LUIKOV, A. V., Dr. Sci.

"Application of Onzager's Theory in Investigating Phenomena of Transfer in the Processes of Evaporation and Combustion," a paper presented at the 6th International Conference of Combustion, New Haven, 19-24 August 1956

Inst. of Energetics, AS USSR, Moscow

A-52806, 9 Jul 56

GREW, K.E.; IBBS, T.L.; MAKSIMOVSKAYA, I.S. [translator] LYKOV, A.V., professor, redaktor; RYDNIK, V.I., redaktor; GAVRILOV, S.S., tekhnicheskiy redaktor

[Thermal diffusion in gases. Translated from the English] Termicheskaia diffuziia v gazakh. Perevod s angliiskogo I.S. Maksimovskoi. Pod red. A.V.Lykova. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1956. 183 p. (MLRA 10:1)
(Diffusion)

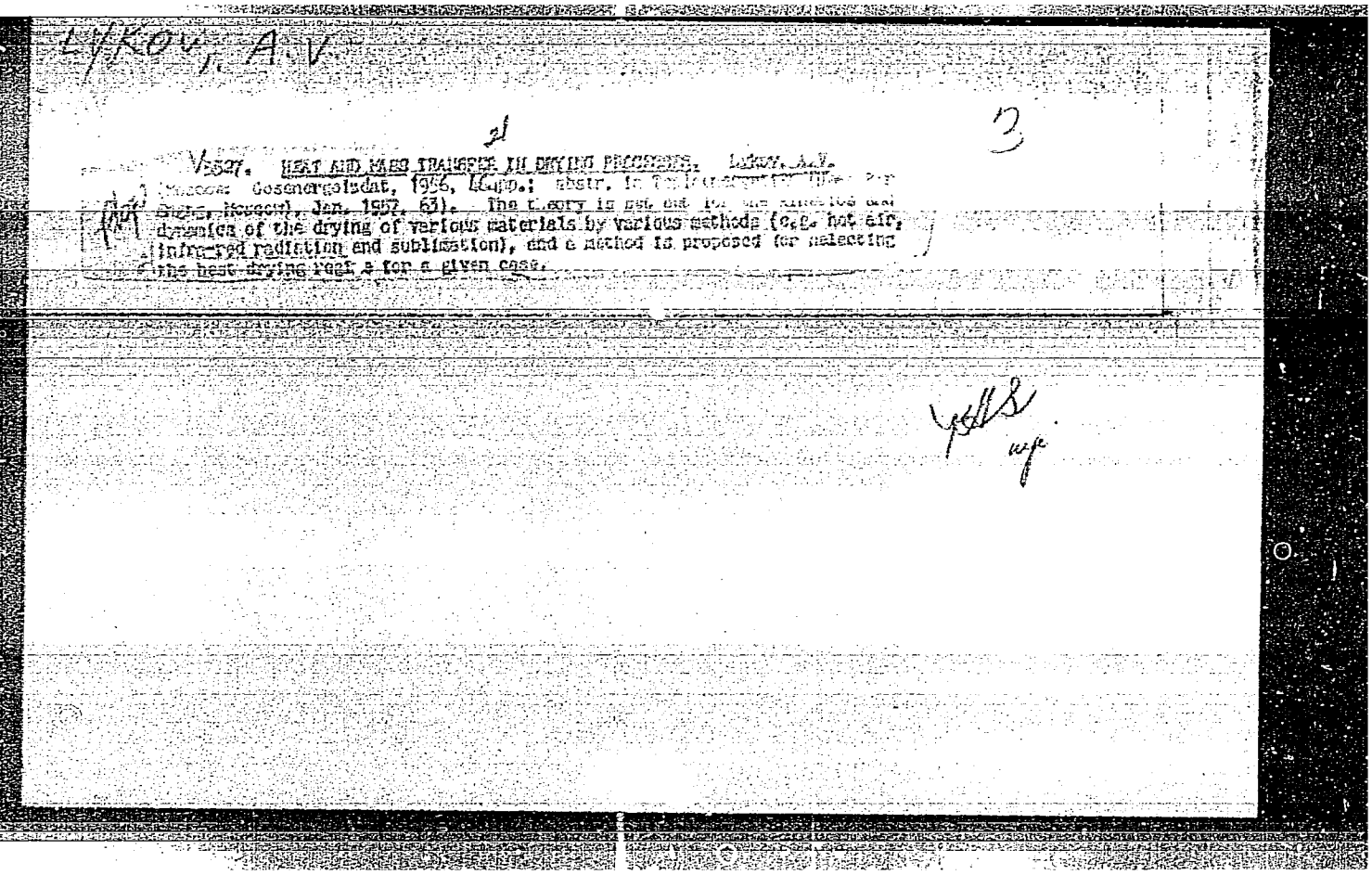
LYKOV, Aleksey Vasil'yevich; GRYAZNOV, Aleksey Andreyevich; KHMEL'NITSKAYA, F.Z., redaktor; GOTLIB, E.M., tekhnicheskiy redaktor

[Molecular drying] Molekuliarnaia sushka. Moskva, Pishchepromizdat, 1956. 270 p. (MLRA 9:12)
(Drying)

LYKOV, A. V.

"Application of the Onsager Theory to Transfer in Evaporation and Combustion," a paper presented at the 6th International Symposium on Combustion, Yale University, 19-24 Aug 56

Abstract of papers E-4519, Branch 5



LYKOV, A. V.

2

3

V-5527. HEAT AND MASS TRANSFER IN DRYING PROCESSES. Lykov, A.V. Moscow, Gosenergoizdat, 1956, [4]pp.; abstr. in Teploenergetika [Thermal Power Engineering], Moscow), Jan. 1957, 63). The theory is set out for the kinetics and dynamics of the drying of various materials by various methods (e.g. hot air, infrared radiation and sublimation), and a method is proposed for selecting the best drying rate s for a given case.

Yes wp

LYKOV, A. V.

Solidification of Metals: ~~(Contd.)~~ Trans. of 2nd Conf. ~~1216~~ on Theory of Foundry Processes, '56; Moscow, Mashgiz, 532pp.

Card 4/8

LYKOV, A.V.; AUERMAN, L.Ya.; GINZBURG, A.S.

Investigating the heat and mass exchange in capillary-porous bodies with methods based on the theory of similitude as applied to the processes of drying and baking. Trudy MTIPP 4:5-18 '56.
(MLRA 9:10)

(Heat--Transmission) (Baking)

LYKOV, A.V.

Coefficients of heat and mass transfer in humid materials.
[illegible] 1958 [illegible]

A. P. Kontsov

LYKOV, A.V., professor, doktor tekhnicheskikh nauk.

Basic problems in the technology of drying food products. Trudy MTIPP no.6:163-170 '56. (MLRA 10:3)
(Food--Drying)

LYKOV, A.V.

2

Rates of drying. A. V. Lykov and M. S. Smirnov. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1956, No. 8, 10–19.—Rates of drying were studied experimentally and analytically by solving a system of differential equations for heat and mass (moisture) transfer in moist substances of porous capillary structure. Mass transfer of water vapor is taken into account with the help of a specially introduced phase transformation criterion. The Fourier-Kirchhoff equation for heat transfer in moist substances is reduced to the Fourier heat conduction equation to and from the heat source, induced by phase transformation. Equations were derived for the entire drying process (including the periods of const. and decreasing drying rates), on the assumption that the drying object forms an infinite continuous surface, and the drying time can be calcd. from the av. body temp. and the heat-transfer coeff., i.e., the computation of the mass-transfer flux can be reduced to the calcn. of the heat flux.

W. M. Sternberg

8(6) SOV/112-59-2-2257

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 2, p 1 (USSR)

AUTHOR: Zabrodskiy, S S., Lykov, A V., and Murashka, M. G.

TITLE: Development of Scientific Research Into Power Problems in Belorusskaya SSR (Razvitiye nauchnykh issledovaniy po energetike v Belorusskoy SSR)

PERIODICAL: Izv. AN BSSR, Ser. fiz-tekhn. n., 1957, Nr 3, pp 57-72 (original in Belorussian)

ABSTRACT: Bibliographic entry.

Card 1/1

LYKOV, A.V., akademik.

The theory of a thermal regular system. Dokl. AN BSSR 1 no.2:52-56 O '57. (MIRA 11:2)

1. AN BSSR.

(Heat)

LYKOV, A.V.; MAKSIMOV, G.A.

Investigation of drying processes in high-frequency fields.
Trudy MTIPP no.8:133-142 '57. (MIRA 10:12)
(Drying) (Dielectric heating)

LYKOV, A.V.

LYKOV, A.V.

Studying transfer phenomena in evaporation processes. Trudy MTIPP no.8:237-245 '57. (MIRA 10:12)
(Evaporation) (Drying)

LYKOV, A.V.

~~MEL NIKOVA~~

5(4) PHASE I BOOK EXPLOITATION SOV/1435

Akademiya nauk SSSR. Energeticheskiy institut

Teplo- i massoobmen v protsessakh isparenlya (Heat- and Mass-Transfer in Evaporation Processes) Moscow, Izd-vo AN SSSR, 1958. 254 p. 5,000 copies printed.

Resp. Ed.: Lykov, A.V., Academician, BSSR Academy of Sciences; Eds. of Publishing House: Tal', A.A. and Smirnov, V.A.

PURPOSE: This book is intended for scientists and engineers in heat engineering and chemical technology and for students and teachers of higher educational institutions in these fields.

COVERAGE: This collection contains articles relating to analytical and experimental investigations of heat - and mass-transfer under conditions of phase and chemical transformations. A new method of solving unsteady-state heat-flow problems is presented. Methods of determining heat - and mass-transfer coefficients during the heating and drying of a composite substance are given. New experimental principles of surface heat- and mass-transfer in vaporization processes are explained and new

LYKOV, A.V.

Analytic investigation of the drying of moist materials with heated gases. Trudy NIKFI no.2:8-21 '58. (MIRA 13:5)

(Drying) (Heat--Transmission)

LYKOV, A.V.; POLONSKAYA, F.M.

Determining the coefficients of mass transfer in colloidal and capillary porous substances with variable moisture content. Trudy NIKFI no.2:113-127 '58. (MIRA 13:5)
(Mass transfer) (Heat--Transmission) (Capillarity)

LYKOV, A.V.; POLONSKAYA, F.M.

Kinetical study of the moisture transfer within the material.
Trudy NIKFI no.2:170-177 '58. (MIRA 13:5)
(Photographic emulsions--Drying)

LYKOV, A.V.

Transfer of heat and mass in dispersion media during phase transformation. Inzh.-fiz. zhur. no. 6:12-19 Je '58.
(MIRA 11:7)

1. Institut energetiki AN BSSR, Minsk.
(Heat--Radiation and absorption)
(Mass transfer)
(Phase rule and equilibrium)

VEYNIK, A.I.; YERMAKOV, V.S.; LYKOV, A.V.

Applying the Onsager theory to the study of the diffusion of neutrons in absorbing media of nuclear reactors. Inzh.-fiz. zhur. no.10:123-129 O '58. (MIRA 11:11)

1. Institut energetiki AN BSSR, g. Minsk.
(Nuclear reactors) (Nuclear physics)

8(2)

AUTHOR: Lykov, A. V., Professor, Member, Academy of Sciences, Belorusskaya SSR

SOV/105-58-12-23/28

TITLE: On the Note "On Some Deficiencies in the Book on Drying Processes" (Po povodu zametki "O nekotorykh nedostatkakh v knige o protsessakh sushki")

PERIODICAL: Elektrichestvo, 1958, Nr 12, pp 84-85 (USSR)

ABSTRACT: Referring to the note by A. V. Netushil in Elektrichestvo, 1958, Nr 7, it is pointed out that the critical remarks made by A. V. Netushil, Professor, Doctor of Technical Sciences, do not concern the main problems of the drying theory of humid substances in the high-frequency field, but deal with some chapters that are of no direct significance for the drying process. Moreover, these remarks are incorrect in their main issues and are apt to create a wrong idea on the contents of the respective chapter. In the present paper, this critique is comprehensively refuted in 7 points.

Card 1/1

KONAKOV, Petr Kuz'mich; LYKOV, A.V., prof., retsenzent; BRILIK, P.M., kand.tekhn.nauk, red.; MATVEYEV, G.I., tekhn.red.

[Theory of similitude and its application in heat engineering] Teoriia podobiia i ee primenenie v teplotekhnike. Moskva, Gos.energ.izd-vo, 1959. 207 p. (MIRA 12:8)

1. Deystvitel'nyy chlen AN BSSR (for Lykov).
(Heat engineering) (Dimensional analysis)

LYKOV, Aleksey Vasil'yevich; MIKHAYLOV, Yuriy Anan'yevich; MARIKS, L., red.izd-va; VOLOKHANOVICH, I., tekhn.red.

[Theory of energy and molecular transfer] Teoriia perenosa energii i veshchestva. Minsk, Izd-vo Akad.nauk BSSR, 1959. 327 p. (MIRA 13:1)
(Force and energy) (Diffusion)

Lykov, A.V.

PHASE I BOOK EXPLOITATION SOV/3407

Akademiya nauk SSSR. Energeticheskiy institut im. G.M. Krzhizhanovskogo

Problemy energetiki; sbornik posvyashchayetsya akademiku G.M. Krzhizhanovskomu (Problems of Power Engineering; Collection of Articles Dedicated to Academician G.M. Krzhizhanovskiy) Moscow, 1959. 851 p. Errata slip inserted. 2,500 copies printed.

Eds. of Publishing House: B.D. Antrushin, P.V. Dubkov, P.I. Dubkov, and S.M. Moyzhes; Tech. Ed.: T.A. Prusakova; Editorial Board: A.V. Vinter, Academician (Deceased), V.I. Popkov (Resp. Ed.) Corresponding Member, Academy of Sciences USSR, V.I. Veyts, A.S. Predvoditelev, M.A. Styrikovich, Z.F. Chukhanov, E.B. Bogianova, Candidate of Technical Sciences, B.K. Kozlov, Candidate of Technical Sciences, M.M. Lebedev, Candidate of Technical Sciences, and I.N. Sundukov.

PURPOSE: This collection of articles is intended as a tribute to the memory of Academician G.M. Krzhizhanovskiy.

COVERAGE: The collection contains sixty articles by former students and coworkers of the deceased Academician. The articles deal with problems of a wide range of subjects in the field of power engineering: problems of the regional development of electrical and thermal power engineering, power engineering technology, and the physics of combustion. No personalities are mentioned. References are given after most articles.

3/2

Lykov, A.V.

21(4) PHASE I BOOK EXPLOITATION SOV/2583

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

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

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

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

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

LYKOV, A.V.

Principal problems in thermophysical engineering. Izv.ASiA no.4: 73-87 '59. (MIRA 13:6)

1. Deystvitel'nyy chlen Akademii strotiel'stva i architekutyr SSSR.
(Heat--Transmission)

24,5300

68758

AUTHOR: Lykov, A. V.

S/170/59/002/11/003/024
B014/B014

TITLE: Investigation of Heat- and Mass Transfer in Binary Gas Mixtures

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Vol 2, Nr 11, pp 20-28 (USSR)

ABSTRACT: In the present paper, the Soret effect (thermal diffusion) and the Dufour effect (diffusion heat conduction) are taken into account. For the purpose of studying interdiffusion on the basis of the theorem by Prigogene the author gives equation (8) for the mean velocity of the center of gravity of mass. The interdiffusion according to S. R. de Groot (Ref 1), which was calculated from equations (9) - (11), is designated as concentration- or gravitation diffusion. Thus, equations (13) and (19) are obtained for the flow of mass of the two diffusing components of the binary mixture under consideration, the generally valid equation (2) being taken into account. Next, equation (28) is deduced for the molecule transfer from the differential equation (14) which describes the conservation of mass, and from the differential equation (20) which represents the transport equation for binary mixtures at constant pressure and variable temperature and in the absence of an external force. Furthermore, the author gives the differential equation (33) which was obtained on the basis of the conservation of energy. The dif-

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ferential equations (28) and (33) are a combined set of equations for the heat- and mass transfer of a binary mixture. These differential equations are given in the form of equations (34) and (35) with reduced parameters. This set of equations furnishes two new criteria. The first criterion is represented in equation (36) and is called by the authors after Soret. It characterizes the effect of thermal diffusion which is determined by the thermal diffusion constant. The second criterion, called after Dufour, is given by equation (37) and serves as a measure of heat transfer due to diffusion as compared to convection. This holds on the assumption that the linear diffusion velocity is equal to the convection velocity. The author evaluated experimental results (Refs 5-10) in order to obtain an empirical dependence of the Dufour criterion on temperature and concentration. The results obtained are diagrammatically shown in figures 1 and 2. Equation (41) for the change in the Dufour criterion according to temperature and concentration is the result of this consideration. It is an empirical formula which holds in a certain temperature range. There are 2 figures, 1 table, and 12 references, 3 of which are Soviet.

4

68758

Investigation of Heat- and Mass Transfer in Binary Gas Mixtures

S/170/59/002/11/003/024
B014/B014

ASSOCIATION: Institut energetiki AN BSSR, g. Minsk
(Institute of Power Engineering of the AS BSSR, City of Minsk)

Card 3/3

GINZBURG, Abram Solomonovich; LYKOV, A.V., akademik, retsenzent; KHMEL'NITSKAYA, A.Z., red.; MURASHEVA, O.I., red.; SOKOLOVA, I.A., tekhn.red.

[Drying of food products] Sushka pishchevykh produktov. Moskva, Pishchepromizdat, 1960. 683 p. (MIRA 14:4)

1. AN BSSR (for Lykov).
(Food—Drying)

84268

S/170/60/003/010/013/023
B019/B054

24.5200
17.4430

AUTHOR: Lykov, A. V.

TITLE: The Molar-molecular Mass- and Heat Transfer in Capillary-porous Bodies

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 10, pp. 88 - 92

TEXT: In his investigation, the author proceeds from a porous body (index 0), the capillary tubes of which contain noncondensing gas (index 1), vapor (index 2), and liquid (index 3). He proceeds from the mass-transfer equation $\gamma_o \partial u_i/\partial\tau = -\mathrm{div}(\vec{j}_{mi} + b_i \pi Q_i \vec{w}_i) + I_i$ (1) and the

energy-transfer equation $\gamma_o \partial/\partial\tau(h_o + \sum_{i=1}^{3} h_i u_i) = -\mathrm{div}(j_q + \sum_{i=1}^{3} j_{ci})$ (2),

and obtains from these the differential equation

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The Molar-molecular Mass- and Heat Transfer in Capillary-porous Bodies

$$c\gamma_o \partial t/\partial\tau = \mathrm{div}(\lambda\nabla t) + r_{23}I_3 - \sum_{i=1}^{3}(j_{ci}\nabla h_i - h_i \mathrm{div} j_{mi}) \quad (3),$$ where

$u_i = M_i/M_o$, M_i are the masses of the three substances belonging to the system, j_{mi} is the molecular flux of the i^{th} substance, w_i is the rate of the molar motion in the capillary tubes, π is the porosity, b_i the saturation, ϱ_i are concentration- and density coefficients, and I_i is the power of the source of the i^{th} substance. Further, the h_k are the specific enthalpies, and j_q the molecular heat convection, c is the specific thermal capacity of the body. The author obtains the differential equation system

$$c\gamma_o \partial t/\partial\tau = \mathrm{div}(\lambda\nabla t) + \varepsilon r c_m \partial\theta/\partial\tau + c_p k\nabla P\nabla t \quad (13)$$

$$c_m\gamma_o \partial\theta/\partial\tau = \mathrm{div}(\lambda_m\nabla\theta + \lambda_m\delta\nabla t + \lambda_{p2}\nabla P) \quad (14)$$

$$c_v\gamma_o \partial P/\partial\tau = \mathrm{div}(k\nabla P) - \varepsilon c_m \partial\theta/\partial\tau \quad (15).$$

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84268

The Molar-molecular Mass- and Heat Transfer in Capillary-porous Bodies

S/170/60/003/010/013/023
B019/B054

These heat and mass transfer equations consider both the diffusion of vapor and liquid, and the filtration motion of the vapor-gas mixture. F. M. Polonskaya (Ref. 4) is mentioned. There are 6 Soviet references.

ASSOCIATION: Institut energetiki AN BSSR, g. Minsk (Institute of Power Engineering of the AS BSSR, Minsk)

SUBMITTED: February 1, 1960

Card 3/3

LYKOV, A.V.; GRUSHANOV, L., tekhn. red.

[Study of heat and mass transfer in a boundary layer using methods involving the thermodynamics of irreversible processes; Conference on Heat and Mass Transfer, Minsk, January 23-27, 1961] Primenenie metodov termodinamiki neobratimykh protsessov k issledovaniiu teplo-i massoperenosa v pogranichnom sloe; soveshchanie po teplo-i massoobmenu, g. Minsk, 23-27 ianvaria 1961 g. Minsk, 1961. 17 p. (MIRA 15:2)
(Heat—Transmission) (Irreversible processes)
(Mass transfer)

BR

PHASE I BOOK EXPLOITATION SOV/5949

Lykov, Aleksey Vasil'yevich

Teoreticheskiye osnovy stroitel'noy teplofiziki (Theoretical Principles of Structural-Engineering Thermophysics) Minsk, Izd-vo AN BSSR, 1961. 519 p. 2500 copies printed.

Sponsoring Agencies: Akademiya nauk BSSR, Institut energetiki; Akademiya stroitel'stva i arkhitektury SSSR, Institut stroitel'noy fiziki.

Ed. of Publishing House: L. Moiseyeva; Tech. Ed.: N. Siderko.

PURPOSE: This book is intended for scientific workers, design and structural engineers, aspirants, and students at civil engineering schools of higher education.

COVERAGE: A brief description of the modern theory of heat and mass exchange based on the thermodynamics of irreversible processes and a systematic explanation of heat and [illegible]ansfer phenomena

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in porous solids are given. Using methods based on the thermodynamics of mass transfer, the author discusses in detail the thermophysical characteristics of building materials and the application of the theory of heat and mass transfer to insulating and facing materials and to the processes associated with the manufacture of building materials. Particular attention is given to techniques and methods for determining the thermophysical characteristics of building materials and to a number of new results in the field of heat and mass transfer phenomena in porous solids. No personalities are mentioned. There are 157 references: 140 Soviet, 9 English, and 8 German.

TABLE OF CONTENTS:

24,5200

39519
S/649/61/000/139/002/018
I028/I228

AUTHOR: Lykov, A. V.

TITLE: The use of integral transformations for investigation of the phenomena of heat - and mass exchange and their connection with the theory of similitude

SOURCE: Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy, no. 139. 1961. Teoriya podobiya i yeye primeneniye v teplotekhnike; trudy pervoi mezhvuzovskoy konferentsii, 10–19

TEXT: Operational methods for determining the relationships between the averages values of the main criteria of similitude of heat–and mass–exchange are discussed, and a set of differential equations describing molecular transfer of heat and matter in a moving gas is presented. This set contains a large number (10–12) of criteria of similitude, is reduced to a small number of independent characteristic variables, by transforming the differential equations into algebraic ones. Gukhman's method replaces the real process by a fictive scheme in which the derivatives are replaced by the ratios of finite magnitudes. The Heaviside-Mikusinskiy method uses the operational transformation $(d^m t)/(dx^m) \rightarrow p^m t$, whose physical meaning in this context is the passage from the actual values of the investigated magnitudes to their averaged values. The method determines the connection between criteria of similitude for this transformation by defining a set of independent criteria.

ASSOCIATION: Institut energetiki AN BSSR (Institute of Energetics, AS BSSR)

Card 1/1

LYKOV, A.V.

Theory of the heat resistance of exterior walls. Izv. ASiA no.1:69-74 '61. (MIRA 14:7)

1. Deystritel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR.

(Heating) (Walls)

LYKOV, A.V.; ZHIKHAREV, Ye.A.

New separation method for molecular solutions and gaseous mixtures. Inz.-fiz. zhur. 4 no.12:22-31 D '61. (MIRA 14:11)

1. Institut energetiki AN BSSR, Minsk.
(Molecular theory) (Hydrodynamics)

AKULOV, N.S., akademik; GINZBURG, A.S., doktor tekhn.nauk, prof.; KOSTERIN, S.I., doktor tekhn.nauk, prof.; LYKOV, A.V., akademik; POMERANTSEV, A.A., doktor fiziko-matematicheskikh nauk, prof.; SIROTA, N.N., akademik; SHEVEL'KOV, V.L., doktor tekhn.nauk, prof.

Aleksandr Savvich Predvoditelev; on his 70th birthday. Inz.-fiz. zhur. 4 no.12:106-108 D '61. (MIRA 14:11)

1. Akademiya nauk BSSR (for Akulov, Lykov, Sirota).
(Predvoditelev, Aleksandr Savvich, 1891-)

YUSHKOV, Petr Petrovich, prof.; LYKOV, A.V., akademik, red.;
BARABANOVA, Ye., red. izd-va; ATLAS, A., tekhn. red.

[Bessel's functions and their applications to problems in the cooling of a cylinder] Funktsii Besselia i ikh prilozheniia k zadacham ob okhlazhdenii tsilindra. Pod red. A.V.Bykova. Minsk, Izd-vo Akad. nauk BSSR, 1962. 169 p. (MIRA 15:7)

1. Akademiya nauk Belorusskoy SSR (for Lykov).
(Bessel' functions) (Heat--Transmission)

LYKOV, A.V., akademik, red.; SMOL'SKIY, B.M., prof., red.; KUTATELADZE, S.S., prof., red.; PALEYEV, I.I., prof., red.; EL'PERIN, I.T., kand. tekhn. nauk, red.; TIMOFEYEV, L., red. izd-va; VOLOKHANOVICH, I., tekhn. red.

[Heat and mass transfer]Teplo- i massoperenos; doklady. Pod obshchei red. A.V.Lykova i B.M.Smol'skogo. Minsk, Izd-vo Akad. nauk BSSR. Vol.2.[Heat and mass transfer during phase transitions and chemical transformations]Teplo- i massoperenos pri fazovykh i khimicheskikh prevrashcheniiakh. 1962. 377 p. (MIRA 16:3)

1. Vsesoyuznoye soveshchaniye po teplo- i massoobmenu. 1st. Minsk, 1961. 2. Akademiya nauk Belorusskoy SSR (for Lykov).
(Heat--Transmission) (Mass transfer)
(Phase rule and equilibrium)

S/862/62/002/000/001/029
A059/A126

AUTHOR: Lykov, A.V.

TITLE: Application of the methods of thermodynamics of irreversible processes to the study of heat and mass transfer in the boundary layer

SOURCE: Teplo- i massoperenos. t. 2: Teplo- i massoperenos pri fazovykh i khimicheskikh prevrashcheniyakh. Ed. by A.V. Lykov and B.M. Smol'skiy. Minsk, Izd-vo AN BSSR, 1962, 16 - 25

TEXT: The partial pressure p_1 or the concentration ρ_1 is usually taken as the transfer potential of a condensing gas (vapor); in this case, the law of diffusion transfer of vapor in a binary mixture will be:

$$J_{m1} = - D_{12} \rho \frac{M_1}{M} \nabla p_{10}, \quad (7)$$

where D_{12} is the coefficient of interdiffusion, ρ is the density of moist air, M_1 the molecular weight of water vapor, M the molecular weight of the mixture, and p_{10} the relative vapor pressure equal to the ratio between partial pressure of the vapor and total pressure of

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Application of the methods of ....

the vapor-gas mixture. The thermodiffusion flow is omitted in this case. The equation

$$\frac{\widetilde{\mu_1}}{T} = -\frac{R}{M_1} \ln \varphi \qquad (15)$$

is derived, with $\mu_1 = \mu_{1e} - \mu_1$, (13)

where μ_{1e} is the chemical potential in the saturated state, μ_1 the chemical potential in the given state at the same temperature, T the absolute temperature in °K, R the universal gas constant, and φ the moisture content of the air. Thus the molecular transfer potential of the vapor may be taken to be the moisture content of the air. From the equation:

$$j_{mi} = \sum_k' x_k L_{ik} + L_{iT} x_T + \sum_k L_{Eik} x_{Ek}, \qquad (21)$$

it follows that, in the process of the molecular transfer by kinetic energy of motion, a separating effect of the mixture must occur under isothermal conditions ($x_T = 0$) which has been confirmed experimentally. A rotating separation

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Application of the methods of ....

column of the Clausius-Dickel type has been used in these experiments performed with NaCl in water and a nitrogen-oxygen (1 : 1) mixture. The concentration of the components and the temperature of the mixture or the solution and that of the wall of the stationary cylinder were continuously recorded. When the clearance between the cylinders was 0.5 mm, a 12% separation was obtained after 60 min at 23.5°C, whereas, with a clearance of 0.22 mm, 50% separation was reached after the same time. Maximum separation efficiency was obtained at 40 rpm; when the speed of rotation was further increased, the degree of separation decreased to zero at 100 rpm. Since optimum linear speeds separated, this is thought to be due to a novel effect and not to the thermodiffusion. It is shown that the speed of air flow in the boundary layer is by 2 to 3 orders greater than in the separating column, and, therefore, the influence of the thermodynamic force x_{Ei} on the molecular transfer of the substance may be essential. A.V. Nesterenko, F.M. Polonskaya, P.D. Lebedev, N.F. Dokuchayev, N.S. Mikheyeva, P. Ye. Mikhaylov, and I.S. Mel'nikova are mentioned. There are 8 figures and 1 table.

ASSOCIATION: Energeticheskiy institut AN.BSSR, g. Minsk (Power Engineering Institute of the AS BSSR, City of Minsk)

LYKOV, A.V., akademik

Concerning O.E.Vlasov's article "Theory of mass transfer." Izv. ASiA no.3:101-106 '62. (MIRA 15:11)

1. Akademiya AN BSSR. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR.
(Mass transfer)

LYKOV, A.V., akademik

Present-day problems of engineering thermophysics. Izv.AS1A 4 no.4:108-117 '62. (MIRA 16:1)

1. AN Belorusskoy SSR, deystwitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR.
(Heating research)

LYKOV, A.V.

Valuable monograph on the theory of heat and mass transfer. Inzh.-fiz.zhur. 5 no.4:141-142 Ap '62. (MIRA 15:4)
(Heat--Transmission) (Mass transfer)

STREL'TSOV, V.V.; SHCHUKIN, V.K.; REBROV, A.K.; FUKS, G.I.; KUTATELADZE, S.S.; LYKOV, A.V.; PREDVODITELEV, A.S.; KONAKOV, P.K.; DUSHCHENKO, V.P.; MAKSIMOV, G.A.; KRASNIKOV, V.V.

Readers' response to I.T. El'perin's article "Terminology of heat and mass transfer" in IFZh No.1, 1961. Inzh.-fiz. zhur. 5 no.7:113-133 Jl '62. (MIRA 15:7)

1. Khimiko-tekhnologicheskiy institut, g. Ivanovo (for Strel'tsov). 2. Aviatsionnyy institut, Kazan' (for Shchukin, Rebrov). 3. Politekhnicheskiy institut, Tomsk (for Fuks). 4. Institut teplofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk (for Kutateladze). 5. Energeticheskiy institut AN BSSR, Minsk (for Lykov). 6. Gosudarstvennyy universitet imeni Lomonosova, Moskva (for Predvoditelev). 7. Institut inzhenerov zheleznodorozhnogo transporta, Moskva (for Konakov). 8. Institut legkoy promyshlennosti, Kiyev (for Dushchenko). 9. Vsesoyuznyy zaochnyy institut pishchevoy promyshlennosti, Moskva (for Maksimov). 10. Tekhnologicheskiy institut pishchevoy promyshlennosti, Moskva (for Krasnikov).

(Heat—Transmission) (Mass transfer)

LYKOV, Aleksey V.

"Methods for intensification of drying chemical and food products and building materials"

report to be submitted for the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas - Geneva, Switzerland, 4-20 Feb 63.

LYKOV, A.V., akademik, red.; SMOL'SKIY, B.M., doktor tekhn. nauk, prof., red.; KORIKOVSKIY, I.K., red.; LARIONOV, G.Ye., tekhn. red.

[Heat and mass transfer] Teplo- i massoperenos; [doklady] Pod obshchei red. A.V.Lykova i B.M.Smol'skogo. Moskva, Gosenergoizdat. Vol.4. [Heat and mass transfer in drying processes] Teplo- i massoperenos v protsessakh sushki. 1963. 271 p. (MIRA 16:7)

1. Vsesoyuznoye soveshchaniye po teplo- i massoobmenu. 1st. Moscow. 2. AN Belorusskoy SSR (for Lykov).
(Mass transfer) (Heat--Transmission) (Drying)

LYKOV, A.V., akademik, red.; SMOL'SKIY, B.M., prof., red.; SHASHKOV, A.G., kand. tekhn. nauk, red.; PLYAT, SH.N., kand. tekhn. nauk, red.; POMERANTSEV, A.A., prof., red.; ROMANENKO, P.N., prof., red.; PEREL'MAN, T.L., kand. fiz.-mat. nauk, red.; YAROSHEVICH, O.I., kand. tekhn. nauk, red.; BEL'ZATSKAYA, L., red. izd.-va; TIMOFEYEV, L., red.izd-va; SIDERKO, N., tekhn. red.; VOLOKHANOVICH, I., tekhn. red.

[Heat and mass transfer] Teplo i massoperenos. Minsk, Izd-vo AN BSSR. Vol.1.[Thermophysical characteristics of materials and methods for their determination] Teplofizicheskie kharakteristiki materialov i metody opredeleniia. Pod obshchei red. A.V. Lykova i B.M.Smol'skogo. 1962. 216 p. Vol.5. [Methods for calculating and modeling heat-and mass-transfer processes] Metody rascheta i modelirovaniia protsessov teplo- i massoobmena. 1963. 471 p. (MIRA 16:10)

1. Vsesoyuznoye soveshchaniye po teplo- i massoobmenu. 1st, Minsk, 1961. Akademiya nauk Bel.SSR (for Lykov).
(Materials--Thermodynamic properties)
(Heat--Transmission) (Mass transfer)

NIKITINA, Lidiya Mikhaylovna; LYKOV, A.V., akademik, red.; RUSHOV, A.A., red.

[Tables of equilibrium specific moisture content and the binding energy between moisture and materials] Tablitsy ravnovesnogo udel'nogo blagosoderzhaniia i energii sviazi vlagi s materialami. Moskva, Gosenergoizdat, 1963. 175 p. (MIRA 18:8)

1. AN Belorusskoy SSR (for Lykov).

LYKOV, A.V., akademik, red.; SMOL'SKIY, B.M., doktor tekhn. nauk, prof., red.; GINZBURG, I.P., doktor fiz.-matem. nauk, prof., red.; ZABRODSKIY, S.S., doktor tekhn. nauk, red.; KONAKOV, P.K., doktor tekhn. nauk, prof., red.; KOSTERIN, S.I., doktor tekhn. nauk, prof., red.; SHUL'MAN, Z.P., inzh., otv. za vypusk; KORIKOVSKIY, I.K., red.; LARIONOV, G.Ye., tekhn. red.

[Heat and mass transfer] Teplo- i massoperenos. Moskva, Gosenergoizdat. Vol.3.[General problems of heat transfer] Obshchie voprosy teploobmena. 1963. 686 p. (MIRA 16:6)

1. Akademiya nauk Belorusskoy SSR (for Lykov).
(Heat--Transmission) (Mass transfer)

AM1035373 BOOK EXPLOITATION S/

Lyʷkov, A. V.; Mikhaylov, YU. A.

Theory of heat and mass transfer (Teoriya teplo- i massoperenosa), Moscow, Gosenergoizdat, 1963, 534 p. illus., biblio. Errata slip inserted. 7,000 copies printed.

TOPIC TAGS: physics, heat transfer, mass transfer, thermodynamics, drying, gasification, combustion, gas mixture distribution, molecular solution, gas mixture, disperse system, capillary porous body, differential equation

PURPOSE AND COVERAGE: The book is devoted to the analytical theory of the phenomena of the transfer of heat and substance in gas mixtures, disperse systems, and capillary-porous bodies. On the basis of the thermodynamics of irreversible processes, a system of differential equation of heat- and mass transfer in the presence of phase and chemical transformations was derived. Solutions were obtained for this system for stationary heat and mass transfer under various conditions. The solutions can be used to calculate the processes of drying, gasification, and combustion and to determine the distribution of gas mixtures and molecular solutions. The book is of interest to a variety of engineers and technicians and can be used as a textbook.

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Appendices -- 521
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SUB CODE: OP SUBMITTED: 28Nov63 NR REF SOV: 217

OTHER: 061 DATE ACQ: 16Apr64

Card 3/3

BAGOTSKIY, V. S.; GUREVICH, I. G.; LYKOV, A. V. (prof)

"Sur la theorie de l'action des electrodes poreuses dans les convertisseurs d'energie electrochimiques employant les combustible liquides."

report submitted for Conf on Combustion & Conversion of Energies, Paris, 19-23 May 64.

NIKITINA, L.M.; LYKOV, A.V., akademik, red.

[Tables of mass transfer coefficients for moist materials] Tablitsy koeffitsientov massoperenosa vlazhnykh materialov. Pod red. A.V.Lykova. Minsk, Izd-vo "Nauka i tekhnika," 1964. 136 p. (MIRA 17:5)

1. Akademiya nauk Bel.SSR (for Lykov).

ACCESSION NR: AP4012800 S/0170/64/000/002/0120/0124

AUTHOR: Ly*kov, A. V.; Shul'man, Z. P.

TITLE: Methodology for the study of cooling by evaporation from porous metallic bodies

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 2, 1964, 120-124

TOPIC TAGS: cooling, evaporation cooling, porous body, porous body cooling

ABSTRACT: The authors discuss the errors in an article by V. P. Isachenko et al. (Teploenergetika, No. 1 i 3, 1961) and which led to conclusions that seem to contradict the results presented by one of the authors in a previous article (A. V. Ly*kov, IFZh, No. 11, 1962). First of all, recession of surface evaporation within the porous layer is determined by the equation of mass balance in the evaporation zone rather than by the equation of heat balance. Next, the "paradoxal" results are due to errors during the calculation of the heat exchange coefficient, and to the incorrect experimental approach. Instead of calculating the coefficient using the amount of evaporated water q_n in the formula

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$$\alpha' = \frac{rq_n \pm \Delta q}{\Delta t}, \qquad (2)$$

where Δq includes the heat losses through the textolite wall, the heat to warm up the water, and the radiation losses, the coefficient α for the case when the metallic layer touches the water should be found from equation

$$\alpha \Delta t = rq_n + \lambda \left(\frac{\partial t}{\partial y}\right)_{y=0} \qquad (3)$$

where λ is the effective heat conduction coefficient of the porous layer. For the given experimental conditions the use of Equation (2) instead of (3) resulted in errors between 10 and 75%. As far as the experimental approach is concerned, the hydrodynamic setup corresponded not to a flow around the layer, but to an initial section of a slit-like channel. Consequently, approximately 55% of the working surface was within the turbulent domain while the rest was within the laminar region. Finally, Isachenko et al. compared their values with the well known equation

$$Nu = 0.032\ Re^{0.8} \qquad (9)$$

ACCESSION NR: AP4012800

which is applicable to the "dry" heat exchange within a completely turbulent boundary layer. Instead one should use data from experiments with impermeable layers of the same roughness under otherwise identical conditions. Experiments at the authors' institute yielded results shown in the figure of Enclosure 1 which disagree with the results of the forementioned authors. Orig. art. has 1 figure and 9 equations.

ASSOCIATION: Institut teplo- i massoobmena (Institute of Heat Exchange and Mass Transfer), AN BSSR, Minsk

SUBMITTED: 08Sep63	DATE ACQ: 26Feb64	ENCL: 01
SUB CODE: AI, PH	NO REF SOV: 005	OTHER: 000

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LYKOV, A. V.; VASIL'YEV, L. L.; SHASHKOV, A. G.

"A method for simultaneous determination of all thermal properties of bad heat conductors over the temperature range 80° to 500°K."

report submitted but not accepted for 3rd Symp on Thermophysical Properties, Lafayette, Ind, 22-26 Mar 65.

Heat & Mass Transfer Inst, AS BSSR, Minsk.

LYKOV, A. V.; VASIL'YEV, L. L.; SHASHKOV, A. G.

"A method for simultaneous determination of all thermal properties of poor heat conductors over the temperature range 80 to 500°K."

report submitted for 3rd Symp on Thermophysical Properties, Purdue Univ, Lafayette, 22-25 Mar 65.

LYKOV, A.V.; ZABRODSKIY, S.S.; SMOL'SKIY, B.M.; CHUDNOVSKIY, A.F.

S.S. Kutateladze; on his 50th birthday. Inzh.-fiz. zhur. no.7:
121-122 Jl '64. (MIRA 17:10)

LYKOV, A.V.; SHEVEL'KOV, V.L.; NESTERENKO, A.V.; LEBEDEV, P.D.; MAKSIMOV, G.A.; NIKITINA, L.M.

IUrii Leonidovich Kavkazov; on his 70th birthday. Inzh.-fiz. zhur. 8 no.1:124-125 Ja '65. (MIRA 18:3)

LYKOV, A.V.

Mass and heat transfer in building materials. Inzh.-fiz. zhur.
8 no.2:161-169 F '65. (MIRA 18:5)

1. Institut teplo- i massoobmena AN BSSR, Minsk.

LYKOV, A.V., akademik

Research in the field of heat and mass transfer. Vest.AN SSSR 35 no.6:66-71 Je '65. (MIRA 18:8)

1. AN BSSR; Institut teplo- i massoobmena AN BSSR.

LYKOV, A.V., akademik, red.; SMOL'SKIY, B.M., prof., red.

[Heat and mass transfer in capillary-porous bodies] Teplo- i massoobmen v kapilliarnoporistykh telakh. Minsk, Nauka i tekhnika, 1965. 152 p. (MIRA 18:10)

1. AN Belorusskoy SSR (for Lykov).

LYKOV, A.V.; LEBEDEV, P.D.; VUKALOVICH, M.P.; GINZBURG, A.S.; SMOL'SKIY, B.M.; SOKOLOV, Ye.Ya.; SEMENENKO, N.A.; LYKOV, M.V.; LEONCHIK, B.I.; KRASNIKOV, V.V.; SHUMAYEV, F.G.; DREVS, G.V.

Georgii Aleksandrovich Maksimov; obituary. Inzh.-fiz. zhur. 9 no.3:418 S '65. (MIRA 18:9)

LYKOV, A.V.

Using the methods of irreversible-process thermodynamics in investigating heat and mass transfer. Inzh.-fiz. zhur. 9 no.3:287-304 S '65. (MIRA 18:9)

1. Institut teplo- i massoobmena AN BSSR, Minsk.

L 04650-67 EWT(m)

ACC NR: AP6024008 (A) SOURCE CODE: UR/0201/66/000/002/0125/0126

57
B

AUTHOR: Lykov, A. V.; Romanovskiy, S. G.

ORG: Institute of Heat and Mass Exchange, AN BSSR (Institut teplo- i massoobmena AN BSSR)

TITLE: Heat treatment of concrete in an electromagnetic field

SOURCE: AN BSSR. Vestsi. Seryya fizika-tekhnichnykh navuk, no. 2, 1966, 125-126

TOPIC TAGS: reinforced concrete, concrete, electromagnetic field, thermal process, heat transfer

ABSTRACT: The authors describe briefly a method and a technology developed at the Institute of Heat and Mass Exchange AN BSSR for accelerated setting of concrete in an electromagnetic field, using commercial-frequency current. The heating of the concrete is produced by induction of the ferromagnetic elements contained in the reinforced and ordinary concrete, and also as a result of the fact that concrete constitutes a relaxation-polarized system with respect to the electromagnetic field, so that heat transfer in the concrete occurs not only under the influence of temperature and concentration gradients, but also under the influence of magnetic and electric field gradients, and also under the influence of differences in the magnetic and electric field intensity vectors at the given instant of time and in the equilibrium state. The method permits a smooth control of the heating of the concrete by continuously regulating the magnetic field intensity. In addition, the external electro-

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L 04650-67

ACC NR: AP6024008

magnetic field, under definite conditions, affects directly also the hydrodynamics, heat and mass exchange, the rate of occurrence of the chemical reactions, and the structural-mechanical properties of the concrete. Tests have established that uniform temperature and moisture-content of the field can be established by this method independently of the symmetry of the reinforcing rods. The method has passed through laboratory tests and is now in use for construction purposes by KAmGESenergostroy. A commercial application was developed jointly by the Institute of Heat and Mass Exchange and by the Glavgidroenergostroy MEiE SSSR, with a productivity of 50,000 m^3 annually. A reduction by a factor of 2.5 - 3.5 is claimed for the duration of heat treatment. The strength of the concrete 5 hours after its heat treatment amounts to 75 - 85% of the rated strength. After 28 days, the actual strength greatly exceeds the rated strength (120 - 140%). The electricity per cubic meter of reinforced concrete is 65 - 70 kw-hours. The total cost for heat treatment of 1 m^3 of reinforced concrete (initial capital investment and operating cost) is reduced by 1.5 - 2.

SUB CODE: 11, 13/ SUBM DATE: 06Apr66/ ORIG REF: 003

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L 05410-67 EWT(1)/EWT(m) DS/WW

ACC NR: AP6024639 SOURCE CODE: UR/0170/66/011/001/0054/0059

AUTHOR: Azroyan, K. K.; Lykov, A. V.; Rabinovich, G. D.; Bobrova, G. I.

ORG: Institute of Heat and Mass Exchange, AN BSSR, Minsk (Institut teplo- i massoobmena AN BSSR)

TITLE: An experimental investigation of the influence of the flow of viscous fluids on transfer processes

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 11, no. 1, 1966, 54-59

TOPIC TAGS: mass transfer, viscous flow, momentum transfer, gas flow, laminar flow, heat transfer

ABSTRACT: Thermodynamics of irreversible processes is used for the study of mass- and heat-transfer processes. To verify the theoretical conclusions, the authors designed an experimental device for the determination of the efficiency of separation of gaseous mixtures in laminar motion. The separation of binary molecular mixtures is generated by a viscous momentum transfer, and following a description of the device the paper presents data on separation of aerosols (tobacco smoke) and binary mixtures (aqueous sugar solutions). Under

Card 1/2 UDC: 536.242:621.039.3

L 05418-67

ACC NR: AP6024639

isothermal conditions, the heavier component is found concentrated at the center of a rotating disk, as predicted by the theory. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 15Mar66/ ORIG REF: 002/ OTH REF: 003

Card 2/2

ACC NR: AT7000375 (A,N) SOURCE CODE: UR/0000/66/000/000/0063/0085

AUTHOR: Lykov, A. V. (Academician AN BSSR); Perel'man, T. L. (Candidate of physico-mathematical sciences)

ORG: Heat and Mass Transfer Institute, AN BSSR, Minsk (Institut teplo- i massoobmena AN BSSR)

TITLE: Unsteady state heat transfer between a body and a fluid flow around it

SOURCE: Teplo- i massoperenos, t. 6: Metody rascheta i modelirovaniya protsessov teplo- i massobmena (Heat and mass transfer, v. 6: Methods of calculating and modeling heat and mass transfer processes). Minsk, Nauka i tekhnika, 1966, 63-85

TOPIC TAGS: convective heat transfer, fluid flow, temperature distribution

ABSTRACT: The basic problem treated in the article is illustrated by Figure 1. The initial temperature distribution in the body remains homogeneous; consequently

$$t|_{\tau=0} = t_0. \qquad (6)$$

With the exception of the surface y = 0, through which takes place the heat transfer between the solid body and the fluid flow, the whole surface of the body A is thermally insulated. Thus:

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ACC NR: AT7000375

$$\left.\frac{\partial t}{\partial x}\right|_{x=0} = \left.\frac{\partial t}{\partial x}\right|_{x=d} = 0, \quad (7)$$

$$\left.\frac{\partial t}{\partial y}\right|_{y=-R} = 0. \quad (8)$$

Finally, as usual, it is assumed that at the solid-fluid boundary

$$\theta|_{y=+0} = t|_{y=-0}, \quad (9)$$

$$-k_l \left.\frac{\partial \theta}{\partial y}\right|_{y=+0} = -k_s \left.\frac{\partial t}{\partial y}\right|_{y=-0}. \quad (10)$$

The remainder of the article is given over to a mathematical development of the problem on the above basis. Results of the calculation are shown in extensive tables and in figures. Orig. art. has: 69 formulas, 4 figures, and 2 tables.

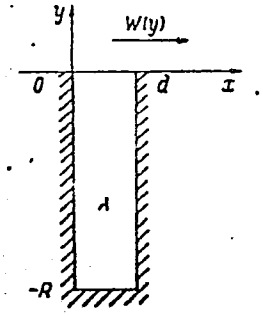

Figure 1. Position of body A in the fluid flow

SUB CODE: 20/ SUBM DATE: 08Jun66/ ORIG REF: 004/ OTH REF: 002

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ACC NR: AT6032004 SOURCE CODE: UR/0000/66/000/000/0311/0333

AUTHOR: Lykov, A. V.

ORG: Heat and Mass Transfer Institute AN BSSR, Minsk (Institut teplo- i massoobmena AN BSSR)

TITLE: Application of the methods of the thermodynamics of irreversible processes to the investigation of heat and mass transfer

SOURCE: Teplo- i massoperenos, t. 4: Teplo- i massoobmen pri khimicheskikh prevrashcheniyakh v tekhnologii (Heat and mass transfer, v. 4: Heat and mass transfer during chemical transformation). Minsk, Nauka i tekhnika, 1966, 311-333

TOPIC TAGS: irreversible thermodynamics, heat transfer, mass transfer

ABSTRACT: The article is of a completely theoretical nature and contains no experimental data. The author distinguishes three basic methods for investigation of irreversible transfer processes: 1) the kinetic theory which is the most direct method; 2) the method of statistical mechanics which is the most generally used method; and, 3) the use of the theory of the thermodynamics of irreversible processes which is founded on the basis of the first two methods. A section of the article is devoted to mass transfer in cooloidal capillary-porous bodies, and another to a consideration of turbulent heat and mass transfer processes. The article concludes with three

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ACC NR: AT6032004

appendices in which the mathematical bases of the proposed method are developed in more detail. Orig. art. has: 89 formulas.

SUB CODE: 20/ SUBM DATE: 25Apr66/ ORIG REF: 005/ OTH REF: 012

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LYKOV, B.

Labor index is the principal basis for correct planning and accounting. Mor. flot 18 no. 6:10-11 Je '58. (MIRA 11:7)

1. Direktora zavoda imeni Zakfederatsii.
(Shipyards)

MASHIN, V.V.; LYKOV, G.P.

Spontaneous ruptures of the uterus during pregnancy. Akush. i gin. 39 no.5:144-145 S-O '63. (MIRA 17:8)

KOVRIZHIN, A.K.; LYKOV, G.P.; PANOV, L.K.

Investigating the manifestation of rock pressure in the chamber and pillar system of mining. Vop. gor. davl. no.17:13-18 '63. (MIRA 18:9)

1. Kuznetskiy nauchno-issledovatel'skiy ugol'nyy institut.

SHIFLINGER, L.Ye.; LYKOV, G.P.

Case of oncogenetic inversion of the uterus. Akush. i gin. 39 no.5:145-146 S-O '63. (MIRA 17:8)

LYKOV, IVAN ALEKSANDROVICH

PHASE I BOOK EXPLOITATION 854

Lykov, Ivan Aleksandrovich

Koordinaty, opredelyayemyye radiolokatorom (Coordinates Determined by Radar) Moscow, Voyen. Izd-vo M-va obor. SSSR, 1957. 52 p. No. of copies printed not given.

Ed.: Karus', A.P., Engineer-Major; Tech. Ed.: Sleptsova, Ye.N.

PURPOSE: This brochure is addressed to officers engaged in the operation of radio communications equipment. It may also be used by readers desiring detailed information on the operation of the individual units and components of radar equipment.

COVERAGE: The brochure is part of the series entitled "Radiolokatsionnaya Tekhnika" (Radar Technique) published by the Military Publishing House. A list of the various titles constituting the series is given on the inside back cover of each brochure. The brochure explains in popular form the

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principles of coordinate fixing by various types of radar stations. No personalities are mentioned. There are no references.

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AVAILABLE: Library of Congress (TK6580.L9)

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11-24-58

LYKOV, I. F.

PA 40/49T89

USSR/Mining Methods Jan 49
Mining Equipment

"Mechanization of Room and Pillar System Coal Mining Operations," I. F. Lykov, Cand Tech Sci, 1½ pp

"Ugol'" No 1

Method first used at Mine No 10 imeni Kirov, VostSibUgol' Trust. Gives thickness of average seam, and results of using subject method. Concludes that despite many improvements still to be accomplished, method described has excellent possibilities.

40/49T89

Lykov, I.F.

SAVOST'YANOV, A.V., kand.tekhn.nauk; LYKOV, I.F., kand.tekhn.nauk.

New mining systems. Part 13. A.V. Savost'ianov. Part 14. I.F. Lykov. Ugol' 32 no.12:19-22 D '57. (MIRA 11:1)

1.Dnepropetrovskiy gornyy institut (for Savost'yanov). 2.Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut (for Lykov).
(Coal mines and mining)

MIKHEYEV, Yu.M.; LYKOV, L.M.

Possibilty of using polyamines in the oil industry. Transp khran. nefti i nefteprod. no. [illegible] '64. (MIRA 17:5)

KATYREV, A.Ye.; KAURTSEV, N.V.; KOZLOVSKIY, A.I., doktor sel'skokhozyaystvennykh nauk; KRASIKOV, Z.D., dotsent, kandidat sel'skokhozyaystvennykh nauk; SOBOLEVSKAYA, K.A.; LYKOV, M.S., redaktor; LISINA, V.M., tekhnicheskiy redaktor

[Experience in cultivating corn; based on papers at a province conference] Opyt vozdelyvaniia kukuruzy; po materialam oblastnoi konferentsii [Novosibirsk] Novosibirskoe kn-vo, 1956. 226 p. (MLRA 9:12)

1. Novosibirskiy sel'skokhozyaystvennyy institut (for Krasikov)
(Corn (Maize))

LYKOV, M.V.; LEONCHIK, B.I.; DANILOV, O.L.

How to intensify atomizing drying. Inzh.-fiz.zhur. 5 no.12:34-40 D '62. (MIRA 16:2)

1. Energeticheskiy institut, Moskva.
(Drying)

LYKOV, M.V.

YANTOVSKIY, I.A.; LYKOV, M.V., otvetstvennyy redaktor; ROMANOVA, L.A., redaktor; ANDREYEV, G.G., tekhnicheskiy redaktor.

[The dryer in a coal preparation plant] Sushil'shchik na ugleobogatitel'noi fabrike. Moskva, Ugletekhizdat, 1954. 30 p. (MLRA 8:3)

(Coal preparation) (Drying apparatus)

VOLIK, N.D.; NASAKIN, T.N.; LYKOV, M.V., kandidat tekhnicheskikh nauk, redaktor.

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AUTHOR: Lykov, M.V. SOV/170-59-3-2/20

TITLE: A Method of Approximate Thermal Rating of Drying Installations With a "Boiling" Layer (Metodika priblizhennogo teplovogo rascheta sushil'nykh ustanovok s "kipyashchim" sloyem)

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ABSTRACT: Although there are numerous publications dealing with the heat- and mass-exchange in the "boiling" layer, no methods have so far been developed for designing drying installations operating on this principle. The author gives at first his definition of the hydrodynamics of the "boiling" layer and discriminates between the two phases of the process. He names the first phase of the "boiling" such a state of the layer in which individual particles are not carried away from the layer; the hydraulic resistance along the layer thickness varies according to a linear law. In the second phase, when the "boiling" layer goes over into a turbulent state, the hydraulic resistance and the concentration of particles along the layer thickness decrease by an exponential law according to N.I. Syromyatnikov's observations [Ref. 3]. The study of the first phase is of more practical interest for drying processes. In order to design a drying installation of a prescribed capacity operating on the "boiling" layer process, the knowledge of the following initial factors is necessary: the

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starting and final moisture of the material and its dispersion composition. It is desirable also to know the values of the hygroscopic and equilibrium moisture. The thermal calculations must yield the following results: the sizes of the drying installation, hydraulic resistance, the duration of drying, the consumption of heat and electric power, and characteristics for the auxiliary equipment required. The thermal rating of a drying installation operating on the "boiling" layer principle must be performed according to a certain sequence: 1. The material balance of the drying installation is calculated by the initial data; 2. The I - d diagram of the drying process is drawn, and the final point of this process is determined from the optimum value of the saturation of exhausted gases; then the hourly consumption of dry gases is computed; 3. The total section of the "boiling" layer is determined from the initial data of the dispersion composition of the material and the rate of boiling which, in its turn, is computed by Fedorov's formula [Ref. 4]; 4. The thickness of the layer of material on the grid and duration of the drying process are then calculated, and the total amount of heat conveyed from

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the gases to the granular material subjected to drying is then determined. The heat exchange coefficient is found from a relation which was derived from the experimental data on the drying of grain, brown coal, cardboard and granulated superphosphate, and which looks approximately as follows: $Nu = 0.024\ Re^{0.84}$, where Nu and Re are criteria of Nusselt and Reynolds respectively. In conclusion the author recommends the use of two-zone dryers for materials sensitive to heating, which are varying considerably in density after moisture removal.
There are 2 graphs, 2 diagrams, 3 tables and 6 references, 4 of which are Soviet and 2 English.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy teplotekhnicheskiy institut imeni F. Dzerzhinskogo (All-Union Scientific Research Thermal-Engineering Institute imeni F. Dzerzhinskiy), Moscow

MIKHAYLOV, N.M.; LYKOV, M.V.; SHCHEGLOV, V.F.; KUROCHKIN, Yu.P.

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