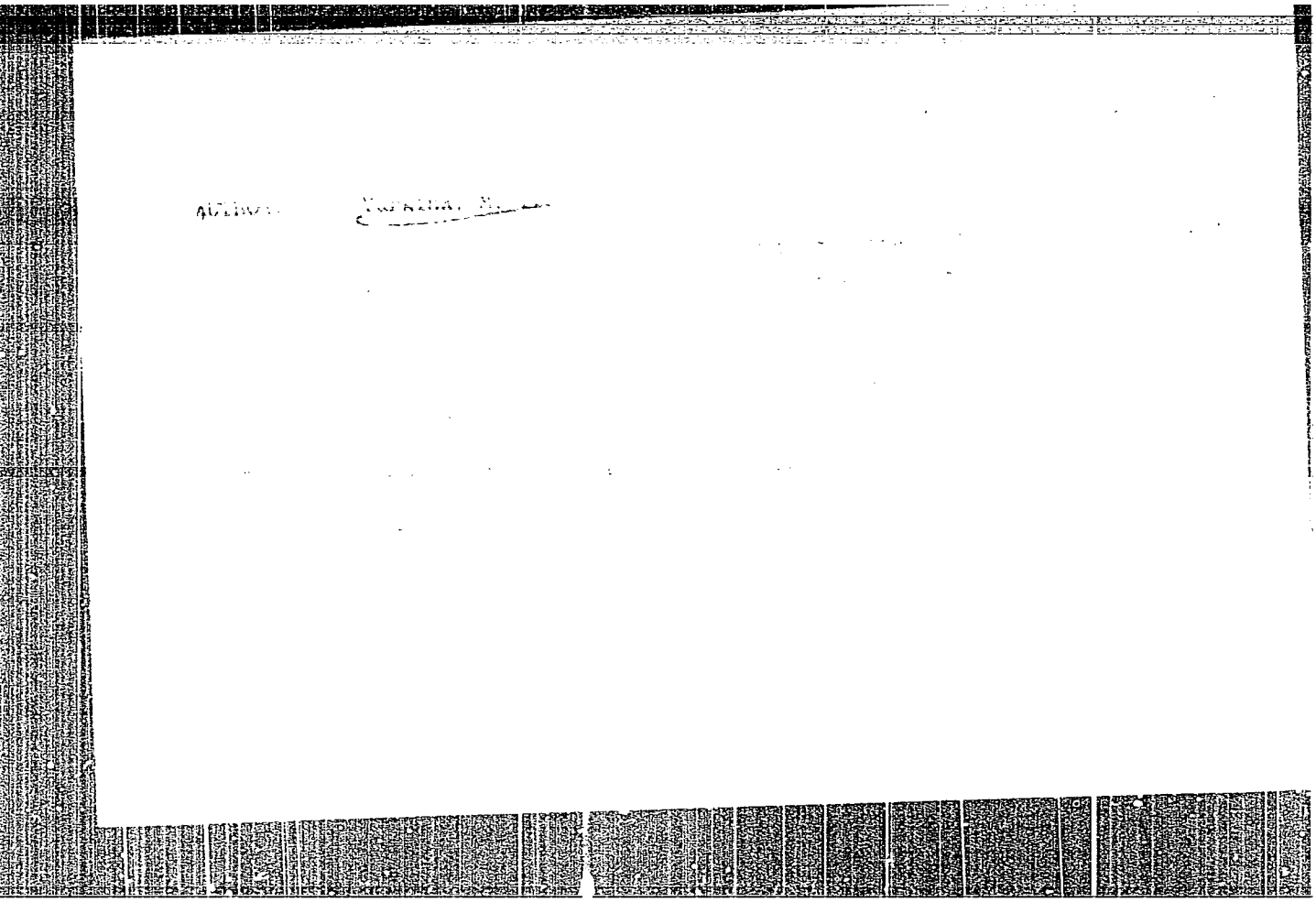

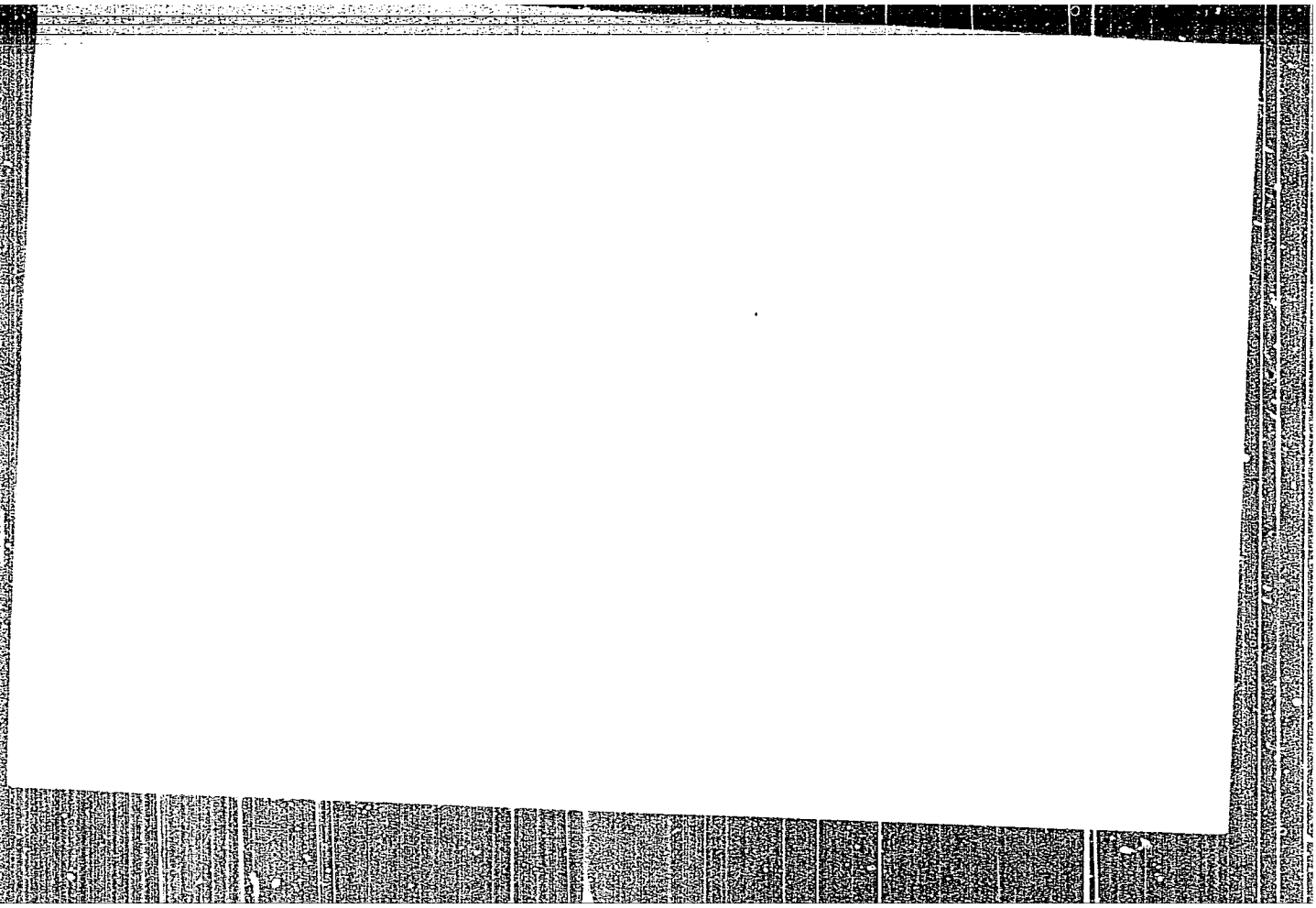

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963210018-0"

MOLODENSKIY, M.S.; YEREMEYEV, V.F.; YURKINA, M.I.

Problem of transversal shift in triangulation. Geod. i kart. no.6:3-5 Je '63. (MIRA 16:9)

(Triangulation)

BROVAR, V.V.; YEREMEYEV, V.F.; MAKAROV, N.P.; PELLINEN, L.P.; SHIMBIREV, B.P.; YURKINA, M.I.

Determining the external gravitational field and the figure of the earth. Geod. i kart. no.10:74-76 O '63. (MIRA 16:12)

L 3629-66 EWT(d)/EWT(l) IJP(c) GW

ACCESSION NR: AT5023297 UR/2547/65/000/157/0047/0057
528.21:531.26

AUTHOR: Yurkina, M. I.; Starostina, A. B.

TITLE: Model testing of the principle of numerical integration for computations based on the Molodenskiy integral equation for the disturbing potential

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut geodezii, aeros"yemki i kartografii. Trudy, no. 157, 1965. Issledovaniya po geodezicheskoy gravimetrii (Research on geodetic gravimetry), 47-57

TOPIC TAGS: geodetic gravimetry, disturbing potential, Molodenskiy equation, integral equation

ABSTRACT: The principle of numerical integration using the Molodenskiy integral equation for the disturbing potential has been tested on a terrestrial model in the form of a cone situated on a reference surface. [See AT5023296, ATD Press v. 4, no. 106, 22 Nov 1965, 7-9.] In the present study, the model was changed slightly by superimposing on the main cone a truncated cone in which the center of the upper surface coincided with the apex of the main cone. Computations were made for the value of the disturbing potential at the vertex of the cone. The surface of the

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L 3629-66

ACCESSION NR: AT5023297

3

cone was approximately represented by plane sides in two versions, the first for large areas and the second for small areas. Tabulated results show that the latter version is more accurate. Orig. art. has: 18 formulas, 2 figures, and 1 table.

[ER]

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut geodezii, aeros"yemki i kartografii (Central Scientific Research Institute of Geodesy, Aerial Surveying, and Cartography)

44,55

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4114

BVK

Card 2/2

L 3265-66 EWT(d)/EWT(l) IJP(c) GW

ACCESSION NR: AT5023296 UR/2547/65/000/157/0003/0046
528.21:531.26

AUTHOR: Yeremeyev, V. F.; Yurkina, M. I.

TITLE: Computation methods based on Molodenskiy's integral equation for the disturbing potential

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut geodezii, aerosъyemki i kartografii. Trudy, no. 157, 1965. Issledovaniya po geodezicheskoy gravimetrii (Research on geodetic gravimetry), 3-46

TOPIC TAGS: geodetic gravimetry, gravity computation, disturbing potential, gravity anomaly, gravity potential

ABSTRACT: The Molodenskiy method of deriving the integral equation for the disturbing potential T is used to obtain the expression for

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L 3265-66

ACCESSION NR: AT5013296

the T-derivative along a tangent τ to the earth's surface:

$$\frac{\partial T}{\partial \tau} = -\frac{1}{2\pi}\int_S \left\{ \frac{1}{r^2}\frac{\partial r}{\partial \tau}\left(g - \gamma - \frac{T}{\gamma}\frac{\partial \gamma}{\partial \nu}\right)\sec^2\alpha - (T-\bar{T})\left(\frac{\partial}{\partial \tau}\frac{\partial \frac{1}{r}}{\partial \nu}\sec^2\alpha - \right.\right.$$

$$\left.\left. - 2\frac{\partial}{\partial \tau}\vec{D}\left(\frac{1}{r}, h\right) + \frac{1}{r^2}\frac{\partial r}{\partial \tau}\Delta_1 h\right)\right\}\cos\alpha\, dS,$$

where r is the distance between the fixed station and the station being observed, g is the gravity measurement, γ is its normal, ν is the normal to the reference surface, α is the angle of tilt of the surface S with respect to the reference surface, and $\bar{T}$ is the value of T at the station being observed. This formula can be used to express the deflection of the vertical on the physical surface of the earth in terms of gravity anomalies and the disturbing potential. Methods are presented for the computation of the disturbing potential,

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L 3265-66

ACCESSION NR: AT5013296

deflection of the vertical, and the Stokes constants (in spherical functions). Stokes approximations are derived, and corrections to them are calculated by representing the physical surface of the earth as sides of a polyhedron; the projections of the sides on the reference sphere are spherical triangles. The heights of the sides are determined by the formula

$$h = a\vartheta + b\lambda + c,$$

where ϑ and λ are the polar distance and longitude, respectively, and a, b, and c are coefficients determined from h at the angles of the sides. Three formulas are derived for expressing the disturbing potential and deflection of the vertical in the case where the distance between the fixed station and the station being observed exceeds 300 km, or where the terrain in the vicinity of the station being observed is relatively flat. Investigations carried out on a model of the earth constructed in the form of a cone situated on the reference plane indicate that the Stokes approximation of the disturbing potential, using the first of the above formulas, does not

Card 3/4

L 3265-66

ACCESSION NR: AT5023296

3

improve the accuracy of the Vening-Meinesz formula for the area effect in a mountainous region. Orig. art. has: 71 formulas and 8 figures. [ER]

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut geodezii, aeros"yemki i kartografii, Moscow (Central Scientific Research Institute of Geodesy, Aerial Surveying, and Cartography) 44,55

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

NO REF SOV: 007 OTHER: 000 ATD PRESS: 4106

Card 4/4

YURKINA, M.I.; STAROSTINA, A.B.

Use of a model in testing the validity of the principle of numerical integration in calculations based on Molodenskiĭ's integral equation for the disturbing potential. Trudy TSNIIGAIK no.157:47-57 '65. (MIRA 18:10)

L 3797-66 EWT(1) GW

ACCESSION NR: AT5023238 UR/2547/65/000/157/0058/0065

40
37
B+1

AUTHOR: Yurkina, M. I.; Alekseshina, G. A. 44,55

TITLE: The estimate using an Earth's model of individual correction terms for the perturbation potential expansion coefficients in Stockes approximation

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut geodezii, aerosyemki i kartografii. Trudy, no. 157, 1965. Issledovaniya po geodezicheskoy gravimetrii (Research on geodetic gravimetry), 58-65

TOPIC TAGS: geologic survey, Earth planet, measurement

ABSTRACT: During an expansion into spherical harmonics of perturbing potentials, the coefficient q_m of the Legendre polynomial P_m has the form

$$q_m = \frac{R\delta_m}{m-1} + \frac{2-m}{4\pi R^2}\int T_c Q_m \lg^2 \frac{\alpha}{2}\, d\sigma + \frac{1}{4\pi R}\int (g-\gamma) Q_m \lg^2 \frac{\alpha}{2}\, d\sigma -$$

$$- \frac{1}{2\pi R^2}\int T_c \frac{\partial h}{R\partial\vartheta}\frac{\partial Q_m}{\partial\vartheta}\, d\sigma - \frac{1}{2\pi R^2}\int T_c \frac{\partial h}{R\sin\vartheta\,\partial\lambda}\frac{\partial Q_m}{\sin\vartheta\,\partial\lambda}\, d\sigma -$$

Card 1/3 UDC: 528.21

L 3797-66

ACCENSION NR: AT 5023298

$$-\frac{1}{4\pi R}\sum_{\sigma} T_c Q_m J - \frac{1}{4\pi k^2}\int_{\sigma} T_c Q_m \frac{\partial k}{R\,\partial\vartheta}\operatorname{ctg}\vartheta\, d\sigma.$$

Here ϑ - polar angle, λ - longitude, p_m - the respective expansion coefficient of the $(g-\gamma)$ gravitational anomaly, R - average radius of the Earth, T_c - Stockes approximation of the perturbing potential, α - angle of inclination of the element of the physical surface of the Earth the projection of which on the reference sphere δ is equal to $d\zeta$, h - normal altitude,

$$J = R^2 \lim_{\Delta\sigma\to 0} \int \Delta_2 h \sin\vartheta\, d\vartheta\, d\lambda,$$

where $\Delta\zeta$ - projection on the reference sphere of an arbitrary curvature of the edge obtained by cutting the plane representing the Earth's surface, and $\Delta_2 h$ - the Mologenskiy operator. The authors investigated the 2nd, 8th, and 16th order terms of this expansion on a model consisting of a spherical Earth and a mountain range girding it. Heights of the vertical section of this range were assumed equal to those taken from hypsometric maps of Tibet, the Himalayas, and the Caucasus. The surface of the range was put approximately equal to the combined area of all the Earth's mountain regions. The paper presents the determination of the influence of the mountain ridge on the q_m's and gives an estimate of the accuracy of the computations as a function of magnitude of the elementary intervals of numerical integrations (the accuracy

Card 2/3

L 3797-66

ACCESSION NR: AT5023293

B

diminishes noticeably with the increase in the elementary areas used). Results are summarized in the form of tables. Orig. art. has: 7 formulas, 3 figures, and 2 tables.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut geodezii, aerosyemki i kartografii, Moscow (Central Scientific-Research Institute of Geodesy, Aerial Photographic Survey and Cartography)

44,55

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

NO REF SOV: 000 OTHER: 000

BC

Card 3/3

L 3796-66 EWT(1) GS

ACCESSION NR: AT5023302 UR/2547/65/000/157/0116/0124
528.21:550.8

AUTHOR: Yurkina, M. I.

TITLE: Calculation of the first and the second vertical derivatives of gravity from maps of gravity anomalies

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut geodezii, aerosyemki i kartografii. Trudy, no. 157, 1965. Issledovaniya po geodezicheskoy gravimetrii (Research on geodetic gravimetry), 116-124

TOPIC TAGS: gravity, gravitation effect, Earth gravity, geophysics, gravimetric survey, geodesy

ABSTRACT: During the geological interpretation of the gravitational anomalies, geophysicists are increasingly interested in the problem of computing the first and second derivatives of gravitational forces from the mass of gravitational anomalies. However, all published expressions do not take into account the inclination of the terrain. The author develops and discusses formulas taking into considerations the local inclinations and, on the basis of the solution proposed by Molodenskiy for his integral equation describing the density of a single layer on the physical surface of the Earth,

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L 3796-66
ACCESSION NR: AT5023302

derives expressions for the determination of the second vertical derivatives of the perturbation potential. The Molodenskiy layer acts as a substitute for the attractions of all the anomalous masses in the interior of the Earth. Orig. art. has: 38 formulas and 1 figure.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut geodezii, aerosyemki i kartografii, Moscow (Central Scientific-Research Institute of Geodesy, Aerial Photographic Survey, and Cartography)

SUBMITTED: 00 ENCLO: 00 SUB CODE: ES

NO REF SOV: 007 OTHER: 002

BC
Card 2/2

L 3737-66 EWT(1)

ACCESSION NR: AP5027636 CZ/0023/65/009/002/0101/0108

AUTHOR: Yurkina, M. I. (Doctor)

TITLE: Computation of the first and the second vertical derivatives of gravity [This paper was presented at the Symposium on the Determination of the Figure of the Earth, October 6 - 10, 1964, Prague]

SOURCE: Studia geophysica et geodaetica, v. 9, no. 2, 1965, 101-108

TOPIC TAGS: gravity, gravimetry, earth gravity, geodesy

ABSTRACT: Following Molodenskiy's suggestions, anomalies of the vertical gradient of gravity were used to achieve a greater accuracy in the determination of the figure of the Earth by gravimetric methods. "The author thanks V. V. Brovar for noticing the errors." Orig. art. has 1 figure, 20 formulas and 1 table.

ASSOCIATION: Tsentral'nyy nauchno-issled. inst. geodezii, aeros"yemki i kartografii, Moscow (Central Scientific Research Institute of Geodesy, Photogrammetry and Cartography)

SUBMITTED: 06Oct64 ENCL: 00 SUB CODE: ES, MA

NO REF SOV: 004 OTHER: 000 JPRS

Card 1/1

L 31716-66 GW

ACC NR: AP6021183 SOURCE CODE: CZ/0023/66/010/001/0001/0014

48
B

AUTHOR: Yeremeyev, F. F.; Yurkina, M. I.

ORG: Central Scientific Research Institute of Geodesy, Photogrammetry and Cartography, Moscow (Tsentral'nyy nauchno-issledovatel'noy institut geodezii, aerofotos"yemki i kartografii)

TITLE: Evaluation of space networks 12

SOURCE: Studia geophysica et geodaetica, v. 10, no. 1, 1966, 1-14

TOPIC TAGS: geodetic survey, geodesy, space coordinate system, astronomic geodesics

ABSTRACT: The article describes a method of determining the coordinates of points on the earth's surface on the basis of measurement of a single base and of the horizontal and vertical angles. It is recommended that the preliminary values of the coordinates and elements of orientation of the local coordinate systems in the levelling of the space networks be determined on the basis of the necessary measurements. Differential equations are presented for the geological and astronomical azimuths and zenith distances. Orig. art. has: 2 figures and 32 formulas. [JPRS]

SUB CODE: 08 / SUBM DATE: 15Mar65 / ORIG REF: 004 / OTH REF: 020

Card 1/1

YURKINA, M.I.; YEREMEYEV, V.F.

Estimating the accuracy of deflections of the vertical and the accuracy of astronomical and astronomical-gravimetric leveling. Geod. i kart. no.8:76-78 Ag '64.

(MIRA 17:11)

S/114/62/000/008/005/006
E194/E455

AUTHORS: Churakova, S.V., Engineer, Yurkina, M.P., Engineer

TITLE: The magnitude of the hydraulic resistance coefficient of lenticular expansion compensators

PERIODICAL: Energomashinostroyeniye, no.8, 1962, 29-30

TEXT: Expansion compensators of various types are fitted in pipe runs. The lenticular type, resembling a segment of aneroid bellows, is a common type. These compensators set up a local aerodynamic resistance because, where the effective diameter of the pipe increases, part of the flow expands into the compensator, flows around and later returns to the main stream, causing a compressive effect. Factors as high as 1.3 to 3.4 have been quoted for the resistance of lenticular compensators, and sleeves are sometimes fitted to reduce these losses. Tests made at the Ural'skiy turbomotornyy zavod (Ural Turbine Works) showed that such figures are exaggerated. For pipes of 200 mm internal diameter and more, the resistance factor does not exceed 0.2 with the Reynolds number in the range of 1.2×10^5 to 5.8×10^5. Simple calculations endorse this result. The use of sleeves did not appreciably reduce the losses and is, therefore, not recommended.
Card 1/1 There are 3 figures.

CHEKHARINA, E.A.; YURKINA, M.S.

Clinical aspects of myelomatosis. Khirurgiia, Sofia 11 no.9:736-805 1958.

1. Akademiia na meditsinskite nauki--SSSR institut po onkologiia direktor: prof. A. I. Serebrov.
(MYELOMA, PLASMA CELL, case reports, (Bul.))

KOSTYUNIN, I.K.; AKULOV, P.V.; YURKINA, N.K.; CHERNYY, I.I.

Causes of the rupture of the upper transversal anchor bolts of coke ovens. Koks i khim. no.6:21-23 '63. (MIRA 16:9)

1. Chelyabinskiy metallurgicheskiy zavod.
(Coke ovens) (Metals—Analysis)

ACC NR: AP7004043 (A) SOURCE CODE: UR/0323/66/000/005/0037/0040

AUTHOR: Yurkina, N. S. (Engineer); Pavlov, N. N. (Candidate of technical sciences; Docent)

ORG: Moscow Technological Institute of Light Industry (Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti)

TITLE: Reaction of polynuclear tanning of trivalent complexes of trivalent chromium with AK 50/50 polyamide powder

SOURCE: IVUZ. Tekhnologiya legkoy promyshlennosti, no. 5, 1966, 37-40

TOPIC TAGS: polyamide, chromium compound, polyamide powder, tanning complex, chromium complex

ABSTRACT: A method for the production of highly dispersed AK 50/50 polyamide powder with the minimum amount of emulsifiers and organic solvents is described. A 20% polyamide suspension in 80% ethanol was heated and the resultant solution was cooled until jellied. The jellied compound was held at least 48 hr at 4 to 6 C and subsequently stirred for 3 to 5 min in the presence of

Card 1/2

ACC NR: AP7004043

triethanol soap. This led to the formation of a viscous mixture which was continuously stirred with the gradual addition of water at 36 C. The unstable 10—20% suspension thus formed precipitated a polyamide powder during settling. The dispersed precipitate was filtered and dessicated. This powder was used in investigations of binding chromium compounds. It was shown that the chromium complexes are bound to a single structural polymer unit when the concentration of chromium is high, and to the multiple sites when the concentration of chromium salts is low. This paper was approved by the Department of Inorganic and Analytical Chemistry, MTILP. Orig. art. has: 1 figure and 1 table. [AM]

SUB CODE: 13, 11/SUBM DATE: 01Apr66/ORIG REF: 002/OTH REF: 004/

Card 2/2

ROZMAKHOV, I.G.; Prinimali uchastiye: SEROVA, P.P.; YURKINA, S.I.; BUDAYEV, Kh., student; SHCHERBAKOV, S., student

Effect of forest on the microcomplexity of soils. Pochvovedenie no.12: 19-26 D '63. (MIRA 17:11)

YURKINA, T.G.

Studying the nutrient and water-air cycle of soils in crop fallows. (MIRA 13:11)
Trudy Komi fil.AN SSSR no.8:149-154 '59.
(Soil chemistry)

YURKIN, V. A.

Yurking, V. A. - "The role of millet husks in kernel mositure", (Problems of preservation), Trudy Vsesoyuz. nauch.-issled. in-ta zerna i produktov ego pererabotki, Issue 17, 1949, p. 100-07.

SO: U-4110, 17 July 53, (Letopis 'Zhurnal 'nykh Statey, No. 19, 1949).

YURKINA, V.I. [IUrkina V.I.].

Material on the ecology of Pulex irritans. Trudy Inst. zool. AN URSR (MIRA 11:6)
2:94-108 '49. (Fleas)

YURKINA, V.I.

Alphaniptera of the eastern Carpathians. Trudy Inst.zool.AN URSR 8:76-90 '52. (MLRA 9:9)
(Carpathian Mountain region--Fleas)

YURKINA, V.I.

IOFF, I.G.; GERSHKOVICH, N.L.; ZAGNIBORODOVA, Ye.N.; LABUNETS, N.F.; LEBEDEV, A.D.; MIKULIN, M.A.; SKALON, O.I.; TIFLOV, V.Ye.; SHVARTS, Ye.A.; YURKINA, V.I.; YAGUBYANTS, I.M.

New species of fleas (Suctoria-Aphaniptera); third report. Med.paraz.i paraz.bol. no.5:460-465 S-O '53. (MLRA 6:12) (Fleas)

SOV/21-59-3-26/27

AUTHOR: Yurkina, V.I.

TITLE: New Data on the Biology of the Development of the Flea-Ceratophyllus Styx Roths, 1900 - a Parasite of Riparia Riparia (Novyye dannyye po biologii razvitiya blokhi (Ceratophyllus styx Roths, 1900) - parazita beregovoy lastochki)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1959, Nr 3, pp 338-340 (USSR)

ABSTRACT: This is a short account of the author's study of the fleas named in the title, which had been so far unknown in the Ukraine. The author found them in the nests of shore swallows, in the Kiyevskaya, Vinnitskaya and Cherkasskaya oblasts, and studied them at seven various bird colonies. The greatest number of these fleas was reached in August, when up to 75% of the nests were infected by them. Adult fleas wintered in the nests of Riparia riparia and adapted themselves to prolonged starvation.

Card 1/2

SOV/21-59-3-26/27

New Data on the Biology of the Development of the Flea-Cerato-phyllus Styx Roths, 1900, - a Parasite of Riparia Riparia

There is 1 Soviet reference.

ASSOCIATION: Institut zoologii AN UkrSSR (Institute of Zoology of the AS UkrSSR)

PRESENTED: November 29, 1958, by A.P. Markevich, Member of the AS UkrSSR

Card 2/2

YURKINA, V.I.

Material on the Aphaniptera of the Ukrainian S.S.R.
Pratsi Inst.zool.AN URSR 15:64-96 '59. (MIRA 13:7)
(Ukraine--Fleas)

YURKINA, V.I.

Palaeopsylla steini Jordan, 1932, a species of flea heretofore unknown in the Soviet Union. Dop.AN URSR no.4:544-546 '60. (MIRA 13:7)

1. Institut zoologii AN USSR. Predstavleno akademikom AN USSR A.P.Markevichem [O.P.Markevychem].
(Transcarpathia--Fleas)

YURKINA, V.I.; KAS'YANENKO, V.G.[Kas'ianenko, V.H.], akademik, otv. red.; MARKEVICH, O.P.[Markevych, O.P.], akademik, red. toma; PIDOPLICHKO, I.G.[Pidoplichko, I.H.], doktor biol. nauk, red.; VOINSTVENSKIY, M.A.[Voinstvens'kyi, M.A.], doktor biol. nauk; PANASENKO, M.D., red. izd-va, red.; ROZENTSVEYG, Ye.N., tekhn. red.

[Fauna of the Ukraine in forty volumes] Fauna Ukrainy; v sorока tomakh. Red. kollegiia: V.G.Kas'ianenko ta inshi. Kyiv, Vyd-vo Akad. nauk URSR. Vol.17, no.4. [Fleas] Blokhi. 1961. 151 p. (MIRA 15:6)

1. Akademiya nauk USSR (for Kas'yanenko, Markevich).
(Ukraine—Fleas)

YUHKINA, V.I.

Biology of Ophthalmopsylla volgensis Wagn. et Ioff and Ctenophthalmus orientalis Wagn. as related to the ecology of their host animals. Trudy Ukr. resp. nauch. ob-va paraz. no.2:159-165 '63 (MIRA 17:3)

1. Institut zoologii AN UkrSSR.

YURKINA, V.I.

Laws governing the distribution of fleas in the area of active and potential foci of tularemia in the southwestern and central steppe of the Ukrainian S.S.R. Trudy Ukr. resp. nauch. ob-va paraz. no. 3:256-266 '64 (MIRA 19:1)

1. Institut zoologii AN UkrSSR.

YURKO, A. D. - LOGVINOV, D. D.

Norsulfazole

Using norsulfazole in postnatal complications in mares.
Konevodstvo 23 no. 2, 1953

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

YURKO, A. D.

Yurko, A. D.

"The Use of Norsulfazol in Acute Septic Post-Natal Complications in Horses." Min Higher Education Ukrainian SSR. Khar'kov Veterinary Inst. Khar'kov, 1955 (Dissertation for the degree of Candidate in Veterinary Science)

SO: Knizhnaya letopis' No. 27, 2 July 1955

USSR/Diseases of Farm Animals - Pathology of Reproductions. R-5

Abs Jour : Ref Zhur - Biol., No 14, 1958, 64693

Author : Logvinov, D.D.; Yurko, A.D.

Inst : Ukrainian Scientific Research Institute of Experimental Veterinary Medicine.

Title : Prompt Removal of the Placenta in Cows as a Measure for Preventing Metritis.

Orig Pub : Vyul. nauchno-tekhn. inform. Ukr. n.-i. in-t eksperim. veterinarii, 1957, No 3, 3-6.

Abstract : In case of the ineffectiveness of the conservative methods of treatment, the suthors recommend to resort to the operative removal of the placenta within the period between 12 to 18 hours, and not later than 24 hours, after parturition. Following the removal of the placenta, it is not advisable to irrigate the uterus with disinfecting aqueous solutions.

Card 1/2

USSR/Diseases of Farm Animals - Diseases Caused by Bacteria and Fungi. R-2

Abs Jour : Ref Zhur - Biol., No 14, 1958, 64619

Author : Logvinov, D.D.; Yurko, A.D.

Inst : Ukrainian Scientific Research Institute of Experimental Veterinary Medicine.

Title : Treatment of Infectious Vestibulitis of Cows.

Orig Pub : Byul. nauchno-tekhn. inform. Ukr. n.-i. in-t eksperim. veterinarii, 1957, No 3, 7-8.

Abstract : In a widespread industrial experiment, a 40% solution of ichtyol with the addition of 10% of onion or garlic juice was used with positive results in the treatment of infectious vestibulitis in cows. The ichtyolphytoncide solution was applied by means of an impregnated tampon, daily, for 4 to 8 days, until cure was achieved.

Card 1/1

USSR/Diseases of Farm Animals - General Problems. R-1

Abs Jour : Ref Zhur - Biol., No 10, 1958, 45364

Author : Logninov, D.D., Yurko, A.D., Osmachkin, S.P., Miloradovich, A.F.

Inst : Ukrainian Scientific Research Institute of Experimental Veterinary Medicine.

Title : On the Surgical Treatment of the Acquired Constriction of the Teat Canal.

Orig Pub : Byul. nauchno-tekhn. inform. Ukr. n-i. in-t eksperim. veterinarii, 1957, No 3, 9-10.

Abstract : No abstract.

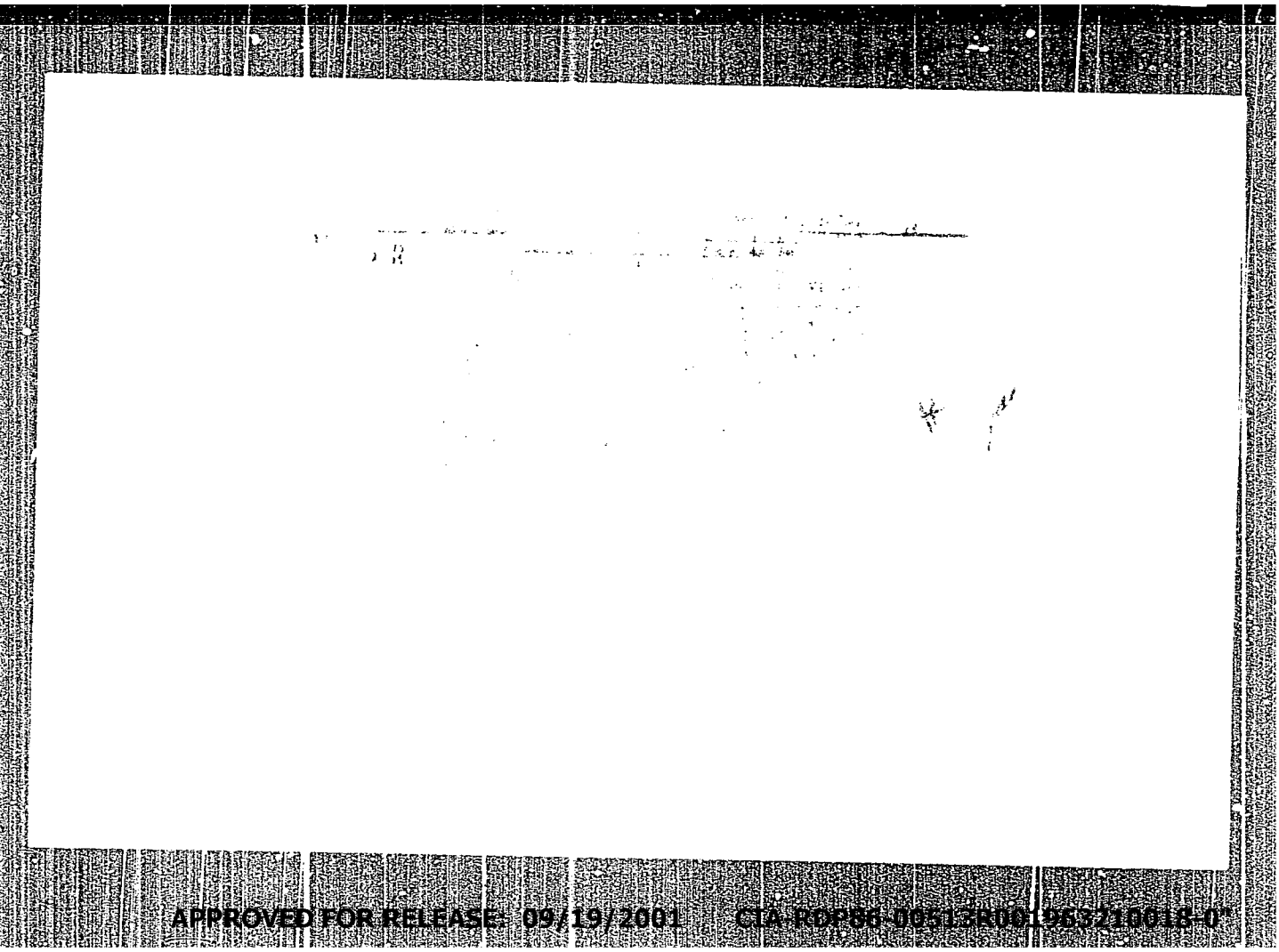
Card 1/1

- 2 -

YURKO, A.D.

Norsulfazole treatment of mares with acute septic complications following parturition. Veterinariia 36 no.2:71-73 F '59. (MIRA 12:2)

1. Khar'kovskiy veterinarnyy institut.
(Sulfathiazole) (Mares--Diseases and pests)



APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963210018-0"

YURKO, D. G.

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Natural Gases and Petroleum. Motor Fuels. Lubricants, I-13

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62603

Author: Yurko, D. G.

Institution: None

Title: Use of the Chromatographic Method for the Separation and Analysis of Aromatic Hydrocarbons and Their Polynitroderivatives

Original Periodical: Tr. komis. po analit. khimii AN SSSR, 1955, 6, 182-190

Abstract: The adsorption of individual polynitroderivatives of aromatic hydrocarbons (PAH) and their mixtures was investigated and it was shown that their adsorption and conversion into colored compounds depend on the nature of the PAH as well as on the nature of adsorbents and solvents. In experiments with Al_2O_3 it was shown that adsorption of PAH depends more upon activity of the adsorbent than on the nature of the solvent, and on more active forms of Al_2O_3 ("acid" form

Card 1/2

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Natural Gases and Petroleum. Motor Fuels. Lubricants, I-13

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62603

Abstract: corresponding to Brockmann's preparation Al_2O_3-1) the molecular adsorption is replaced by a surface chemical reaction. PAH are converted to colored compounds and are strongly retained at the surface of Al_2O_3 particles. The basic form Al_2O_3-1 is much less active. Activity of both forms of Al_2O_3 is sharply decreased with an increase of their moisture content. There are given the colorations of PAH in alkaline acetone and on Al_2O_3 and also the procedure of qualitative analysis of mixtures of aromatic hydrocarbons (AH) during which it was found that adsorption of AH by finely porous silicagel is directly dependent on their refraction index. An explanation is provided of the mechanism of the surface reaction and of the reaction of Yanovskiy.

Card 2/2

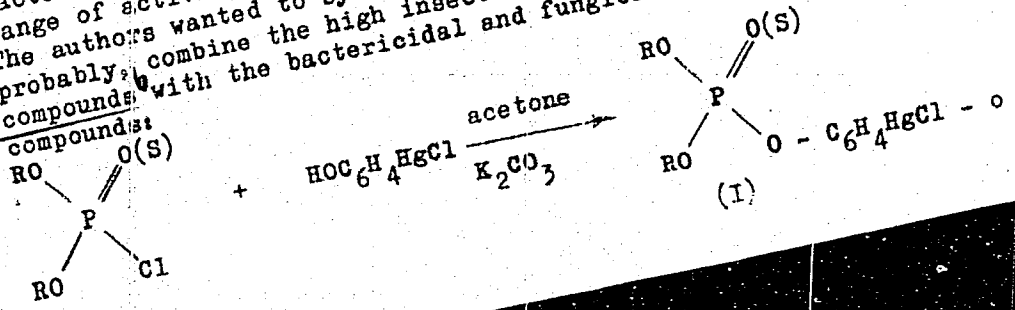
S/079/60/030/007/025/039/XX
B001/B066

AUTHORS: Malinovskiy, M. S., Yurko, D. G., and Tul'chinskiy, V. B.

TITLE: Phosphoric Acid Esters With Mercury Containing Radicals

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 7, pp. 2170-2171

TEXT: Mercury compounds are known to be most effective in the control of bacterial and fungus deseases of plants. They are distinguished by a wide range of activity and do not affect the growth of seeds treated with them. The authors wanted to synthesize compounds of type (I) which, most probably, combine the high insecticidal activity of organophosphorus compounds with the bacterecidal and fungicidal activity of organomercury compounds:



(I)

Card 1/2

Phosphoric Acid Esters With Mercury Containing Radicals

S/079/60/030/007/025/039/XX
B001/B066

The authors synthesized these compounds on the basis of dialkyl chloro phosphates, dialkyl chloro thiophosphates, and o-hydroxyphenyl mercuric chloride. The latter was condensed with dialkyl chloro phosphates and dialkyl chloro thiophosphates in water, acetone, and benzene between 20° and 80°C. The resultant hydrogen chloride was bound by sodium hydroxide, triethylamine, pyridine, and potassium carbonate. This condensation proceeds best in acetone or benzene and in the presence of K_2CO_3. It takes 6 - 8 hours at low temperatures, and 1 - 2 hours between 50° and 80°; the yield of the end products decreasing considerably. The six resultant compounds, unknown so far, are presented in a table. There is 1 table.

SUBMITTED: May 21, 1959

Card 2/2

MALINOVSKIY, M.S.; YURKO, D.G.; MASHTAK, N.I.

Mercury-containing esters of phosphoric acids having fungicide properties. Izv.vys.ucheb.zav.;khim.i khim.tekh. 4 no.3:514-516 '61. (MIRA 14:10)

1. Dnepropetrovskiy gosudarstvennyy universitet, kafedra organicheskoy khimii.
(Mercury organic compounds)
(Phosporic acid)
(Fungicides)

YURKO, D.G., TULCHINSKIY, V.B., MASHTAK, N.I.

Certain esters of phosphoric acids with mersury containing radicals., exhibiting fungicidal action.

Khimiya i Primeneniye Fosfororganicheskikh Soyedineniy (Chemistry and application of organophosphorus compounds) A. YE. ARBUZOV, Ed. Publ. by Kazan Affil. Acad. Sci. USSR, Moscow 1962, 632 pp.

Collection of complete papers presented at the 1959 Kazan Conference on Chemistry of Organophosphorus Compounds.

EXCERPTA MEDICA Sec 15 Vol 11/11 Chest Dis. Nov 58

2434. PHYSICAL EXERCISES AND MASSAGE IN THE COMPLEX TREATMENT OF PNEUMONIA IN CHILDREN OF EARLY AGE (Russian text) - Yurko G. P. Ped. Inst., Karachev - PEDIATRIJA 1957, 9 (62-67) Graphs 4

Infants and children 3 months to 2 yr. old were treated with massage and therapeutic exercises after the abatement of toxic symptoms. The results of this kind of treatment were altogether favourable both with respect to an earlier return to a normal function of the respiratory tract and to a decreased susceptibility to pneumonia in a follow-up period of 5 to 12 months compared with a similar group of children who were not treated in this way.

Najman - Zagreb (L, 7, 15)

YURKO, G.P.

YURKO, G.P.

Use of exercise therapy among other measures in treating pneumonia in younger children. Vop.kur.fizioter. i lech.fiz.kul't. 22 no.4: 57-61 Jl- Ag '57. (MIRA 10:11)

1. Iz Nauchno-issledovatel'skogo pediatricheskogo instituta Ministerstva zdravookhraneniya RSFSR (dir. - kandidat meditsinskikh nauk V.N.Karachevtseva)

(PNEUMONIA) (EXERCISE THERAPY)

YURKO, G. P., Cand Med Sci -- (diss) "Employment of therapeutic gymnastics and massage in complex treatment of pneumonia in children of early age." Mos, 1958. 12 pp (Inst of Pediatry, Acad Med Sci USSR), 200 copies (KL, 18-58, 104)

YURKO, I.

LAPKO, A.; YURKO, I.

Long runs on methane between repairs. Avt.transp. 32 no.3:38 Mr '54. (MLRA 7:8)
(Automobiles--Engines (Compressed gas))

VASIL'YEVA, A.V.; STEPANYAN, Ye.G.; GAL'PERIN, L.P.; YURKO, L.P.; ORAKAYEVA, N.S.

Epidemiology of typhus abdominalis and paratyphoid fever in the City of Ashkhabad. Zdrav. Turk. 5 no.4:14-16 Jl-Ag '61.
(MIRA 14:10)

1. Iz Ashkhabadskogo instituta epidemiologii i gigiyeny (direktor - dotsent Ye.S.Popova).
(ASHKHABAD—TYPHOID FEVER) (PARATYPHOID FEVER)

STEPANYAN, Ye.G.; YURKO, L.P.; BURMISTROVA, O.G.; ORAKAYEVA, N.S.

Salmonellosis in Ashkhabad. Zdrav.Turk. 6 no.4:18-21 Jl-Ag '62.
(MIRA 15:8)

1. Iz kafedr mikrobiologii (zav. -prof. Ye.Ya.Gleyberman), infektsionnykh bolezney (zav. - dotsent A.S.Medvedev) Turkmenskogo gosudarstvennogo meditsinskogo instituta i Ashkhabadskogo instituta epidemiologii i gigiyeyeny (dir. - dotsent Ye.S.Popova).
(ASHKHABAD--SALMONELLA INFECTIONS)

YURKO, L.P.; STAPANYAN, Ye.G.

Biological characteristics of Salmonella typhi murium Breslau cultures of various origin. Izv. AN Turk. SSR. Ser. biol. nauk No.3:30-36 '62. (MIRA 18:2)

1. Ashkhabadskiy institut epidemiologii i gigiyeny.

L 41321-65

ACCESSION NR: A 5009933

S/0296/64/000/006/0050/0056

AUTHOR: Stepanyan, Ye. G.; Semashko, I. [illegible]; Geyberman, S. Ye.; Yurko, L. P.; Shashikhina, M. [illegible]

TITLE: Experimental Breslau salmonellosis in sparrows

SOURCE: [illegible] Izvestiya. [illegible] [illegible]icheskikh nauk, no. 6, 1964, 50-56

TOPIC TAGS: [illegible] salmonella, food poisoning, [illegible], epidemiology

ABSTRACT: [illegible] either a typical or a [illegible] in a disease with a definite [illegible] accompanied by prolonged [illegible] pathological changes in various organs accompanied by prolonged [illegible] and pathohistological data [illegible] results in [illegible] [illegible] the [illegible] [illegible] which do not [illegible] [illegible] characteristic is persistent. [illegible] carbohydrates showed [illegible] carriers, the prolonged elimination of [illegible] infected by [illegible]

Card 1/2

L 41825-65

ACCESSION NR: P5009033

the bacteria, and the comparative ease with which healthy birds contract the disease on contact with sick birds point up the epidemiological significance of this reservoir of salmonellosis. Orig. art. has: 2 figures, 1 table.

ASSOCIATION: Ashkhabadskiy institut epidemiologii i gigiyeny Minzdrava Turkmenskoy SSR (Ashkhabad Institute of Epidemiology and Hygiene, Turkmen Ministry of Health)

SUBMITTED: 23Nov63 ENCL: 00 SUB CODE: LS

NO REF SOV: 006 OTHER: 004

Card 2/2

YURKO, P. G.

Yurko, P. G. "Acute appendicitis," Trudy Kazansk. gos. in-ta usovershenstvovaniya vrachey im. Lenina, Vol. XI, 1949, (On cover: 1948), p. 171-94.

SO: U-3736, 21 May 53, (Letopis 'Zhurnal 'nykh Statey, No. 17, 1949).

YURKO, V., insh. (UB5SHK)

Simple UHF apparatus. Radio no.6:18-21 Je '65. (MIRA 18:10)

YURKO, V. (UB5CHK)

Ultrashort wave apparatus in competitions. Radio no.12:12-14 D '64. (MIRA 18:3)

BARKHATNYY, G., inzh.; YURKO, Yu., inzh.

Precast mesh-reinforced folded shells. Na stroi.Ros. 4 no.6:14 Je '63. (MIRA 16:6)

(Roofs, Shell)

MALKIN, V.B.; YURKOV, A.F.

Resistance of adrenalectomized and hypophysectomized rats to acute oxygen deficit. Probl.kosm.biol. 2:393-398 '62.
(MIRA 16:4)

(ANOXEMIA) (PITUITARY BODY) (ADRENAL GLANDS)

FROM, A.A.; KOSMACHEVSKAYA, G.A.; YURKOV, A.S.

Mechanism of the disintoxicating effect of low molecular polyvinylpyrrolidone. Probl. gemat. i perel. krovi no.10:44-49 '62. (MIRA 17:12)

1. Iz tsitologicheskoy laboratorii (zav. - prof. E.I. Torent'yeva) i khirurgicheskoy kliniki (zav. - prof. D.M. Grozdov) TSentral'nogo ordena Lenina instituta gematologii i perelivaniya krovi (direktor - dotsent A.Ye. Kiselev).

L 04178-67 EWI(1)/EWP(m)

ACC NR: AP6027320 SOURCE CODE: UR/0043/66/000/002/0076/0080

64
63
B

AUTHOR: Zelenkov, O. S.; Yurkov, A. V.

ORG: none

TITLE: The effect of an abruptly expanding sonic jet on the bottom pressure

SOURCE: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 2, 1966, 76-80

TOPIC TAGS: gas jet, near sonic flow, static pressure, gas flow, axial flow, nozzle flow, diverging flow, axisymmetric flow, boundary layer flow, supersonic nozzle flow, flow analysis, flow kinetics, flow profile, flow research, flow velocity

ABSTRACT: Changes in the bottom pressure within a cylindrical nozzle due to a sonic gas jet having diameter smaller than the internal diameter of the nozzle are investigated. The internal diameter of the nozzle increases in steps toward the orfice. A sonic gas jet emerging from a nozzle into a space having a lower ambient pressure forms a complex barrel-like periodical structure before the pressure in the flow becomes equal to the ambient. The periodical parameter fluctuation ceases and the main turbulent portion of the flow starts at this point. The conditions for the particular investigation were selected such that the nozzle was shorter than the first "barrel" and the diameter of the jet within the nozzle was smaller than the smallest in-

UDC: 531.601.135

Card 1/3

ternal diameter of the nozzle. Under these conditions, a back-flow of ambient gas into the nozzle occurs at the pressure of the ambient gas. Thus a closed volume at the bottom pressure P_b is formed between the outer jet boundary and the internal wall surface of the nozzle. It was shown [1] that the relative bottom pressure $\pi_b = P_b/P_0$ is given by the following expression for the adiabatic jet expansion

$$\pi^{\frac{1}{k}}\left[1-\pi^{\frac{k-1}{k}}\right]^{\frac{1}{2}}=\left(\frac{k-1}{2}\right)^{\frac{1}{2}}\left(\frac{2}{k+1}\right)^{\frac{k+1}{2(k-1)}}\frac{F_1}{F_2},$$

where k is adiabatic index, F_1 and F_2 are the flow cross section diameters before and after expansion respectively. In the present work, the influence of this zone and the thickness of the boundary layer at the nozzle wall are considered. The displacement zone boundaries are defined by the boundary of the "ideal" portion of the flow and the region in which the flow velocity is reduced to zero. Figure 1 shows the flow profile of the axisymmetrical jet. The flow is from left to right. Gas emerges from the orfice (radius r_1) into the cylindrical volume (radius r_2). The boundary of the displacement zone is given by the broken line having the radius R and subtending angle θ; r_{2e} is the radius of the cross section of the "ideal" portion of the flow. Defining $\lambda_{2e} = u_{2e}/a_*$ (where u_{2e} is the gas velocity at the boundary of the "ideal" portion of the flow, and a_* the critical sound velocity) and $q(k)=\frac{r_1^2}{r_{2e}^2}$

L 04178-67
ACC NR: AP6027320

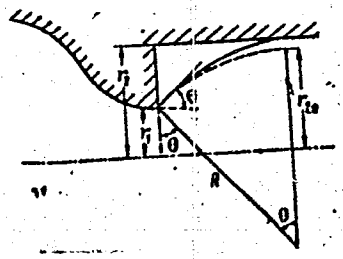


Fig. 1

π_b may be found from

$$q(\lambda)=\left(\frac{k+1}{2}\right)^{\frac{1}{k-1}}\lambda\left(1-\left(\frac{k-1}{k+1}\lambda^2\right)^{\frac{1}{k-1}},\right.$$

$$\pi(\lambda)=\left(1-\frac{k-1}{k+1}\lambda^2\right)^{\frac{k}{k-1}},$$

r_{2_e} is calculated by the method of successive approximations. The thickness of the boundary layer at the wall of the nozzle is determined from the condition of mass preservation in the cross sections before and after expansion. The experimental data was in close agreement with calculated values. In conclusion the authors express their gratitude to professor I. P. Ginzburg for his valuable advice, remarks and constant attention during the conduct of this work. Orig. art. has: 9 formulas, 2 figures.

SUB CODE: 20/ SUBM DATE: 02Feb65/ ORIG REF: 004

Card 3/3 LC

YURKOV, B.

Engine operating on a super-lean mixture. IUn.tekh. 4 no.12:35-38 D '59. (MIRA 13:4)
(Automobiles--Ignition) (Automobiles--Fuel consumption)

YURKOV, B., starshiy nauchnyy sotrudnik

Exhibition of motorcycles and motor scooters. Za rul. 17 no.12:3-5 D '59. (MIRA 13:4)

1. Politicheskiy muzey, Moskva.
(Moscow--Exhibitions) (Motorcycles) (Motor scooters)

YURKOV, B.

From the history of the internal combustion engine. IUn.tekh. 5 no.5:73-76 My '61. (MIRA 14:5)
(Papin, Denis, 1647-c.1712)

YURKOV, B.

From the history of the internal combustion engine (continued).
IUn.tekh. 5 no.6:67-70 Je '61. (MIRA 14:9)
(Gas and oil engines)

YURKOV, B.

Engine rushing into the skies. IUn.tekh. 7 no.3:70-73 Mr '63.
(MIRA 16:3)
(Kostovich, Ogneslav (Ignatii) Stepanovich, 1851-1916)
(Oil and gas engines—Patents)

YURKOV, B., inzh.

Automobiles of the seven-year plan. IUn.tekh. 6 no.9:26-29 S '61.
(Motor vehicles)

YURKOV, B.

From the history of the internal combustion engine (continued).
IUn.tekh. 6 no.11:64-67 N '61. (MIRA 14:11)
(Gas and oil engines)

YURKOV, B.

From the history of the internal combustion engine (continued). (MIRA 14:12)
IUn.tekh. 6 no.12:65 D '61.
(Gas and oil engines)

YURKOV, B., inzh.

Transportation of the future. IUn.tekh 6 no.10:12-15 O '61. (MIRA 14:11)

(Ground-effect machines)
(Submarine boats)
(Plasma(Ionized gases))

YURKOV, B.Ya.

A special case of using the matrix method in radio engineering. (MIRA 9:1)
Zhur.tekh.fiz. 25 no.11:1988-1993 O '55.
(Transistors) (Triodes)

AUTHOR: Yurkov, B. Ya. 57-28-6-4/34

TITLE: The Penetration of Electrons Into Germanium and Silicon (Proniknoveniye elektronov v germaniy i kremniy)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 6, pp. 1159-1164 (USSR)

ABSTRACT: In connection with the construction of semiconducting transformers of fast electron energy the question arises as to the distribution number of the electron-hole pairs, which are generated by radiation, according to the depth of the penetration of the electrons. As, however, reduction of the intensity of the electron bundles (at energies of $E < 0{,}5$ MeV) is connected both with loss of energy which passes to excitation and to ionization of the atoms (ionization losses) as well as with elastic scattering on the atomic nuclei, the theoretical calculation of the average energy lost by the electron bundle, according to depth of penetration z, has until recently been a very difficult problem. This problem was solved by Spencer.

Card 1/5

(reference 1) in the approximation of the interrupted energy losses which determines the lowest limit of the applicability of the theory (for low electron energies). The highest limit is determined by the amount of the radiation losses which were not taken into account in Spencer's theory. In this approximation the kinetic equation for the distribution function of the electrons is written down as follows: I(r, θ, z), connection with the remaining range r and the electron energy T = $\frac{E}{m_0 c^2}$ being expressed by the formula developed by Bete, (e. g. reference 2 or 3) (θ - angle between the direction - r and the axis z). The amounts of the average ionization potentials were determined by the author by comparison with known values for other elements (figure 1). The values determined in this manner are given (table 1) in each column. In this table retardation $\left(\frac{dT}{dr}\right)$ and the genuine complete ranges are expressed as follows:

$$r_o(T_o) = \int_0^{T_o} \left(\frac{dT}{dr}\right)^{-1} dT .$$

The curves for energy losses J(x) for silicon and germanium at energies of E = 0,05, 0,25 and 0,5 MeV are given (figures 2 and 3) in relative units. The energy lost by the primary electron J(x) divided by the energy $\mathcal{E}$ necessary for the forming of an electron-hole pair gives the full number of pairs G(x). Although the pairs are formed not only by the primary electrons but also by the secondary electrons produced as a result of primary ionization, Bethe (reference 7) showed that the majority of secondary electrons have only low energies. Comparatively fast electrons, about 2 $\div$ 3 % of the total number of secondary electrons, have a range that does not exceed 10^{-4} gr/cm^2 and form pairs in the immediate vicinity of primary ionization. The difficulty in determining the connection between J(x) and G(x) is caused by the

determination of the ionization energy ε. The quantity ε is determined by dividing the total electron energy E by the total number of the formed pairs G: $\varepsilon = \frac{E}{G}$. In the interrelation J(x) and G(x) the "differential" ionization energy

$$\varepsilon_d = \frac{dE}{dx}\Big|\frac{dG}{dx} = \frac{dE}{dG} ,$$

must be contained, which is connected with ε by the equation (reference 2): $\varepsilon_d = \frac{1}{\frac{d}{dE}\left(\frac{E}{\varepsilon}\right)} = \varepsilon\left(1 - \frac{d \ln \varepsilon}{d \ln E}\right)^{-1}$.

Therefore $J(x) = \frac{\varepsilon G(x)}{1 - \frac{d \ln \varepsilon}{d \ln E}}$ or approximatively:

$G(x) \approx \frac{J(x)}{\varepsilon}$. It must be pointed out that at the distance x concerned electrons with various E contribute towards the losses, so that the quantity ε_d becomes an

average quantity up to a certain degree. This paper was written in cooperation with the deceased S. Z. Belen'kiy. The author thanks V. S. Vavilov for the interest he displayed. There are 4 figures, 2 tables, and 9 references, 5 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva, AN SSSR, Moskva (Moscow Physics Institute imeni P. N. Lebedev, AS USSR)

SUBMITTED: June 21, 1957

1. Electrons—Penetration 2. Germanium—Electron transitions
3. Silicon—Electron transitions 4. Electrons—Energy
5. Nuclear energy levels

AUTHOR: Yurkov, B. Ya. 507/57-28-7-1/35

TITLE: On the Theory of Semiconductor Energy Transformers (K teorii poluprovodnikovykh preobrazovateley energii)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Vol. 28, Nr 7, pp. 1365 - 1370 (USSR)

ABSTRACT: A theory of the semiconductor transformer of the energy of the monoenergetic electrons into electric energy is developed on the basis of the theory on the energy losses by the electron suggested by Spencer (Ref 4). The author starts from the diffusion approximation of the transformer theory. The connection between the functions I(x)/ mean energy losses of a rapid electron/ and G(x) / number of the produced electron-hole pairs, x denotes the depth in which the latter are produced/ is given by the formula (1)

$G(x) = \frac{I(x)}{\varepsilon}$ with rather great preciseness. ε denotes the energy necessary for the formation of one electron-hole pair. In the formula (1) the distribution of the energy losses I(x) is determined according to the theory of Spencer, whereas

Card 1/3

the function G(x) is contained in the diffusion equation for electrons in the p-region of the transformer (2), for the holes in the n-region in the equation (2') resp. The equations (2) and (2') are solved by introduction of dimensionless quantities. The limiting conditions at the p-n transition are written down; equation (3), (4), and (5). For the case of the limiting conditions (3) and (4) the formula (6) is obtained for the electronic current at the p-n transition and the formula (6') for the case of the limiting conditions (3) and (5). Analogous equations are obtained for the hole current. The total current is composed of the electronic- and the hole current. Thus the further investigation is restricted to the determination of the short-circuit current i_g under the most simple limiting conditions ($\alpha = \beta = 0$)only. The formula (8) for the generation current (short-circuit current) I_g of the transformer is derived. This is very convenient for the practical calculations. V.S.Vavilov suggested this object and was interested in this paper. V.L.Bonch-Bruyevich read the manuscript and commented on it. Yu.A.Kurskiy assisted in the

On the Theory of Semiconductor Energy Transformers SOV/ 57-23-7-1/35

paper. E.I.Adirovich discussed the results of this paper with the author and gave several valuable advices. There are 2 figures, 1 table, and 12 references, 5 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P.N.Lebedeva AN SSSR Moskva (Institute of Physics imeni P.N.Lebedev, AS USSR, Moscow)

SUBMITTED: July 13, 1957

1. Semiconductors--Theory 2. Transformers--Applications
3. Electrical energy--Development 4. Mathematics--Applications

Card 3/3

YUHKOV, B.Ya.

Theory of the space distribution of radiation disturbances in the crystal lattice of silicon during irradiation by monoenergetic electron beams. Fiz.tver.tela 1 no.5:696-704 My '59. (MIRA 12:4)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR, Moskva.
(Electron beams) (Crystal lattices)

Yurkov, B. Ya.

82534

S/181/60/002/007/009/042
B006/B070

21.5300
24.7700

AUTHORS: Vavilov, V. S., Patskevich, V. M., Yurkov, B. Ya., Glazunov, P. Ya.

TITLE: The Effect of Fast Electron Bombardment on the Electrical Conductivity of Silicon and the Dependence of the Rate of Defect Formation on the Orientation of the Crystal Relative to the Electron Beam

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1431-1433

TEXT: A determination of the minimum kinetic energy of electrons, necessary for the production of stable structural defects in crystals, is of importance for the possible application of semiconductors as particle counters, and for transformation of nuclear radiation energy. To obtain new data on defect formation, the authors investigated it in p-type silicon by bombarding rectangular single crystals oriented at different angles relative to the incident beam of 500-kev electrons. Before their radiation, the samples had a homogeneous resistivity ? of 160 ohm.cm.

Card 1/4

82534

S/181/60/002/007/009/042
B006/B070

The Effect of Fast Electron Bombardment on the Electrical Conductivity of Silicon and the Dependence of the Rate of Defect Formation on the Orientation of the Crystal Relative to the Electron Beam

Bombardment and the subsequent measurement of potential distribution were done at room temperature. The crystals were water-cooled during the bombardment. Measurements of the Hall effect showed that the carrier mobility changed only slightly as a result of bombardment. To investigate the depth distribution of the defects produced, a comparison was made between the potential distribution curves along the direction of the incident beam for irradiated and unirradiated samples. Fig. 1 shows the curves $\rho(x)$ for three samples bombarded in the directions ⟨111⟩, ⟨110⟩, and ⟨100⟩, respectively, x denoting the depth of penetration of the electron beam. The maximum depth of penetration for which a change in ρ could be established, was 0.6 mm irrespective of the orientation. On bombardment in the ⟨111⟩ direction, the surface of the sample showed a larger change in resistivity than for the other two directions. Further, the experimental and theoretical values of the minimum electron energy are compared. Two theoretical values are investigated:

Card 2/4

8253b

S/161/60/002/007/009/042
B006/B070

The Effect of Fast Electron Bombardment on the Electrical Conductivity of Silicon and the Dependence of the Rate of Defect Formation on the Orientation of the Crystal Relative to the Electron Beam

4

E'_{min} = 280 kev (Ref. 3) and E''_{min} = 145 kev (Ref. 2 and the present paper). A comparison with the experiments of the authors (Fig. 2) shows that there is a much better agreement with the E''_{min} curve. For E''_{min} = 145 kev, the rate of defect formation is $A_d(0) \simeq 2.9$ cm^{-1}, and the rate of removal of the holes is $A_p(0) \simeq 1.4 \cdot 10^{-3}$cm^{-1}. Hence, $A_p/A_d \simeq 5 \cdot 10^{-4}$ is the average number of trapped carriers corresponding to the theoretically calculated value of defect concentration. The effects observed are finally discussed. The authors thank T. M. Kopylova for her calculations. There are 2 figures and 10 references: 3 Soviet and 7 US.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR Moskva (Institute of Physics im. P. N. Lebedev of the AS USSR, Moscow)

Card 3/4

82534

The Effect of Fast Electron Bombardment on the Electrical Conductivity of Silicon and the Dependence of the Rate of Defect Formation on the Orientation of the Crystal Relative to the Electron Beam

S/181/60/002/007/009/042
B006/B070

SUBMITTED: December 21, 1959

4

Card 4/4

S/181/60/002/011/008/042
B006/B056

24.7700 (1035,1043,1143)

AUTHOR: Yurkov, B. Ya.

TITLE: The Number of Radiation Defects in Silicon as a Function of the Initial Energy of Electrons

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 11, pp. 2710 - 2712

TEXT: On the basis of the results of one of his own earlier papers (Ref.2) and one of Spencer (Ref.1), where the interrelations between the number of defects in the crystal lattice Σ_c and the path s_o traveled by the electrons within the irradiated material have theoretically been investigated, the total number of radiation defects in silicon is calculated as a function of the initial energy E_o of the electrons for the case of an experimentally fixed threshold energy $E_k = E_{min} = 0.145$ Mev; for this value, $s_o = 0.03338$ g/cm^2. The results of the calculations are given in a table. For each initial electron energy E_{oq} the pertinent electron range is s_{oq}, and the number of defects produced by one such

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The Number of Radiation Defects in Silicon as a Function of the Initial Energy of Electrons

S/181/60/002/011/008/042
B006/B056

electron is Σ_{oq}. In the discussion of the results, which are illustrated by two diagrams, reference is made to a number of non-Soviet papers. T. M. Kopylova is thanked for numerical computations and V. S. Vavilov for his critical comments and advice. There are 2 figures, 1 table, and 7 references: 2 Soviet, 4 US, and 1 German.

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SUBMITTED: May 25, 1960

$E_{эл}$ Мэв	s_0, г/см²	Σ_{oq}	$E_{эл}$ Мэв	s_{oq} г/см²	Σ_{oq}
0.150	0.03510	0.000302	0.220	0.06471	0.0181
0.155	0.03704	0.000803	0.230	0.06933	0.0221
0.160	0.03701	0.00146	0.240	0.07404	0.0263
0.165	0.04101	0.00226	0.250	0.07883	0.030[illegible]
0.170	0.04303	0.00318	0.275	0.09139	0.0433
0.175	0.04509	0.00423	0.300	0.1040	0.0565
0.180	0.04715	0.00533	0.350	0.1312	0.0875
0.185	0.01925	0.00664	0.400	0.1584	0.120
0.190	0.05137	0.00779	0.450	0.1876	0.156
0.195	0.05352	0.00944	0.500	0.2168	0.194
0.200	0.05569	0.0110	0.700	0.3398	0.363
0.210	0.06016	0.0144			

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AUTHOR: Yurkov, B. Ya.

TITLE: Theory of radiation defect annealing

PERIODICAL: Fizika tverdogo tela, v. 3, no. 12, 1961, 3563 - 3570

TEXT: R. C. Fletcher, W. L. Brown (Phys. Rev. 92, 585, 1953), and T. R. Waite (Phys. Rev. 107, 463, 471, 1957; Jour. Chem. Phys. 28, 103, 1958) have developed a theory of defect annealing and have given solutions describing annihilation of homogeneous and heterogeneous pairs. Waite's theory differs from the first mentioned in the assumption that both types of pairs may be annihilated simultaneously. Waite's solutions are both analyzed; they are preferred since they account not only for vacancy (B) diffusion but also for diffusion of impurity atoms, (A). The problem can be reduced to the solution of the diffusion equation

(X) $$\frac{\partial w_{ij}(x, 0)}{\partial 0} = D \frac{\partial^2 w_{ij}(x, 0)}{\partial x^2} \quad (x = r - r_{min}).$$

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which, with the conditions

$$C_A C_B = \rho_{ij}(\infty, 0)\frac{N_A^0 N_B^0}{V^2}, \qquad (5)$$

$$\rho_{ij}(\infty, 0) = \frac{C_A C_B}{C_A^0 C_B^0} \qquad (i \neq j).$$

has the solution

$$w_{ij}(x, \theta) = \frac{1}{2\sqrt{\pi \mathfrak{D}\theta}} \int_0^\infty \left[e^{-\frac{(x-\xi)^2}{4\mathfrak{D}\theta}} - e^{-\frac{(x+\xi)^2}{4\mathfrak{D}\theta}} \right] w_{ij}(\xi, 0)\, d\xi. \qquad (6)$$

$\mathfrak{D} = \mathfrak{D}_A + \mathfrak{D}_B$, the sum of the diffusion coefficients, θ - the annealing time. If recombination of A_i and B_i is taken into account, the annealing process is described by

$$\frac{dC_A}{d\theta} = \frac{dC_B}{d\theta} = -\frac{4\pi r_{min}^2 \mathfrak{D}}{V^2} \sum_i^{N_A^0} \sum_j^{N_B^0} \left[\frac{\partial \rho_{ij}}{\partial r} \right]_{r_{min}}. \qquad (7)$$

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For equal pair densities ($C_A = C_B$), Waite's relation for the annealing rate of heterogeneous pairs

(10) $$\frac{df_2}{dz} = -2\pi r_{min}^3 C^0 z\left(1+\frac{2}{\sqrt{\pi}}\frac{1}{z}\right) f_2^2(z) \quad \left(z = \frac{2\sqrt{\mathcal{D}t}}{r_{min}}\right).$$

is found. Comparison with experimental data shows that the results differ even in their functional course. The solution

(11) $$f_2(z) = \frac{1}{\pi r_{min}^3 C_A^0 z^2 + 4\sqrt{\pi} r_{min}^3 C_A^0 z + C}$$

which had been rejected by Waite, can be rewritten as

(Y) $$f_2(0) = \frac{1}{C}\frac{1}{1+\frac{4\pi r_{min} \mathcal{D} C_A^0}{C}\theta},$$

which is equivalent to the empirical relation given by Bemski and Augustyniak. For $\mathcal{D} = 7.1\cdot10^{-14}$ cm^{2}sec^{-1}, comparison of both yields C = 6.7 and

Theory of radiation ...

$r_{min} \approx a = 5.431 \cdot 10^{-8}$ cm (silicon). The results show that annealing of heterogeneous pairs does not occur simultaneously with that of homogeneous pairs as was assumed by Waite but only in the third stage of annealing (in the Fletcher-Brown theory). Waite's theory is, however, correct in principle except for the improper choice of the initial distribution. The annealing rate of homogeneous pairs is given by

$$\frac{df_1}{d\theta} = -\frac{4\pi r_{min}^2 \mathcal{D}}{V}\left(\frac{2}{\sqrt{\pi}\, r_{min}} + \frac{1}{\sqrt{\pi \mathcal{D}\theta}}\right) g(2\sqrt{\mathcal{D}\theta} + r_{min}), \tag{12}$$

where the distribution function

$$g(2\sqrt{\mathcal{D}\theta} + r_{min}) = VQ \exp\left[-2.6 \cdot 10^4 \left(\frac{k}{V}\right)^{2/3} \mathcal{D}\theta\right], \tag{16}$$

Q is a normalization constant . The sought equation for the annealing of homogeneous pairs is

$$f_1(\theta) = \frac{8\sqrt{\pi}\, r_{min} \mathcal{D} Q}{1.8 \cdot 10^{-9}} \left(\frac{k}{V}\right)^{-2/3} \exp\left[-1.8 \cdot 10^{-9} \left(\frac{k}{V}\right)^{2/3} \theta\right] + \text{const.} \tag{17}$$

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With $Q = 1.8 \cdot 10^{16}$ cm^{-3} and $\left(\frac{k}{v}\right)^{2/3} = 6.2 \cdot 10^{5}$ cm^{-2}, $f_1(\theta) = 0.9 \exp(-\theta/15)$ (θ in minutes), which is identical with the empirical formulas of Brown, Augustyniak and Waite (Ref. 10). The author thanks V. S. Vavilov, V. A. Chuyenkov, V. V. Antonov-Romanovskiy, and Yu. A. Kurskiy for advice and discussions, R. A. Latypov for calculations. There are 3 figures, 1 table, and 10 references: 4 Soviet and 6 non-Soviet. The four most recent references to English-language publications read as follows: T. R. Waite. Jour. Chem. Phys. 28, 103, 1958; G. Bemski, W. M. Augustyniak. Phys. Rev. 108, 645, 1957; J. J. Loferski, P. Rappaport. Phys. Rev. 111, 432, 1958; Ref. 10: W. L. Brown et al. J. Appl. Phys. 30, 1258, 1959.

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AUTHOR: Yurkov, B. Ya.

TITLE: Effect of annealing on the distribution of radiation-induced defects in silicon

PERIODICAL: Fizika tverdogo tela, v. 4, no. 4, 1962, 851 - 854

TEXT: The distribution of radiation defects in a crystal at a specific temperature is determined by the distance by which the atoms in question have been displaced from their sites into interstices. This distance is dependent on the energy imparted to the atom by the radiation. In the course of time, particularly on annealing, the vacancy - interstitial atom pairs will diffuse over a distance $r = r_{min} + 2\sqrt{D\theta}$ ($D = D_{atom} + D_{vacancy}$ is the diffusion coefficient, θ is the annealing period). Consequently, annealing may give information on the initial distribution of the defects. A relation between the distance r and the energy imparted to an atom can be established experimentally. On the basis of work by Bemski and Augustyniak (see below) such a relation was determined for silicon. If an atom colliding with a fast electron is imparted the minimum energy

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necessary for the formation of a defect (W_{min} = 12.9 ev), it will be displaced by a distance r_{min} which is approximately equal to the lattice constant a = $5.43 \cdot 10^{-8}$ cm. V. S. Vavilov, V. A. Chuyenkov, and T. M. Kopylova are thanked for advice and help. There are 3 figures, 1 table, and 8 references: 5 Soviet and 3 non-Soviet. The three references to the English-language publications read as follows:
J. J. Loferski, P. Rappaport. Phys. Rev., 111, 432, 1958; T. R. Waite. Phys. Rev., 107, 463, 471, 1957; J. Chem. Phys., 28, 103, 1958; G. Bemski, W. M. Augustyniak. Phys. Rev., 108, 645, 1957.

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AUTHOR: Yurkov, B. Ya.

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TITLE: Feasibility of approximating continuous energy losses in the moderate energy region

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3406-3408

TOPIC TAGS: theoretic physics, secondary electron emission

ABSTRACT: The author considers the contribution made by fast secondary electrons to energy losses in the moderate energy region ($E \sim 100$ kev) where an approximation for continuous energy losses may not be applicable. A formula is derived for the number of secondary electrons as a function of their minimum reduced energy. It is found that the number of secondary electrons decreases with a reduction in E_0, but since ε_0 also decreases in this case, the number of secondary electrons at $E_0 = 0.05$ Mev is approximately 2.5 times as great as at 0.5 Mev. There is only a slight loss in precision by using an approximation for continous losses: with a reduction in beam energy from $E_0 = 0.5$ Mev, where the approximation is quite well satisfied, to $E_0 = 0.05$ Mev, the loss in energy increases by a factor of 1.3. The author is sincerely grateful to

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