "Distilled Naphthalene" for the Manufacture of Phthalic Anhydride

ene but also due to the removal of residual phenols, bases and partially unsaturated compounds. The yield of "distilled naphthalene" depends on the design of the still, i.e., on the amount left in the still. In laboratory experiments it amounted to 95.3% and in industrial - to 93.5% of the washed fraction. Nevertheless the overall yield of naphthalene in respect of its content in the washed naphthalene fraction amounted to 100% (6.6% of methylnaphthalenes). The production of phthalic anhydride from "distilled naphthalene" was tested on laboratory and industrial scales with satisfactory results. A comparison of industrial results of manufacture of phthalic anhydride from crystalline and "distilled" naphthalene is given in table 7. The yield of phthalic anhydride calculated on pure naphthalene was somewhat higher (about 0.8%) from "distilled" naphthalene due to the presence of methylnaphthalenes. It is considered that the proposed technology of treatment of naphthalene fraction is simpler than the existing methods and permits a maximum possible utilisation of

S/068/60/000/007/001/001
E071/E233

Production of "Distilled Naphthalene" for the Manufacture of Phthalic Anhydride

naphthalene raw materials. There are 7 tables and 5 references, all Soviet .

ASSOCIATION: N.-Tagil'skiy metallurgicheskiy kombinat (N.-Tagil' Metallurgical Combine)

Card 5/5

S/068/63/000/001/002/004
E071/E136

AUTHORS: Cherkasova, L.M., and Gorin, L.K.

TITLE: Purification of benzole from thiophene by the formaldehyde method

PERIODICAL: Koks i khimiya, no.1, 1963, 44-46

TEXT: Laboratory experiments on the removal of thiophene by washing of benzole with formalin and sulphuric acid were carried out. Under laboratory conditions optimum results were obtained by the following washing procedure: acid wash (about 1%), separation of spent acid, addition of 0.1 wt.% formalin, stirring, addition of 19.2% of 94.5% sulphuric acid, stirring for 5 min, addition of 0.7% of formalin. Under these conditions, the acid tar produced could be easily separated and the acid regenerated. The method was tested under works conditions using benzole containing 0.0064% of CS_2 and 0.057% of thiophene. The washed product was free from thiophene and contained less than 0.0001 of carbon disulphide. The yield of rectified product was 90.6%. It is concluded that the method is suitable for the production of

Purification of benzole from ...

sulphur free benzene. The consumption of reagents under works conditions was reduced to 0.52% formalin and 10.9% acid. The washing time was 2 hours (against 8 - 9 hours when washing is carried out with sulphuric acid alone). The yield of pure product was 92.18%. Formaldehyde treatment removes carbon disulphide due to the saturation of benzole with methanol present in formaldehyde.
There is 1 table.

ASSOCIATION: NTMK

Card 2/2

CHERKASOVA, L.M.; GORIN, L.K.

Formaldehyde method of thiophene removal from benzene. Koks i khim. no.1:44-46 '63. (MIRA 16:2)

1. Nizhne-Tagil'skiy metallurgicheskiy combinat.
(Benzene) (Thiophene)

Cherkasova, L. N.

5008

Unsymmetrical organic α-oxides. XI. Isobutyl glycidyl ether of glycidol and its transformations. F. G. Ponomarev, L. N. Cherkasova, and R. M. Chernysheva. J. Gen. Chem. U.S.S.R. 25, 1705-9 (1955)(Engl. translation)
See CA 50, 5523a

3

B M R

PONOMAREV, F.G.; CHERKASOVA, L.N.; CHERNYSHEVA, R.M.

Research in the field of asymmetric organic ∝ -oxides. Part 11. Isobutyl glycidol ether and its conversions. Zhur.ob.khim. 25 no.9:1753-1757 S '55. (MLRA 9:2)

1.Voronezhskiy gosudarstvennyy universitet.
(Ethers)

AUTHOR: Cherkasova L.N., Engineer. 110-6-16/24

TITLE: A method of determining the thermal conductivity of dielectrics. (Metod opredeleniya teploprovodnosti dielektrikov.)

PERIODICAL: "Vestnik Elektropromyshlennosti"(Journal of the Electrical Industry) 1957,Vol.28,No.6, pp.55-59 (U.S.S.R.)

ABSTRACT: There are two main types of method for determining thermal conductivity, those based on steady and those on transient heating conditions. Steady state methods have been widely used but a number of difficulties are encountered such as that they take a very long time and that water migration may occur. The methods of regular thermal regime developed by Prof. G.M.Kondrat'ev occupy a special place amongst methods based on transient conditions. The advantages of these methods are such that they have now become widely used and the most suitable of them can be chosen for measurements on dielectrics. This article describes a simple and convenient method of determining the thermal conductivity of dielectrics by means of a plane bi-calorimeter. The essence of the method is as follows: A metal core, the diameter of which is ten times its thickness, is placed

Card 1/3

A method of determining the thermal conductivity of dielectrics. (Cont.)

110-6-16/24

between two sheets or discs of the material being investigated. The whole system is placed in a hermetically sealed casing. This device with a thermo-couple enclosed inside the core is called a bi-calorimeter. It is first heated and then cooled in a medium at constant temperature. During the cooling the substance being examined is in different stages of thermal condition. A certain thermal condition characterised by definite temperature change relationships at any point of the body with time is called the regular condition. In this condition the nucleus is everywhere at the same temperature and the thermal influence of the medium on the bicalorimeter is so intensive that there is practically no temperature jump between the medium and the outer surface layer of the dielectric. The heat transfer coefficient is then infinite. Under these conditions a formula for the thermal conductivity of the lamina may be determined. The specific heat of the dielectric enters into the equation and if it is not known it may be estimated without serious error in the final result.

Card 2/3

A method of determining the thermal conductivity of dielectrics. (Cont.)

110-6-16/24

When determining the thermal conductivity it is necessary to find experimentally the cooling time of the bicalorimeter and to construct a graph of log temperature against time. The cooling rate is the slope of the straight line so obtained. The method of calculating the thermal conductivity from this result is explained. The construction of the bicalorimeter is described and illustrated by a sketch, the necessary thermostat baths are illustrated. An example of the determination of the thermal conductivity of polystyrene is given and the thermal conductivities and specific heats of a number of organic insulating materials are tabulated.

Card 3/3

There are 3 figures, 1 table and 2 Slavic references.

SUBMITTED: February 26, 1957.

AVAILABLE:

5(4), 15(8) SOV/76-33-9-6/37

AUTHOR: Cherkasova, L. N.

TITLE: Effect of Structure on the Thermal Conductivity of Polymers

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 9, pp 1928-1932 (USSR)

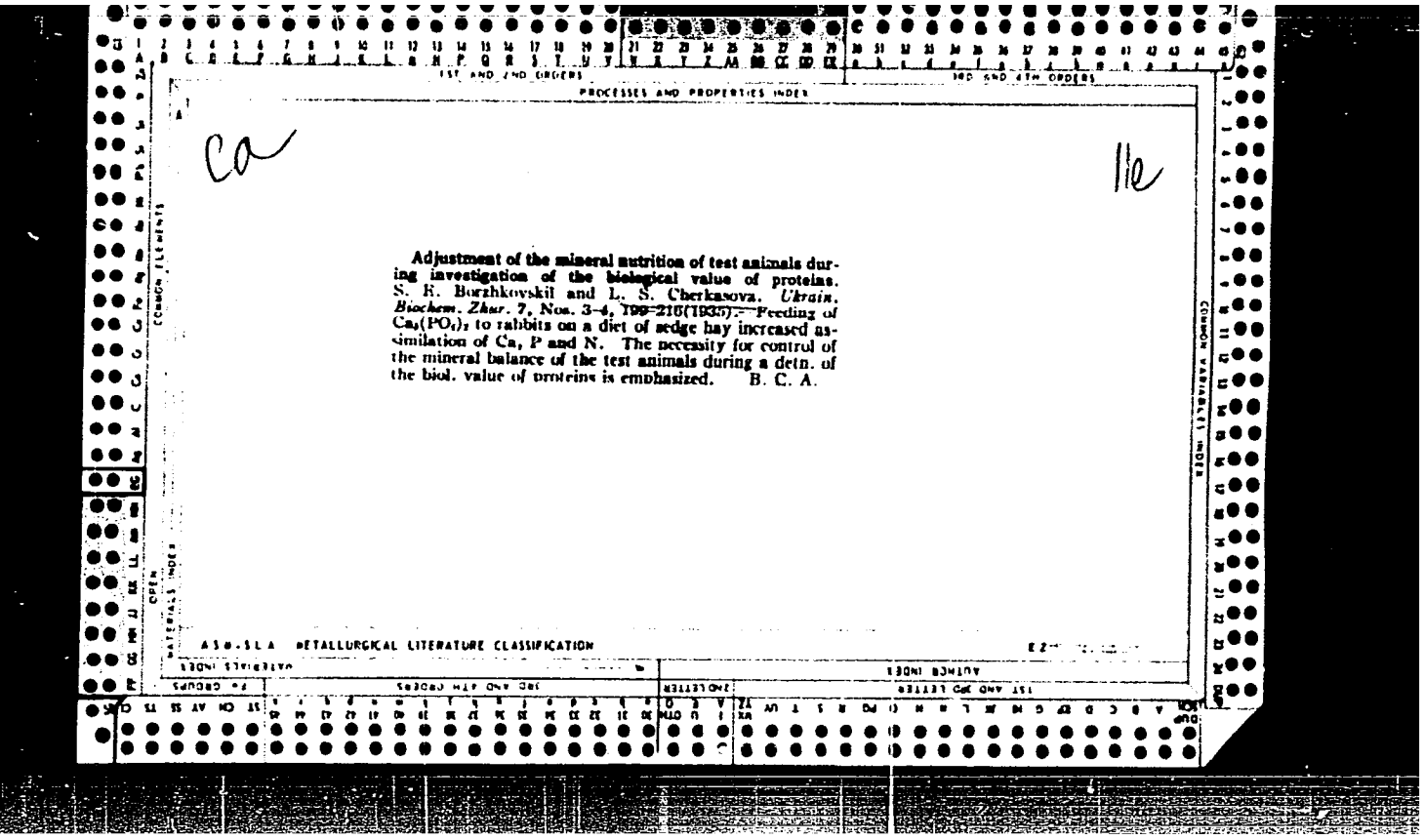
ABSTRACT: As only very few data have been reported by publications so far about the effect of the phase of polymers on their thermal conductivity, the dependence of the thermal conductivity coefficient of polymers on their physical structure and on their phase was investigated in a wide temperature range by means of the method by G. M. Kondrat'yev (Ref 9) as well as by means of (Ref 10). The following amorphous polymers were investigated (Table 1): Polystyrene, bitumen, an epoxy compound, compound MBK, the polyurethans K-30 and K-31, and the crystalline polymers polyethylene, paraffin, "fluoroplast", caprone and polyamide (Table 1 composition). It was observed that for amorphous polymers the thermal conductivity rises constantly under heating up to the fusion point. For crystalline polymers the thermal conductivity decreases under heating up to the fusion point, but then rises slowly under further heating

Card 1/2

(after all crystals are molten) in the same way as the amorphous polymers. As shown by diagrams obtained from measurements on natural rubber (natural rubber may possess crystalline as well as amorphous structure in the temperature range investigated), a decline of the thermal conductivity occurs down to a certain point, after which the thermal conductivity increases in the same way as with the amorphous polymers. This thermal changing point is assumed to correspond to the fusion point of the crystalline phase. A similar observation was made for paraffin, and it may thus be definitely stated that with change of phase in polymers also a change of thermal conductivity occurs. There are 2 figures, 1 table, and 10 Soviet references.

SUBMITTED: January 28, 1958

Card 2/2



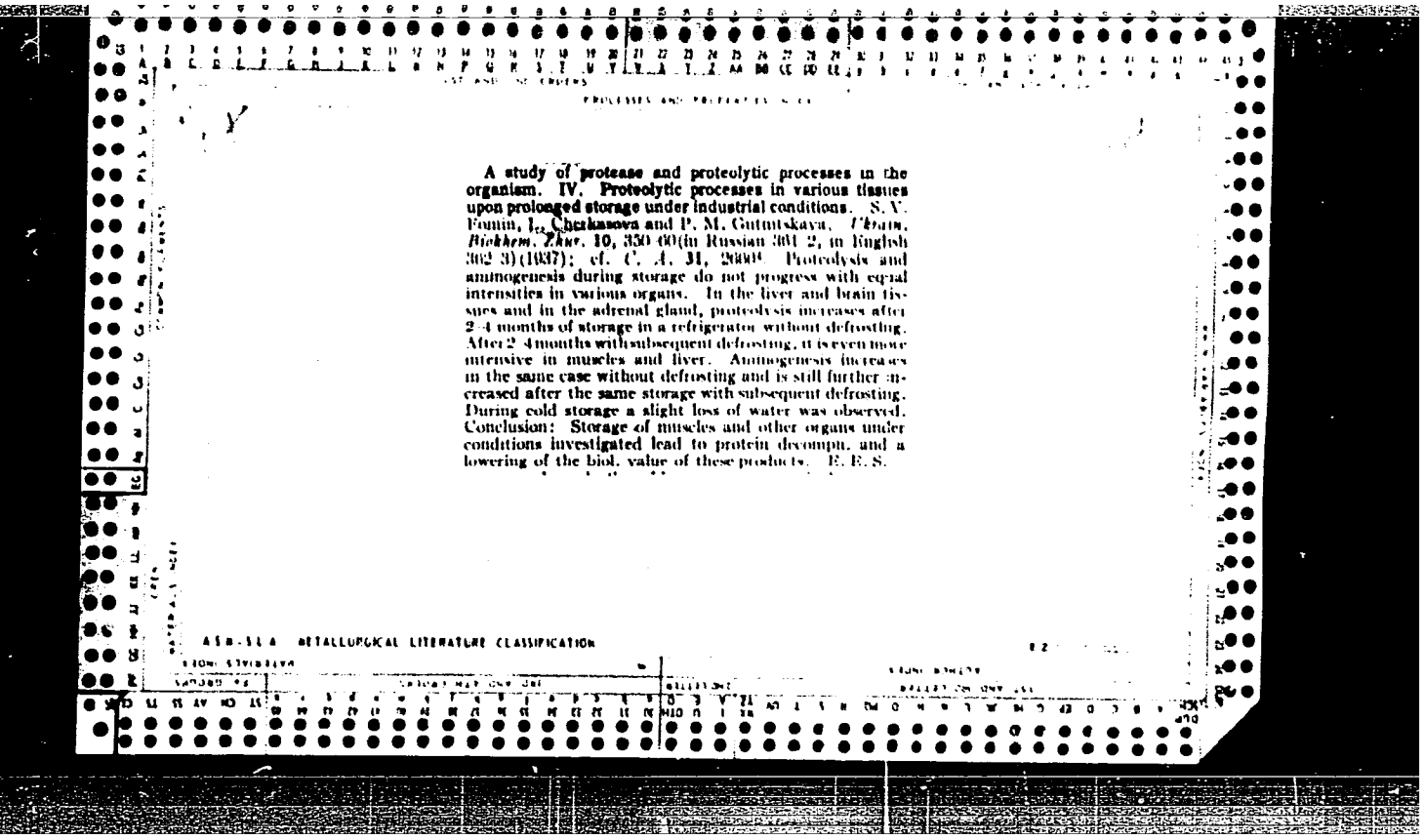
PROCESSES AND PROPERTIES INDEX

Ca

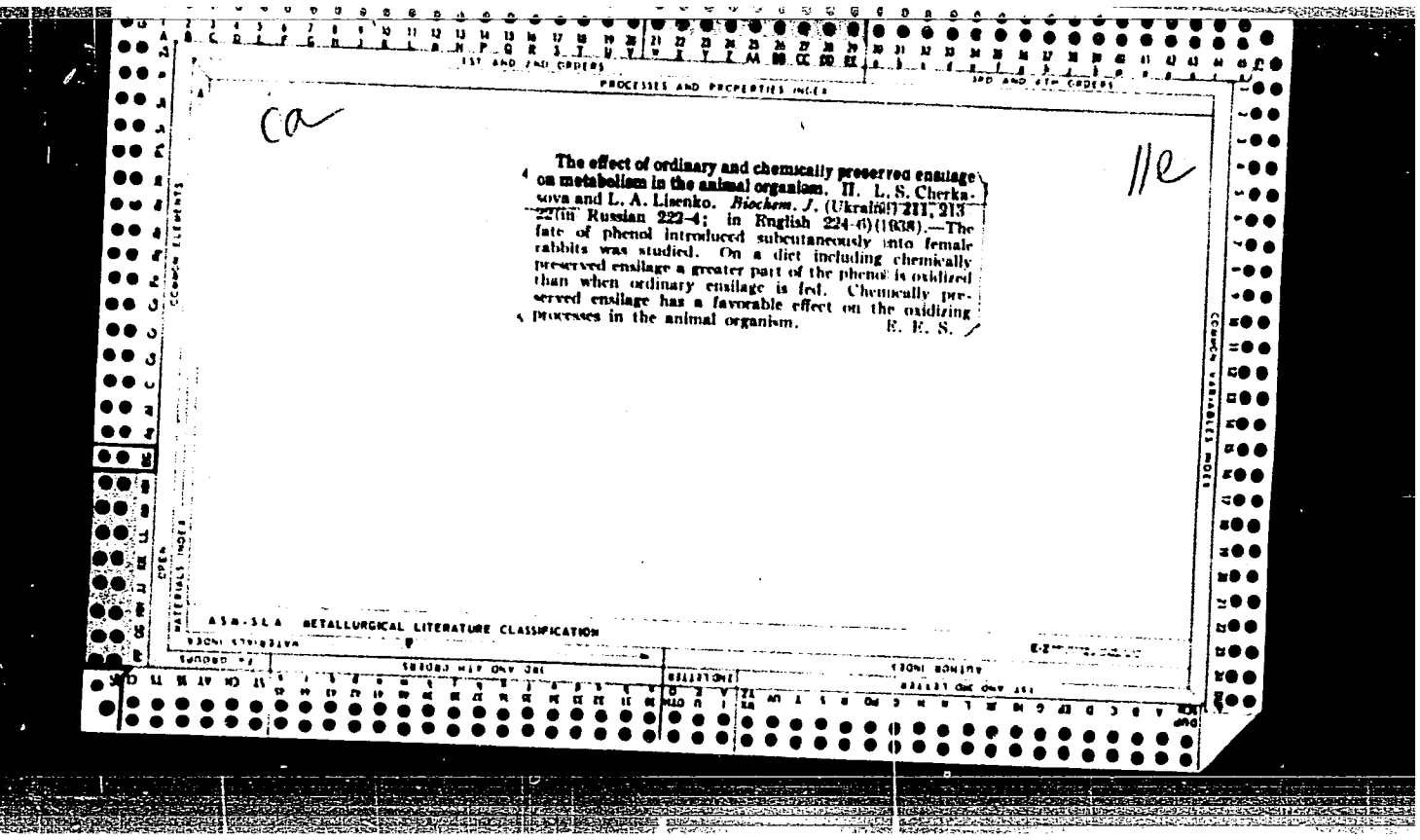
11e

Adjustment of the mineral nutrition of test animals during investigation of the biological value of proteins. S. E. Borzhkovskii and L. S. Cherkasova. *Ukrain. Biochem. Zhur.* 7, Nos. 3–4, 199–216(1935).—Feeding of $Ca_3(PO_4)_2$ to rabbits on a diet of sedge hay increased assimilation of Ca, P and N. The necessity for control of the mineral balance of the test animals during a detn. of the biol. value of proteins is emphasized. B. C. A.

A56-51A METALLURGICAL LITERATURE CLASSIFICATION



A study of protease and proteolytic processes in the organism. IV. Proteolytic processes in various tissues upon prolonged storage under industrial conditions. S. V. Fomin, L. Cherkasova and P. M. Gutnitskaya. *Ukrain. Biokhem. Zhur.* 10, 350-60(in Russian 361-2, in English 362-3)(1937); cf. C. A. 31, 2000. Proteolysis and aminogenesis during storage do not progress with equal intensities in various organs. In the liver and brain tissues and in the adrenal gland, proteolysis increases after 2-4 months of storage in a refrigerator without defrosting. After 2-4 months with subsequent defrosting, it is even more intensive in muscles and liver. Aminogenesis increases in the same case without defrosting and is still further increased after the same storage with subsequent defrosting. During cold storage a slight loss of water was observed. Conclusion: Storage of muscles and other organs under conditions investigated lead to protein decompn. and a lowering of the biol. value of these products. E. E. S.



CA

11e

The effect of ordinary and chemically preserved ensilage on metabolism in the animal organism. II. L. S. Cherkasova and L. A. Lisenko. *Biochem. J.* (Ukraine) 211, 213 (in Russian 222-4; in English 224-6)(1938).—The fate of phenol introduced subcutaneously into female rabbits was studied. On a diet including chemically preserved ensilage a greater part of the phenol is oxidized than when ordinary ensilage is fed. Chemically preserved ensilage has a favorable effect on the oxidizing processes in the animal organism. E. E. S.

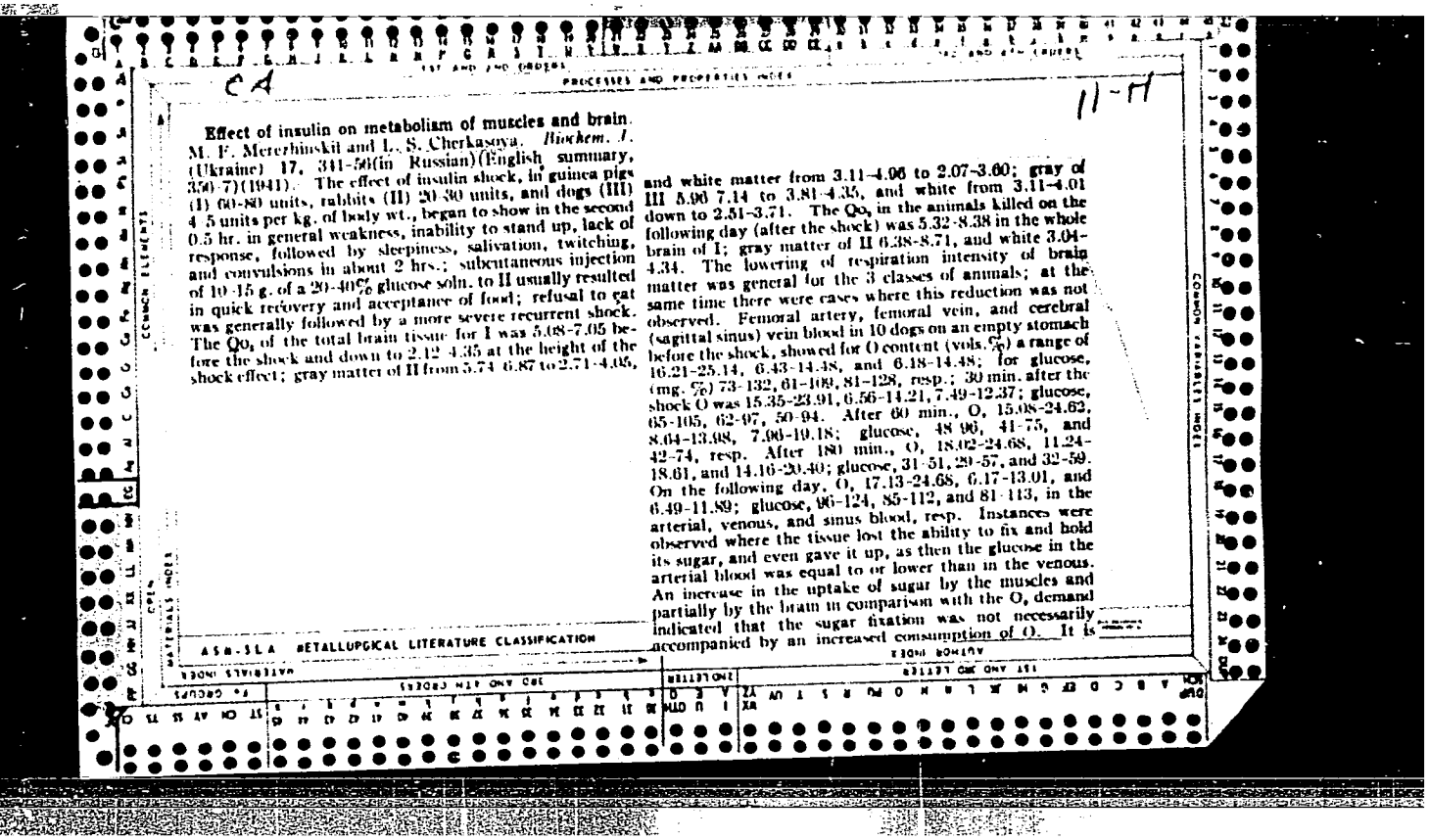
1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

Effect of ordinary and chemically preserved ensilage on the metabolism of the animal body. IV. Ascorbic acid content of vegetable mass preserved by various methods. L. S. Cherkusova. *Biochem. J.* (Ukraine) 14, 225-7 (in Russian, 227-8; in English, 228 9) (1939); cf. C. A. 33, 5813[4].—The various methods of preserving ensilage have no significant effect on the rate of destruction of ascorbic acid. The fresh vegetable mass has 1.5 times the concn. of ascorbic acid when compared to any of the ensilage tested. R. Levine

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION



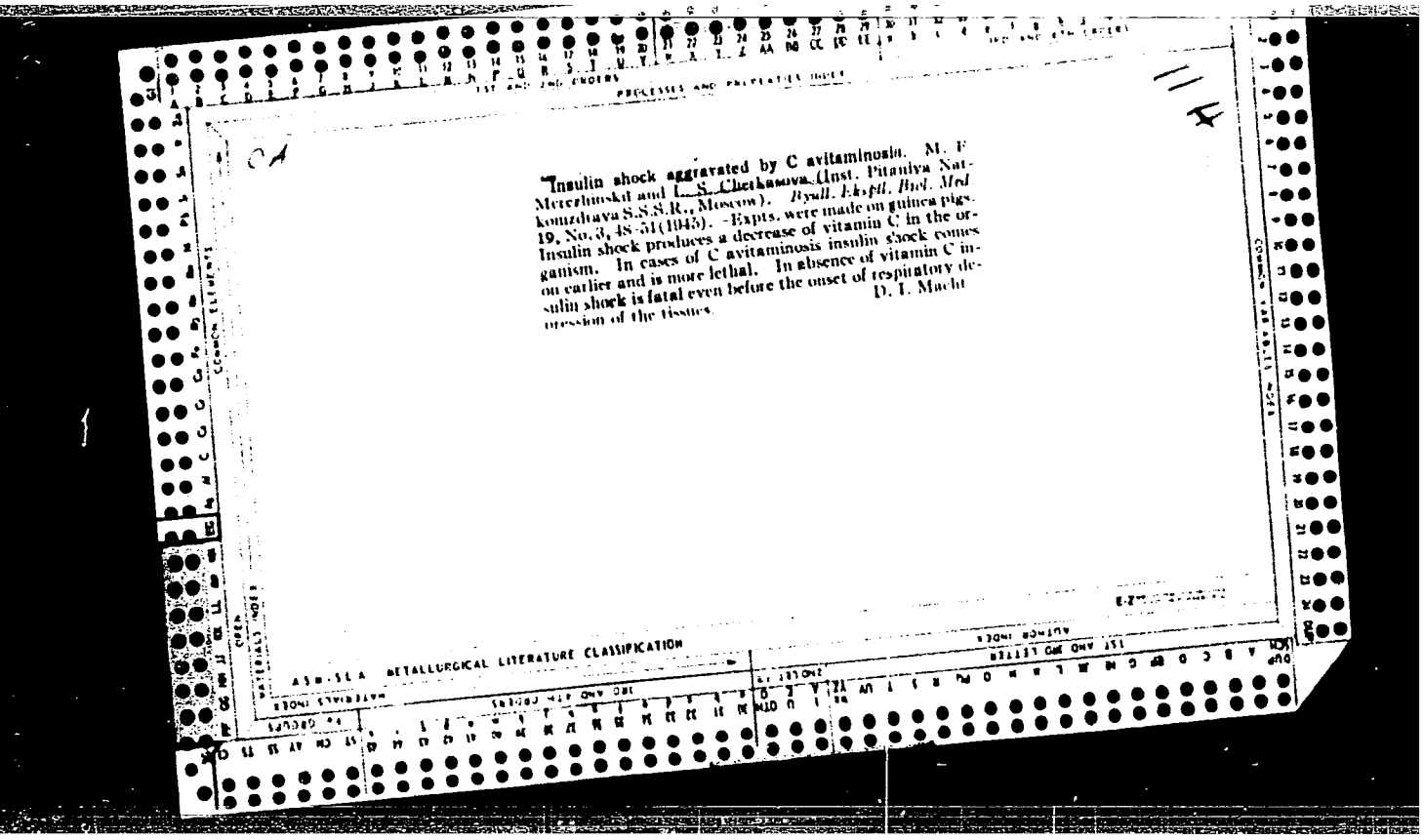
CA

11-H

Effect of insulin on metabolism of muscles and brain. M. F. Meterhinskii and L. S. Cherkasova. *Biochem. J.* (Ukraine) 17, 341-56(in Russian)(English summary, 350-7)(1941). The effect of insulin shock, in guinea pigs (I) 60-80 units, rabbits (II) 20-30 units, and dogs (III) 4-5 units per kg. of body wt., began to show in the second 0.5 hr. in general weakness, inability to stand up, lack of response, followed by sleepiness, salivation, twitching, and convulsions in about 2 hrs.; subcutaneous injection of 10-15 g. of a 20-40% glucose soln. to II usually resulted in quick recovery and acceptance of food; refusal to eat was generally followed by a more severe recurrent shock. The Q_{O_2} of the total brain tissue for I was 5.08-7.05 before the shock and down to 2.12-4.35 at the height of the shock effect; gray matter of II from 5.74-6.87 to 2.71-4.05, and white matter from 3.11-4.06 to 2.07-3.60; gray of III 5.90-7.14 to 3.81-4.35, and white from 3.11-4.01 down to 2.51-3.71. The Q_{O_2} in the animals killed on the following day (after the shock) was 5.32-8.38 in the whole brain of I; gray matter of II 6.38-8.71, and white 3.04-4.34. The lowering of respiration intensity of brain matter was general for the 3 classes of animals; at the same time there were cases where this reduction was not observed. Femoral artery, femoral vein, and cerebral (sagittal sinus) vein blood in 10 dogs on an empty stomach before the shock, showed for O content (vols.%) a range of 16.21-25.14, 6.43-14.48, and 6.18-14.48; for glucose, (mg. %) 73-132, 61-109, 81-128, resp.; 30 min. after the shock O was 15.35-23.91, 6.56-14.21, 7.49-12.37; glucose, 65-105, 62-97, 50-94. After 60 min., O, 15.08-24.63, 8.64-13.98, 7.90-19.18; glucose, 48-90, 41-75, and 42-74, resp. After 180 min., O, 18.02-24.68, 11.24-18.61, and 14.16-20.40; glucose, 31-51, 29-57, and 32-59. On the following day, O, 17.13-24.68, 6.17-13.01, and 6.49-11.89; glucose, 96-124, 85-112, and 81-113, in the arterial, venous, and sinus blood, resp. Instances were observed where the tissue lost the ability to fix and hold its sugar, and even gave it up, as then the glucose in the arterial blood was equal to or lower than in the venous. An increase in the uptake of sugar by the muscles and partially by the brain in comparison with the O demand indicated that the sugar fixation was not necessarily accompanied by an increased consumption of O. It is

also probable that under the influence of insulin some organs gave up their sugar; this caused the fluctuation in the sugar level. That the muscle tissue adsorbs and holds the sugar more intensely than the brain does was shown in those instances in which the consumption of O did not decrease despite the reduction in sugar consumption. Introduction of glucose improved the consumption of O_2 with a rise in the arteriovenous O difference; this was not observed before the shock. In guinea pigs killed on the following day, the Q_{O_2} of the total brain tissue was 5.03-8.38; II, gray matter, 6.38-8.71, white, 3.04-4.34. The fluctuating values were probably due to variations of respiration intensity during some stages while the hormone was still in effect. A series of I and II were given repeated injections of insulin in doses sufficient to cause convulsions; the Q_{O_2} for the whole brain of I (each value for a different animal) was after 8 injections, 6.98; after 15, 7.74; after 25, 8.01; 17, 8.59; 30, 4.39; 34, 3.35; 27, 6.05; 6, 7.95; 35, 4.38; and one after 41 injections, 3.45; the Q_{O_2} for II, gray and white matter, resp., was, after 6 injections, 6.95 and 4.05; after 35, 7.38 and 4.08; 58, 5.37 and 3.52; 64, 3.85 and 2.92; 59, 4.35 and 3.01; and one after 60 injections, 3.02 and 2.92. The injections to individual animals varied from 6 to 63; some survived many, while others died very quickly after only a few injections. All lost weight at once; the animals were killed 2-3 days after the last injection.

B. Gutoff



"Insulin shock aggravated by C avitaminosis. M. F. Mereshinskii and L. S. Chekhonova (Inst. Pitaniya Nat. komzdrava S.S.S.R., Moscow). *Byull. Eksptl. Biol. Med.* 19, No. 3, 48-51 (1945). -Expts. were made on guinea pigs. Insulin shock produces a decrease of vitamin C in the organism. In cases of C avitaminosis insulin shock comes on earlier and is more lethal. In absence of vitamin C insulin shock is fatal even before the onset of respiratory depression of the tissues. D. I. Macht

Intensity of brain-tissue respiration; the brain and the muscle supply of oxygen, carbohydrates, and products of decomposition of carbohydrates during insulin intoxication. M. G. Merezhinskii and L. S. Cherkasova (Med. Inst., Kazan). *Byull. Eksptl. Biol. Med.* 22, No. 1, 31-4 (1946)(in Russian). Guinea pigs, rabbits, and dogs were investigated as to brain-tissue respiration in insulin shock by using the Warburg technique on minced tissue in Ringer-bicarbonate suspension. In guinea pigs the brain tissue shows a Q_{O_2} in insulin shock which is 54.3% of normal value. In rabbits the white brain substance gave 67%, grey matter 52.2%. In dogs the white matter gave 70.1%, grey matter 63.2%. The animals were killed in the condition of deep coma (3-7 hrs. after insulin administration). Thus insulin shock leads to severe depression of brain respiration. Analysis of arterial and venous blood (to the brain and to the hind quarters) showed that the supply of glucose to the muscle is depressed (37.8% of normal in deep coma), although the O supply is substantially normal. As the shock developed, the muscle lost its ability to retain glucose, and the venous blood carried as much as 44% of normal glucose level; the O in venous blood in this case was 143% of normal. The brain tissue tends to retain glucose in early shock stage but later begins to lose glucose like the muscle. The venous blood from the brain showed severe increase over normal (164%). In early shock stages glycogen tends to be retained in the muscle and especially in the brain; in deep shock this tendency is substantially lost. Blood lactic acid rises in early shock (probably because of the convulsions); this condition moderates when coma stage is reached. Brain tissue does not utilize lactic acid but actually supplies it to the blood. Pyruvic acid level does not vary significantly. G. M. Kosolapoff

11-H

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Cherkasova, L. S., Merezhinskiy, M. F., Groshev, Ye. I. and Fel'dman, O. S.

Cherkasova, L. S. "On the relation of the mineral composition of osseous and dental tissue to the protein content of the food ration," Trudy Kazansk. gos. stomatol. in-ta, Issue 2, 1949, p. 31-37

SO: U-5240, 17 Dec. 53, (Letopis 'Zhurnal 'nykh Statey, No. 25, 1949).

CHERKOSOVA, L.S.

21052 Cherkosova, L.S. i Merezhinskiy, M.F. Metobality Regeneratii i toksikoza pri traume Trudy In-ta (Kazansk Nauch-issled in-t ortopedii i vosstanovit Khirurgii) t. 111 1949, s. 280-96.

SO: LETOPIS ZHURNAL STATEY -Vol. 28, Moskva, 1949

CHERKASOVA, L. S.

Insufficiency and daily requirement of ascorbic acid in persons suffering from traumatic osteomyelitis. L. S. Cherkasova and M. F. Merezhinskii (Stomatol. Inst., Kazan). *Ukrain. Biokhim. Zhur.* 21, 199–201 (1949) (in Russian).—The levels of the ascorbic acid (I) in the urine of 49 patients (in some instances its absence) were established. The patients were then given 300 mg. of I daily for 8–16 days until 50% of the administered I was in the urine, and was regarded as the point of satn. For 30 days following that patients were kept on a normal diet and given in addn. 50 mg. of I. The daily requirements for each patient were established as follows: dosage of administered I was gradually reduced until I in the urine fell just below 50–40% of the daily dose administered, such a dosage being regarded as the daily min. required. After 10-days administration of such a dosage, blood I was detd. In traumatic osteomyelitis of medium severity accompanied by subfebrile temp. I deficiency was 1600–1800 mg.; the daily requirement following attainment of the point of satn. was 90–200 mg., the variability being dependent upon the extent and severity of the osteomyelitic nidus; the proposed treatment procedure requires first the attainment of the preliminary point of I satn., after which a daily administration of 200 mg. I is recommended. B. S. L.

CA

11E

Chemical composition of dental tissues and biochemical processes in them. L. S. Cherkasova and M. F. Merezhinskii (Med. Stomatol Inst., Kazan). *Stomatologiya* 1950, No. 4, 19–22.—Supernormal amts. of Mg and some Cl is found in roots of pyorrheal teeth. The healthy part of dentine of carious teeth contains larger than normal amts. of Cu, H_2O, and org. matter, but in enamel no changes except low F are found. Deficiency of minerals during tooth growth is discussed. With vitamin A deficiency growing teeth reveal slow growth and structural defects; deficiency of vitamin C leads to defective enamel and dentine development, while vitamin D deficiency leads to caries of milk teeth with hypoplastic defects. Protein deficiency may lead to lowering of P and Ca content of growing teeth (mouse expts.). G. M. Kosolapoff

CHERKASOVA, L.S.

Changes in the chemical composition of bones and teeth in experimental traumatic osteomyelitis. L. S. Cherkasova, B. I. Groshev, and A. V. Krupina (Sci. Research Inst. Orthopedic Restorative Surg., Kazan). *Ukrain. Biokhim. Zhur.* 23, 282–90(1951)(in Russian).—Chronic traumatic osteomyelitis of rats affects the chem. constitution of bone tissues not only at the disease foci, but sympathetically in corresponding unaffected bone and teeth tissues of distant parts of the body. There is a reduction in the *N* content and to a lesser extent in the Ca and P content. This is especially true of chronic cases. The normal Ca/P and Ca/*N* ratios are disturbed. There appears to be a lowering in the activity of the alk. phosphatase at the active sites and sympathetically in similar control bones. Evidence points to a rather general disturbing effect which localized osteomyelitis has upon the total body metabolism. B. S Levine

(2)

MERRZHINSKIY, M.F.; CHERKASOVA, L.S.

The effect of food rations on the content of carbohydrates in the tissues during development of general metabolic reaction of the organism to trauma. Voprosy Pitaniya 12, No.1, 27-34 '53. (MLRA 6:3)
(CA 47 no.14:7050 '53)

1. Med. Inst., Minsk.

CHERKASOVA, L.S.

Participation of some electrolytes in the overall metabolic reaction of the organism against tumors. M. F. Mertz-hirskii and L. S. Cherkasova. *Vestsi Akad. Navuk Belarus. S.S.R.* 1954, No. 2, 95–105.—The concns. of Na, K, Ca, Mg, Cl, and P-contg. ions in blood and in normal and traumatic tissues of men and exptl. animals are discussed. The following traumatic tissues are considered: burns, shocks, sepsis, bone fractures, abscesses, and pathol. operations. The shifts of Na and Cl are particularly pronounced in the injured tissues. The reaction of the organism is described during the development, presence, and curing of the tumors, expressed in the ionic shifts, changes in the body water balance, and the metabolic changes of proteins and org. acids.

E. Wierbicki

CHERKASOVA, L.S.

The consumption and replacement of protein substances in experimental internal brain trauma. L. S. Cherkasova, F. D. Koldobskaya, and V. A. Kukushkina. *Biokhim. Zhur.* 26, 155-65(1954)(in Russian).—Internal brain injury manifests in the organism decompn. of proteins, disturbance in their normal metabolism, and an accumulation of toxic end-products. This leads to a lowering of the protein resources which is observed shortly after the onset of the trauma. As the pathologic brain lesion disappears protein synthesis begins to predominate.

F. S. Levine

Biochem. Lab., Inst Physiol., AS Belo SSR

CHERKASOV, Lydiya Semenovna

(Inst of Physiology Acad Sci USSR), Academic degree of Doctor of Biological Sciences, based on her defense, 6 December 1954, in the Council of the First Leningrad Medical Inst imeni Pavlov, of her dissertation entitled: "Characteristics of biological disturbances appearing in osteomyelitis caused by explosions."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 24, 26 Nov 55, Byulleten' MVO SSSR, No. 20, Oct 57, Moscow, pp 22-24, Uncl. JPRS/NY-471

CHERKASOVA, L.S.

USSR/Medicine - Biosynthesis of Ascorbic Acid FD-1759

Card 1/1 Pub 141-5/15

Author : *Merezhinskiy, Prof M. F.; Cherkasova, L. S.; Kutsenko, Z. M.

Title : The ascorbic acid content in the tissues of white rats with experimentally fractured bones under various nutritional conditions

Periodical : Vop pit., 26-30 Jan/Feb 1955

Abstract : An increase in ascorbic acid content is noted in animals capable of vitamin C biosynthesis after bone fracture when the diet is sufficient in protein. Decreasing the protein content while maintaining constant calorific content has an effect on the ascorbic acid content in the traumatic tissues. Compensating a diet low in protein by an increase in carbohydrates, results in a different distribution of ascorbic acid in the tissues of white rats following trauma than by a compensation with fats. White rats show great compensatory capabilities in respect to satisfying the ascorbic acid requirements of individual tissues after bone fracture. One table. Seven references (six USSR).

Institution: Chair of Biochemistry (*Head) Minsk Medical Institute

Submitted : --

CHERKASOVA, L. S.

Some indexes of the protein metabolism and the functional state of liver in patients suffering from cerebral tumors. L. S. Cherkasova, F. D. Koldobskaya, V. A. Kukushkina, and E. I. Slinyak (Inst. Physiol., Acad. Sci. White Russian S.S.R., Minsk). *Izvest. Akad. Nauk Belorussk. S.S.R.* 1955, No. 3, 127-36(in Russian).—Data are presented for the amts. of total protein, albumin, globulin, fibrinogen, and the protein index; the activities of the proteolytic and aminolytic enzyme; and the amt. of amino acid N (mg. %) polypeptide and urea N fractions of the blood in 21 patients suffering from cerebral tumors. Nonprotein N increases during the illness, the increase being due to the accumulation of polypeptides, since the amts. of free amino acids and urea remain nearly unchanged. The normal proportion of albumin to globulin is disturbed and the enzyme activities lowered; the detoxicating capacity of the liver (Quick-Pytel method) is also greatly decreased as a result of the illness. F. Wierbicki

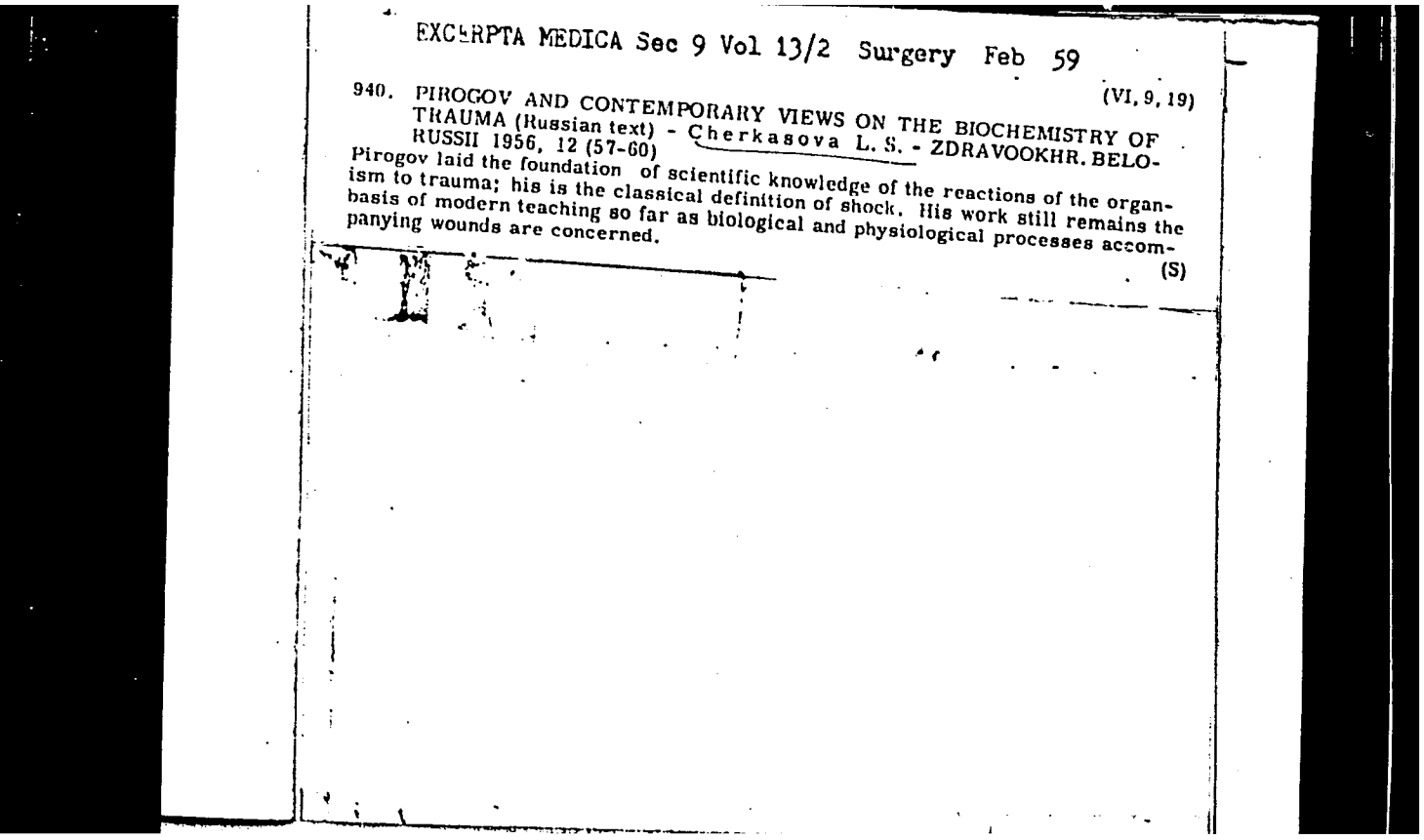
EXCERPTA MEDICA Sec.2 Vol.11/4 Physio-biochem-pharm Apr58

Cherkasova L. S.

1621. EFFECT OF MECHANICAL STIMULATION OF GASTRIC RECEPTORS ON SOME METABOLIC VALUES (Russian text) - Cherkasova L. S., Kukushkina V. A., Mironova T. M., Remberger V. G. and Fomichenko K. V. Inst. of Physiol. of the Belorussian Acad. of Scis, Minsk - TRUD. INST. FIZIOL. BELORUSSK. AKAD. NAUK 1956, 1 (88-98)

Study was made of the influence of mechanical stimulation of the gastric receptors.

on the content of ATP and creatinephosphoric acid and free phosphorus in the cerebral and muscular tissues, on the respiratory and glycolytic capacity of the cerebral and muscular tissues, on the glycogen content of the liver and muscles, and on the blood sugar curve after alimentary glucose load and after injection of caffeine and adrenaline. Tissue metabolism determinations were carried out on white rats and on rabbits with chronic fistulae of the stomach. Carbohydrate metabolism determinations were carried out on dogs with gastric fistulae. For determinations of phosphorus-containing compounds and of glycogen, rats were killed by putting them into liquid air. For study of respiration and glycolysis rats were killed by decapitation and rabbits by embolism. Phosphorus compounds were estimated by the method of Meshkov and Severin, lactic acid colorimetrically, and liver and muscle glycogen by Pflüger's method. Experiments showed that after gastric distension the respiratory capacity of the cerebral tissue was raised by 33.6-47%; liver glycogen content fell simultaneously. After distension of the stomach with 700 ml. the blood sugar rise was delayed and the glycaemic peak occurred at 60-120 min. instead of the 20-40 min. in controls. References 7. Semenova - Moscow (S)



EXCERPTA MEDICA Sec 9 Vol 13/2 Surgery Feb 59

940. PIROGOV AND CONTEMPORARY VIEWS ON THE BIOCHEMISTRY OF TRAUMA (Russian text) - Cherkasova L. S. - ZDRAVOOKHR. BELORUSSII 1956, 12 (57-60) (VI, 9, 19)

Pirogov laid the foundation of scientific knowledge of the reactions of the organism to trauma; his is the classical definition of shock. His work still remains the basis of modern teaching so far as biological and physiological processes accompanying wounds are concerned.

(S)

CHERKASOVA, L. S.

Tissue respiration during lingering insulin shock. L. S. Cherkasova and M. F. Merazhinskii. *Vestsi Akad. Navuk Belarus. S.S.R., Ser. Biyal. Navuk* 1955, No. 1, 141–50 (Russian summary).—Guinea pigs, rabbits and dogs were injected subcutaneously with 60–80, 20–30, and 5–6 units of insulin (I)/kg. body wt., resp. The animals so treated were classified as being in a shock-like physiol. state (state a); those of the exptl. animals which could not be brought to the normal physiol. state after a prolonged treatment with glucose were further classified as living in a lingering I shock (state b). Visual observations and detns. of sugar (II) in blood and respiratory quotient (Q_{R}) glycogen (III), II, and lactic acid (IV) in the muscle and cerebral tissues were used for evaluating the results of the I shocks. For studying Q_{O_2} (in Warburg app.) Ringer's bicarbonate solns. contg. NaCl, KCl, and $CaCl_2$ (for cerebral tissue), or $MgCl_2$ instead of $CaCl_2$ (for muscle tissue) were used. Two–4 hrs. after the I injections the blood II usually decreased to 25–30 mg. %; in the state b the II content was over the normal reaching in some instances 180–200 mg. %, due to glucose injections. The following changes of the biochem. indexes in the tissues of dogs represent the general trend of the physiol. effect of the I injections (similar data are given also for guinea pigs and rabbits): state a: Q_{O_2} 1.85 (muscle) and 2.94–4.18 (cerebral tissue: white-gray substance, resp.), III 285.4 and 48.2, II 63.8 and 74.3, and IV 92.0 and 82 mg. %; state b: 2.90 and 4.95–5.06, III 834.0 and 114.4, II 139.1 and 77.7, and IV 94.0 and 150.1 mg. %; and control: 2.50 and 3.81–5.27, III 799.1 and 88.6, II 50.3 and 69.8, and IV 71.3 and 51.5 mg. %; resp. Thus, injection of great doses of I decreases the intensity of the tissue respiration, accompanied by a depletion of carbohydrates in the tissues (hypoglycemia). Repeated injection of the large I doses, or the inability of the I poisoned organism to return to normal following glucose injections is characterized by increase of Q_{O_2} and the II content of the tissues (hyperglyc-

E. Wassiliki

USSR/Human and Animal Physiology. Digestion.. T

Abs Jour: Ref Zhur-Biol., No 8, 1958, 36546.

Author : Cherkasova, L.S., Kukushkina, V.A., Mironova, T.M. Reinberger, V.G., Fomichenko, K.V.

Inst : Institute of Physiology BSSR.

Title : The Effect of Mechanial Stimulation of Gastric Receptors on Metabolic Processes Under Conditions of Exclusion of Certain Areas of the Brain Cortex.

Orig Pub: Tr. In-taFiziol. AN BSSR 1956, 1, 180-193.

Abstract: The fasting glucose blood level (G) in dogs increased following removal of the premotor area of the cortex of the left hemisphere. Distension of the stomach prior to the operation lowered the fasting G level during the first 15 min and raised it somewhat after 30-45 minutes; following the operation, this produced

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Abs Jour: Ref Zhur-Biol., No 8, 1958, 36546.

only a slight decrease of the level in the first 5 min. The alimentary hyperglycemia following feeding persisted much longer in the operated than in the non-operated dogs, and gastric distension also prevented the appearance of the maximum raise of glycemia. The removal of the motor area of the cortex of both hemispheres in rats produced storage of glycogen in the liver and a marked increase in muscle tissue content of creatin-phosphoric acid and preorganic P; the content in the brain tissue of creatinphosphoric quotient of the muscle tissue remained of the same intensity. The reaction to mechanical stimulation of the receptors of the stomach in operated rats and rabbits remained the same as in non-operated animals.

Cherkasova, L.S.

USSR/General Division. History. Classics. Personnel. A-2

Abs Jour: Ref. Zhur. Biologiia, No 4, 1958, 14136.

Author : Cherkasova L.S.
Inst :
Title : The Research of I.M. Sechenov and Contemporary Biochemistry of the Processes of Stimulation and Inhibition of the Central Nervous System.

Orig Pub: Vectsi AN BSSR. Ser. biial. n., Izv. AN BSSR. Ser. biol. n., 1956, No 4, 123-128.

Abstract: No abstract.

Card : 1/1 -11-

CHERKASOVA, L.S.

CHERKASOVA, L.S., prof.; GODNEV, T.N., akademik, red.; MANINA, L., red.izd-va; ALEKSANDROVICH, Kh., tekhn.red.

[Biochemistry of trauma (tissue injuries, bone fractures and their complication by suppurative infection)] Biokhimiia travmy (pri raneniiakh miagkikh tkanei, perelomakh kosti i ikh oslozhneniiakh gnoinoi infektsiei. Minsk, Izd-vo Akad.nauk BSSR, 1957. 191 p. (MIRA 10:12)

1. Akademiya nauk BSSR.(for Godnev)
(WOUNDS) (PHYSIOLOGICAL CHEMISTRY)

CHERKASOVA, L., et al

"The action of general irradiation of animals with X-rays on some indices of the cerebral metabolism," a paper submitted at the 2nd Conference on Biochemistry of the Nervous System, AS UkrSSR, 12-16 Feb 1957, Kiev.

1122802

USSR/Pharmacology and Toxicology. Analeptics

Abs Jour : Ref Zhur - Biol., No 10, 1958, No 47162

Author : Cherkasova L.S., Remberger V.G.
Inst : AS BSSR
Title : The Mechanism of the Action of Caffeine

Orig Pub : Vestsi AN BSSR. Ser. viyal. n., Izv. AN BSSR. Ser. biol. n., 1957, No 2, 109-114

Abstract : No abstract

Card : 1/1

USSR / Human and Animal Physiology (Normal and Pathological). T-3
Metabolism.

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 60095

Author : Cherkasova, L. S.
Inst : Not given
Title : Vitamin B6 (Pyridoxine) as Related to the Function of the Nervous System

Orig Pub : Zdravookhr. Belorussii, 1957, No 12, 28-31

Abstract : No abstract given

Card 1/1

CHERKASOVA, L.S.; REMBERGER, V.G.

Effect of caffeine on the nature of the exchange reaction induced by mechanical stimulation of gastric receptors. Trudy Inst. fiziol. AN BSSR 2:270-277 '58. (MIRA 12:1)

1. Laboratoriya biokhimii Instituta fiziologii AN BSSR.
(CAFFEINE) (STOMACH--INNERVATIONS)

CHERKASOVA, L.S. [Charkasava, L.S.], prof.

Effect of ionizing radiations on metabolism in the animal organism. Vestsi AN BSSR Ser.biial.nav. no.4:91-102 '58.
(MIRA 12:4)

(RADIATION--PHYSIOLOGICAL EFFECT)
(METABOLISM, DISORDERS OF)

BULYGIN, I.A., otv.red.; GOLUB, D.M.; KOLESNIKOV, M.S.; MARKOV, D.A.; CHERKASOVA, L.S.

[Materials of the scientific session dedicated to the fortieth anniversary of the White Russian S.S.R., January 1959] Materialy nauchnoi sessii, posviashchennci 40-letiiu Belorusskoi SSR, ianvar' 1959 god. Minsk, 1959. 145 p. (MIRA 12:11)

1. Akademiya nauk BSSR. Minsk. Institut fiziologii.
(PHYSIOLOGY)

CHERKASOVA, L.S., red.; BELEN'KAYA, I.Ye., tekhn. red.

[Summaries of reports] Tezisy dokladov. Moskva, Izd-vo Akad. nauk SSSR. Vol.2. [Abstracts of reports in section meetings; biochemistry and pharmacology] Tezisy dokladov na sektsionnykh zasedaniiakh; biokhimiia i farmakologiia. 1959. 267 p. (MIRA 14:11)

1. Vsesoyuznoye obshchestvo fiziologov, biokhimikov i farmakologov. 9. s"yezd.

(BIOCHEMICAL SOCIETIES)

BULYGIN, I.A., red.; ZAKUSOV, V.V., red.; KAPLANSKIY, S.Ya., red.; MUZYKANTOV, V.A., red.; TURPAYEV, T.M., red.; CHERKASOVA, L.S., red.; CHERNIGOVSKIY, V.N., red.; SHADURSKIY, K.S., red.; SHIDLOVSKIY, V.A., red.; SHIK, L.L., red.; MUZYKANTOV, V.A., red.; BELEN'KAYA, I.Ye., tekhn. red.

[Summaries of reports] Tezisy dokladov. Moskva, Izd-vo Akad. nauk SSSR. Vol.1. [Abstracts of reports in section meetings; physiology] Tezisy dokladov na sektsionnykh zasedaniiakh; fiziologiia. 1959. 432 p. (MIRA 14:11)

1. Vsesoyuznoye obshchestvo fiziologov, biokhimikov i farmakologov. 9. s"yezd. 2. Kafedra fiziologii Moskovskogo meditsinskogo instituta im. I.M.Sechenova (for Shidlovskiy).
(PHYSIOLOGICAL SOCIETIES)

CHERKASOVA, L.S.; SOSINA, B.M.; REMBERGER, V.G.

Metabolism of labile phosphorus compounds in brain tissue in connection with radiation sickness. Dokl. AN BSSR 3 no.1:26-29 Ja '59.
(MIRA 12:3)

1.Predstavlene akademikom AN BSSR T.N. Godnevym.
(PHOSPHORUS) (BRAIN) (RADIATION SICKNESS)

MEREZHINSKIY, M.F.; CHERKASOVA, L.S.

Relationship of body's metabolic reactions to injury to the age of the animal and nature of feeding. Vop.pit. 18 no.5:51-55 S-O '59. (MIRA 13:1)

1. Iz kafedry biokhimii (zav. - prof. M.F. Merezhinskiy) Meditsinskogo instituta, Minsk.
(WOUNDS AND INJURIES exper.)
(AGING eff.)
(PROTEINS nutrition & diet)

CHERKASOVA, L.S.; REMBERGER, V.G.

Metabolism of labile phosphorus compounds in the brain during total-body X-irradiation. Dokl.AN BSSR 4 no.3:129-131 Mr '60. (MIRA 13:6)

(PHOSPHORUS METABOLISM)
(X RAYS--PHYSIOLOGICAL EFFECT)

CHERKASOVA, L.S., prof.

Prevention and treatment of adiposis. Zdrav. Bel. 6 no.11:61-63 N '60. (MIRA 13:12)
(CORPULENCE)

CHERKASOVA, L.S., prof.

Modern concept of the causes of excessive weight in man. Zdrav. Belor. 6 no. 7:15-17 Je '60. (MIRA 13:8)
(CORPULENCE)

MEREZHINSKIY, M.F.; CHERKASOVA, L.S.

Role of diet in the development of body adaptation to external temperature changes. Vop. pit. 19 no.3:33-37 My-Je '60. (MIRA 14:3)

1. Iz kafedry biokhimii (zav. - prof. M.F.Merezhinskiy) Meditsinskogo instituta, Minsk.

(ACCLIMATIZATION) (DIET)

CHERKASOVA, Lidiya Semenovna, prof.; MEREZHINSKIY, Mikhail Fedorovich, prof.; GES', N.D., red.; DUBOVIK, A.P., tekhn. red.

[Fat and lipid metabolism] Obmen zhirov i lipidov. Minsk, Izd-vo M-va vysshego, srednego spetsial'nogo i professional'nogo obrazovaniia BSSR, 1961. 400 p. (MIRA 15:6)
(FAT METABOLISM) (LIPID METABOLISM)

CHERKASOVA, L.S., KUKUSHKINA, V. A., MALASHKO, V.I., TAIN, M. TU.,
TOMILOVSKIY, K. V., (USSR)

"Energetic Study of Carbohydrate Metabolism During Single and Fractionated Co^{60} Irradiation."

Report presented at the 5th Int'l. Biochemistry Congress, Moscow, 10-16 Aug 1961.

32757
S/205/61/001/006/017/022
D243/D305

27.1220 also 2209

AUTHOR: Cherkasova, L.S.

TITLE: Changes in carbohydrate metabolism in the central nervous system after X- and Co^{60} γ-radiation

PERIODICAL: Radiobiologiya, v. 1, no. 6, 1961, 919 - 925

TEXT: The object was to study the effect of X- and Co^{60} γ-radiation on carbohydrate metabolism in the central nervous system, as reflected by changes in glycolysis and the glycogen fraction, ATP and creatine phosphoric acid metabolism in the brain hemispheres, the labile phosphorus-containing products formed on carbohydrate consumption, oxygen absorption and the activity of phosphorylase, cytochromoxidase and succindehydrogenase. Sexually mature white rats and chinchilla rabbits were subjected to the following radiation regimes; for single X-radiation, all animals received a 600 - 700 rad. dose, at a rate of 38 rads/min; for single γ-radiation, the rats received 600 - 700 rads at 20 - 25 rads/min and the rabbits, 900 rads at 14 rads/min; for fractional X-radiation, rats were given single doses of 40 rads, at 21 rads/min, up to a total of 760

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Changes in carbohydrate metabolism ...

rads, delivered in 1 - 1.5 months; for fractional γ-radiation, they were given 40 rad single doses, at 13 rads/min., to a 760 rad. total in 1 month; rabbits received both types of radiation in single doses of 100 rads, at 8 rads/min, to a total of 1,000 rads in one week. Estimations were made immediately after irradiation and at intervals for 3 - 4 months. To study the glycogen fraction and the labile phosphorus compounds in the brain, the rats were killed by submersion in liquid oxygen. To study the respiration rate and glycolysis, and the fermentation systems of the CNS, the rabbits were killed by air embolus. The general reaction to radiation was estimated from the clinical picture, peripheral blood analyses and body weight. 10 - 15 animals were used in each series of tests. X-radiation was given from a РУМ-3 (RUM-3) apparatus; γ-radiation from a ГУТ-Со-400 (GUT-Co-400) apparatus. The author concludes that the CNS is highly sensitive to the effect of ionizing radiation. ATP and creatinephosphoric acid metabolism are considerably disturbed, together with glycogen metabolism, particularly with regard to free glycogen and glycogen-lipoid fractions. Carbohydrate conversions are hampered and oxygen absorption and the fermentation systems act more vigorously. X- and γ-radiation produce similar effects, but

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the latter disturbs glycogen metabolism more and increase oxygen absorption and succindehydrogenase activity to a greater extent. The phosphorolytic activity of phosphorylase is more inhibited after X-radiation. Co^{60} γ-radiation also causes a greater consumption of glucose-1-, glucose-6- phosphate and fructose-1,6-diphosphate than X-radiation. After 3 - 4 weeks surviving animals begin to return to a normal state, this process being dependent on the relative stability of the fermentation system. Single radiation causes greater changes in carbohydrate metabolism than fractional radiation. A.V. Lebedniskiy and Z.N. Nakhil'nitskaya (Ref. 1: Vliyaniye ioniziruyushchikh zilucheniy na nervnuyu sistemu (Effect of Ionizing Radiations on the Nervous System), Atomizdat, M., 1960) are mentioned for work in this field. There are 4 tables and 21 Soviet-bloc references.

ASSOCIATION: Institut fiziologii Akademii nauk Belorusskoy SSR, Minsk (Institute of Physiology AS BSSR, Minsk)

SUBMITTED: June 26, 1961

Card 3/3

PHASE I BOOK EXPLOITATION SOV/6156

Cherkasova, L. S., K. V. Fomichenko, T. M. Mironova, F. D. Koldobskaya, V. A. Kukushkina, V. G. Remberger

Ioniziruyushcheye izlucheniye i obmen veshchestv (Ionizing Radiation and Metabolism). Minsk, Izd-vo AN BSSR, 1962, 152 p. Errata slip inserted. 2,200 copies printed.

Sponsoring Agency: Akademiya nauk Belorusskoy SSR. Institut fiziologii.

Resp. Ed.: L. S. Cherkasova; Ed. of Publishing House: T. Zaytseva; Tech. Ed.: A. Atlas.

PURPOSE: This book is intended for physicians, biologists, biochemists, radiologists, and students of medical institutes.

COVERAGE: This monograph summarizes the results of the most recent investigations in the field of radiation biochemistry. Attention has been

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2

focused mainly on problems of changes and disturbances in metabolic processes in the central nervous system, the endocrine system, the gastrointestinal tract, and the liver and muscles after irradiation of the animal organism with ionizing radiation.

TABLE OF CONTENTS:

CHERKASOVA, L. S. and FOMICHENKO, K. V.

"Effects of Ionizing Radiation on Protein Metabolism in the Central Nervous System and in the Liver"

paper presented at the Symposium on Biological Effects of Ionizing Radiation at the Molecular Level (IAEA), 2-6 July 1962, Brno, Czech.

ACCESSION NR: AT3013147 S/3018/63/000/000/0589/0596

AUTHOR: Cherkasova, L. S.; Romberger, V. G.; Mironova, T. M.; Koldovskaya, F. D.

TITLE: Carbohydrate-phosphorus metabolism in the brain with total X-irradiation

SOURCE: Tret'ya Vsesoyuznaya konferentsiya po biokhimii nervnoy sistemy*. Sbornik dokladov. Yerevan, 1963, 589-596

TOPIC TAGS: brain carbohydrate metabolism, brain phosphorus metabolism, carbohydrate-phosphorus metabolism, brain tissue, single X-radiation dose, fractional X-radiation dose, free glycogen, protein-bound glycogen, lipoid-bound glycogen, total glycogen, glucose-1-phosphate, glucose-6-phosphate, fructose-1.6-diphosphate, phosphopyruvic acid, carbohydrate metabolism radiation damage

ABSTRACT: The effects of single and fractional X-radiation doses on brain metabolism were investigated by determining levels of glycogen fractions (free, protein-bound, lipoid-bound, and total glycogen) and levels of carbohydrate metabolism intermediate products containing phosphorus (glucose-1-phosphate, glucose-6-phosphate, fructose-1.6-

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ACCESSION NR: AT3013147

diphosphate, and phosphopyruvic acid). Experimental white rats were X-irradiated with single total doses of 700 r (RUM-3 unit, no filter, focal length 30 cm, 38 r/min) and 40 r (RUM-3 unit, focal length 40 cm, 21 r/min). Animals were X-irradiated under the same conditions with daily 40 r fractional doses totaling 120 and 760 r. Methods for measuring glycogen fractions and products containing phosphorus are not described. Observations were made 1, 2, 5, 15, 30, 60, and 90 days after irradiation. Findings show that a single 700 r dose causes the most significant glycogen metabolism changes. With a 700 r dose glycogen accumulates in the brain between the 30th and 60th days, lipoid-bound glycogen level drops below normal on the 2nd day reaching its norm by the 60th day, protein-bound glycogen is high at all periods, and free glycogen level is unsteady. A single 40 r dose causes less marked changes with a reduction in lipoid-bound glycogen level on the 60th day and a slight decrease in protein-bound glycogen and total glycogen levels. Fractional radiation doses totaling 700 r produce relatively small changes in all glycogen fraction levels because of compensatory processes taking place after each dose. For carbohydrate metabolism intermediate products containing phosphorus, fractional doses totaling 760 r cause the most significant shifts. With fractional doses totaling 760 r, glucose-1-