SHAKHSUVARYAN, L.; GUKASYAN, V.; MINASYAN, R.

Deteriorations in stone structures of industrial and public buildings and causes of their formation. Prom.Arm. 6 no.12:44-48 D '63. (MIRA 17:2)

GUKAS'YAN, V.

Training personnel for consumers' cooperative societies. Sov. torg. no.12:14-17 D '58. (MIRA 12:2)

1. Zamestitel' nachal'nika Upravleniya kadrov i uchebnykh zavedeniy TSentrsoyuza.
(Cooperative societies) (Business education)

GUKASYAN, V.; KARAPETYAN, V.

Production of concrete with a natural texture finish for outer wall panels. Prom.Arm. 5 no.8:54-55 Ag '62. (MIRA 15:8)

1. Armyanskiy institut stroitel'nykh materialov i sooruzheniy.
(Armenia—Building materials)

MARTIROSYAN, G.M.; MANVELYAN, A.P.; TERLEMEZYAN, G.Ye.; MELKUMYAN, G.G.; AGAMIRYAN, G.N.; TARDZHIMANOV, R.O.; GUKASYAN, V.M.; POGOSYAN, M.P.; MARUKHYAN, A.O.; MARUNOV, P.M., red.; SAHOYAN, P., tekhn.red.; MATINYAN, A.A., tekhn.red.

[Forty years of Soviet Armenia; a statistical manual] Sovetskaia Armeniia za 40 let; statisticheskii sbornik. Erevan, Armianskoe gos.izd-vo, 1960. 209 p. (MIRA 14:4)

1. Armenian S.S.R. Statisticheskoye upravleniye. 2. Nachal'nik TSentral'nogo statisticheskogo upravleniya pri Sovete Ministrov Armyanskoy SSR (for Martirosyan). 3. Zamestitel' nachal'nika TSentral'nogo statisticheskogo upravleniya pri Sovete Ministrov Armyanskoy SSR (for Manvelyan). 4. TSentral'noye statisticheskoye upravleniye pri Sovete Ministrov Armyanskoy SSR (for Terlemezyan, Melkumyan, Agamiryan, Tardzhimanov, Gukasyan, Pogosyan, Marukhyan). 5. Nachal'nik otdela statistiki svodnykh rabot TSentral'nogo statisticheskogo upravleniya pri Sovete Ministrov Armyanskoy SSR (for Marunov).

(Armenia--Statistics)

GUKAYEV, S. (g.Ordzhonikidze)

Reducing valve used for increasing air pressure in brake air lines. Zhel.dor.transp. 36 no.6:80 Je '55. (MIRA 12:4)

1. Predsedatel' Nauchno-tekhnicheskogo otdela Ordzhonikidzevskoy dorogi.

(Air brakes)

GUKAYLO, Mikhail Martynovich

[Growing potatoes in the German Democratic Republic] Kartofelevodstvo v Germanskoi demokraticheskoi respublike. Moskva, Gos.izd-vo sel-khoz.lit-ry, 1959. 55 p. (MIRA 13:6)
(Germany, East--Potatoes)

ACC NR: AP6017988 (A,N) SOURCE CODE: UR/0413/66/000/010/0088/0088

INVENTOR: Gukaylo, M. Ya.

ORG: None

TITLE: A prism for rotating the light beam in an autocollimator, Class 42, No. 181840

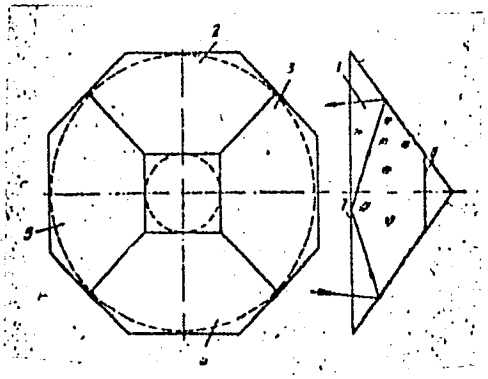
SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 10, 1966, 88

TOPIC TAGS: optic prism, collimation, optic equipment component

ABSTRACT: This Author's Certificate introduces a prism for rotating the light beam in an autocollimator. To reduce vignetting of light beams during autocollimation measurements at distances of the order of 50 meters, the prism is made in the form of a frustum of a tetrahedral pyramid with a reflective coating on the lateral faces and the smaller base, while the larger base is used for entrance and exit of the light beam.

Card 1/2 UDC: 535.853.214

ACC NR: AP6017988



1—frustum of tetrahedral pyramid; 2-5—lateral faces; 6—smaller base; 7—larger base

SUB CODE: 17, 20/ SUBM DATE: 05Jul64

Card 2/2

SOV/122-58-12-18/32

AUTHOR: Gukaylo, M.Ya., Engineer

TITLE: An Optical Method of Checking the Horizontality of a Plane and the Perpendicularity to it of Two Mutually Parallel Vertical Planes (Opticheskiy metod kontrolya gorizontal'nosti ploskosti i perpendikulyarnosti k ney dvukh vzaimno parallel'nykh vertikal'nykh ploskostey)

PERIODICAL: Vestnik Mashinostroyeniya, 1958, Nr 12, pp 50-51 (USSR)

ABSTRACT: The basic principles of optical auto-collimation are shown in Fig 1 where perpendicularity is checked by co-incident reflections using half-silvered prisms. Fig 2 shows the principle for checking parallelism of two vertical surfaces and horizontality using an artificial horizon created by a dish filled with mercury or oil. The collimator is aligned by reflection from this surface, the dish is removed and replaced by an optically flat reflecting surface lying on the horizontal plate. The plate (3) is then adjusted until the reflection from this surface is co-incident to the levelled collimator. To check perpendicularity of surfaces to this aligned horizontal surface, a holder containing a mirror (Fig 3) is fixed into a prepared hole in plate (1) and a telescope (Fig 4) into a similar hole in plate (2). The

Card 1/3

An Optical Method of Checking the Horizontality of a Plane and the Perpendicularity to it of Two Mutually Parallel Vertical Planes

mirror is viewed through a collimator (8) and the plate (1) is adjusted until reflections are co-incident; plate (1) is then perpendicular to plate (3). The mirror is removed from plate (1), and the telescope in plate (2) is focussed on the cross wire of the collimator (8). Plate (2) is then adjusted until the cross wire in the telescope coincides with the cross wire in the collimator (8). The telescope is removed and the mirror in its holder (Fig 3) is fixed in its place in plate (2). This plate is then aligned as for plate (1) using collimator (8). This completes the operation for bringing plates (1) and (2) perpendicular to plate (3). Details are given of the construction of the holders for the mirror

An Optical Method of Checking the Horizontality of a Plane and the Perpendicularity to it of Two Mutually Parallel Vertical Planes

and telescope, which are arranged to align with a machined rim around the holes in the vertical plates, the holders touching the rim at three points and being pressed against it by a spring in the clamping device. There are 4 figures

7(6) PHASE I BOOK EXPLOITATION SOV/2578

Gukaylo, Mikhail Yakovlevich

Osnovnyye printsipy konstruirovaniya opticheskikh kontrol'no-yustirovochnykh priborov (Basic Principles of Designing Optical Checking and Adjusting Instruments) Moscow, Mashgiz, 1959, 124 p. 4,000 copies printed.

Reviewer: Ye. N. Mozes, Engineer; Eds.: M.A. Kagan, Engineer, and M.S. Soroka; Chief Ed. (Yuzhnyy Division, Mashgiz): V.K. Serdyuk, Engineer.

PURPOSE: This book is intended for beginning designers and technologists in the field of optical instrument manufacture and for students in optico-mechanical schools.

COVERAGE: Basic principles for designing optical checking and adjusting instruments are presented and problems concerning methods of manufacture are discussed. Special attention is given to the construction of autocollimators, characterized by high sensitivity and accuracy. In addition, methods of checking assembly and adjustment of these instruments are presented. No personalities are mentioned. There are 13 references, all Soviet.

Card 1/4

TABLE OF CONTENTS:

Basic Principles of Designing (Cont.) SOV/2578

Card 3/4

Basic Principles of Designing (Cont.) SOV/2578

AVAILABLE: Library of Congress

Card 4/4

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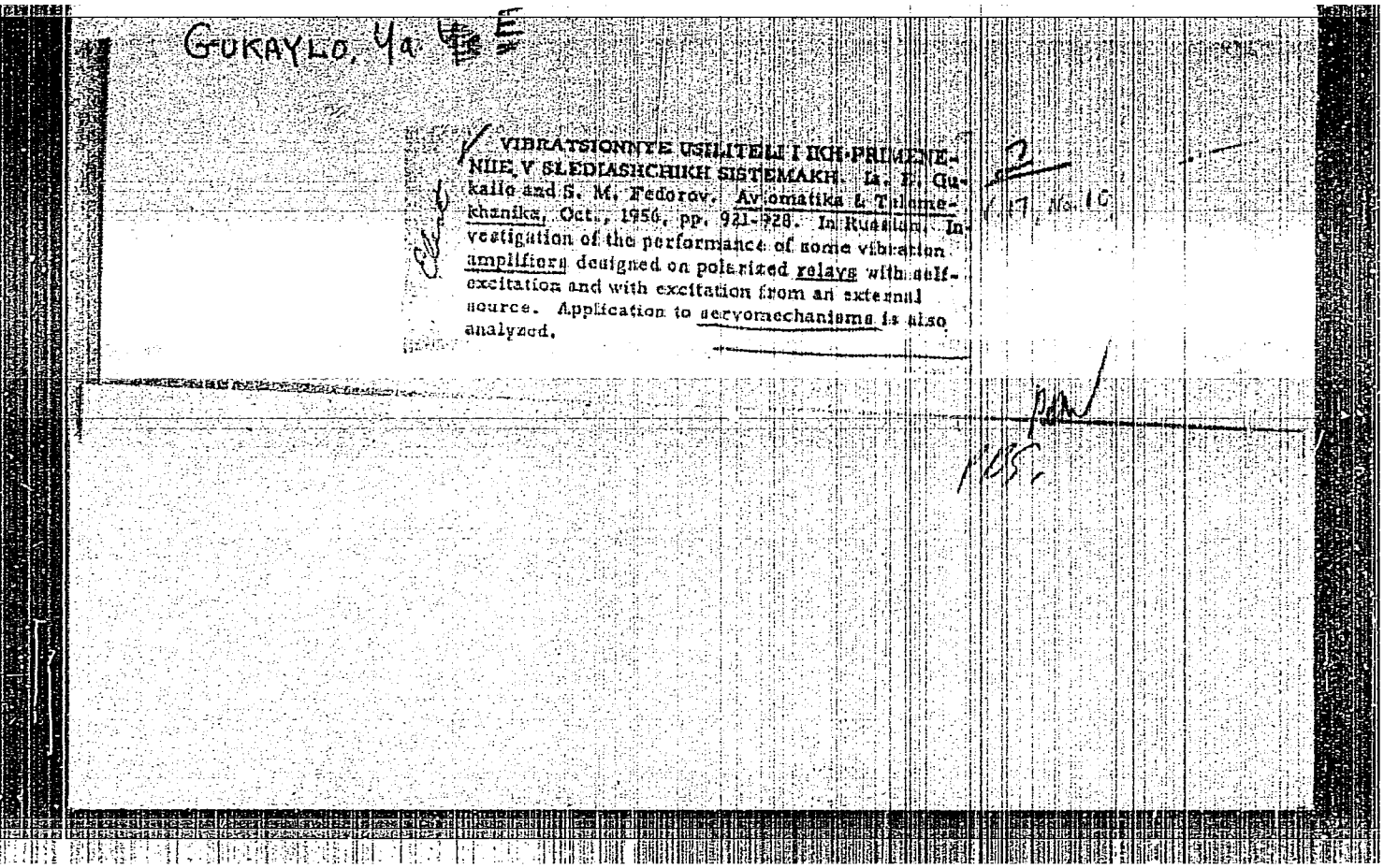
12-9-59



GUKAYLO, Ya. E.

VIBRATSIONNYE USILITELI PRIMENENIE V SLEDIASHCHIKH SISTEMAKH. Ia. E. Gukailo and S. M. Fedorov. Avtomatika i Telemekhanika, Oct., 1956, pp. 921-928. In Russian. Investigation of the performance of some vibration amplifiers designed on polarized relays with self-excitation and with excitation from an external source. Application to servomechanisms is also analyzed.

GUKEVICH, V.I.

Gukevič, V. I. The best approximation in the mean of the function $\ln(a-x)$ by polynomials. Doklady Akad. Nauk SSSR (N.S.) 77, 785–786 (1951). (Russian)

The author calculates the quantity described in the title for the interval $(-1, 1)$ and $-1<a<1$; for polynomials of degree $2n-1$ it is $c(1-a^2)^{\frac{1}{2}}n^{-1}+O(n^{-2}\log n)$, where c is given explicitly as a definite integral. The corresponding result for $|a|\geqq 1$ was known. *R. P. Boas, Jr.*

Source: Mathematical Reviews, Vol 12 No. 10

29839
S/044/61/000/007/008/055
C111/C222

16.4200

AUTHOR: Gukevich, V.O.

TITLE: The remainder of the Fourier series of a function the r-th derivative of which satisfies the Lipschitz condition

PERIODICAL: Referativnyy zhurnal. Matematika, no. 7, 1961, 9, abstract 7 B 35 ("Teor. i prikl. matem.", vyp I. L'vov, L'vovsk. un-t, 1958, 3-15)

TEXT: Let $W^{(r)}_{KH}(\alpha)$ be the class of functions f with the period 2π, $(r \geq 1,\ 0 < \alpha \leq 1)$, the r-th derivative of which in the sense of Weyl satisfies the condition Lip α with the constant K. Let $E_{s_n}(W^{(r)}_{KH}(\alpha)) = \sup_{f \in W^r_{KH}(\alpha)} |f(x) - S_n(f; x)|$, where $S_n(f,x)$ is the Fourier sum of f . The author proves the asymptotic equality :

$$E_{s_n}(W^{(r)}_{KH}(\alpha)) = K\left[\frac{2^{\alpha+1}\lg(n-1)}{\pi^2 n^{r+\alpha}} \int_0^{\frac{\pi}{2}} v^{\alpha} \sin v\,dv + \frac{e_{n,r}}{n^{r+\alpha}}\right] \quad (n \geq 3),$$

Card 1/2

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S/044/61/000/007/008/055
C111/C222

The remainder of the Fourier series ...

where $|e_{nr}| < c$ and c is an absolute constant. This result is a generalization of corresponding asymptotic formulas of S.M. Nikol'skiy and S.M. Selivanova in which the constant c depended on r. There are misprints.

[Abstracter's note: Complete translation.]

Card 2/2

GUKEVICH, Ye.V.

Arrest of cerebral circulation under hypothermia [with summary in English]. Eksper.khir. 3 no.1:30-35 Ja-F '58. (MIRA 11:2)

1. Iz Vinnikovskoy rayonnoy bol'nitsy L'vovskoy oblasti (glavnyy vrach V.S.Cherednik, nauchnyy rukovoditel' - zav. kafedroy fakul'tetskoy khirurgii lechebnogo fakul'teta L'vovskogo meditsinskogo instituta prof. G.G.Karavanov)

(HYPOTHERMIA, exper.
eff. on cerebral circ. in rabbits (Rus))
(BRAIN, blood supply
circ., eff. of hypothermia in rabbits (Rus))

GUKEVICH, Ye.V. (Vinniki, L'vovskoy obl, ul.Lenina, d.12)

Two cases of repeated operations on the biliary tract. Nov. khir.arkh. no.3:79-80 My-Je '59. (MIRA 12:10)

1. Khirurgicheskoye otdeleniye (zav. - Ye.V.Gukevich) Vinnikovskoy rayonnoy bol'nitsy, L'vovskoy oblast.
(BILIARY TRACT--SURGERY)

GUKEVICH, YeV., Cand Med Sci (diss) "Exclusion of the Blood circulation in the brain during hypothermia," L'vov, 1960, 18 pp (L'vov State Medical Institute) (KL, 34-60, 124)

GONCHARENKO, Ye. I.; GUKEVICH, Ye. V.; MALYUK, V. I.

Arterioroentgenography of the hip following occlusion of the right common iliac artery. Vrach. delo no.3:141-143 Mr '62. (MIRA 15:7)

1. Kafedra anatomii (zav. - prof. A. P. Lyubomudrov) L'vovskogo meditsinskogo instituta i Vinnikovskaya rayonnaya bol'nitsa L'vovskoy oblasti.

(ILIAC ARTERY) (ANGIOGRAPHY)

GUKEVICH, Ye.V.

Work experience of a blood transfusion departement in a regional hospital. Probl.gemat.i perel.krovi no.7:54-55 '62. (MIRA 15:9)

1. Iz Vinnikovskoy bol'nitsy (glavnyy vrach V.S. Cherednik) L'vovskoy oblasti.

(BLOOD—TRANSFUSION)

GUKEVICH, Ye. V.

Tumors of the vascular glomeruli. Vrach. delo no.6:142-143 Je '62. (MIRA 15:7)

1. Vinnikovskaya bol'nitsa L'vovskoy oblasti.

(BLOOD VESSELS—TUMORS) (FINGERS—DISEASES)

GUKEVICH, Ye.V. (L'vov, ul. Kutuzova, d.13, kv.1)

Three cases of removal of the third left thoracic sympathetic ganglion in endarteritis obliterans. Klin.khir. no.12:66 D '62. (MIRA 16:2)

1. Vinnikovskaya bol'nitsa L'vovskoy oblasti.
(ARTERIES—DISEASES)
(NERVOUS SYSTEM, SYMPATHETIC—SURGERY)

GUKHLERNER, L. M. PA 38/49T42

USSR/Engineering Mar 49
Construction Equipment
Stacks, Exhaust

"Assembly Smokestacks by Using a Crawling Shaver," I. L. Benderskiy, L. M. Gukhlerner, Engineers, 1 p

"Mekh Stants" No 3

Gives drawings and operating principle of an arrangement for erecting heavy steel smokestacks without the use of high towers.

[redacted] 38/49T42

BENDERSKIY, I. I. GUKHLERNER, L. M.

Cranes, Derricks, etc.

"Using a /‾ shaped crane of 25 Tons Capacity for a 40 Tons Load"
Elek. sta. 23, No 4, 1952

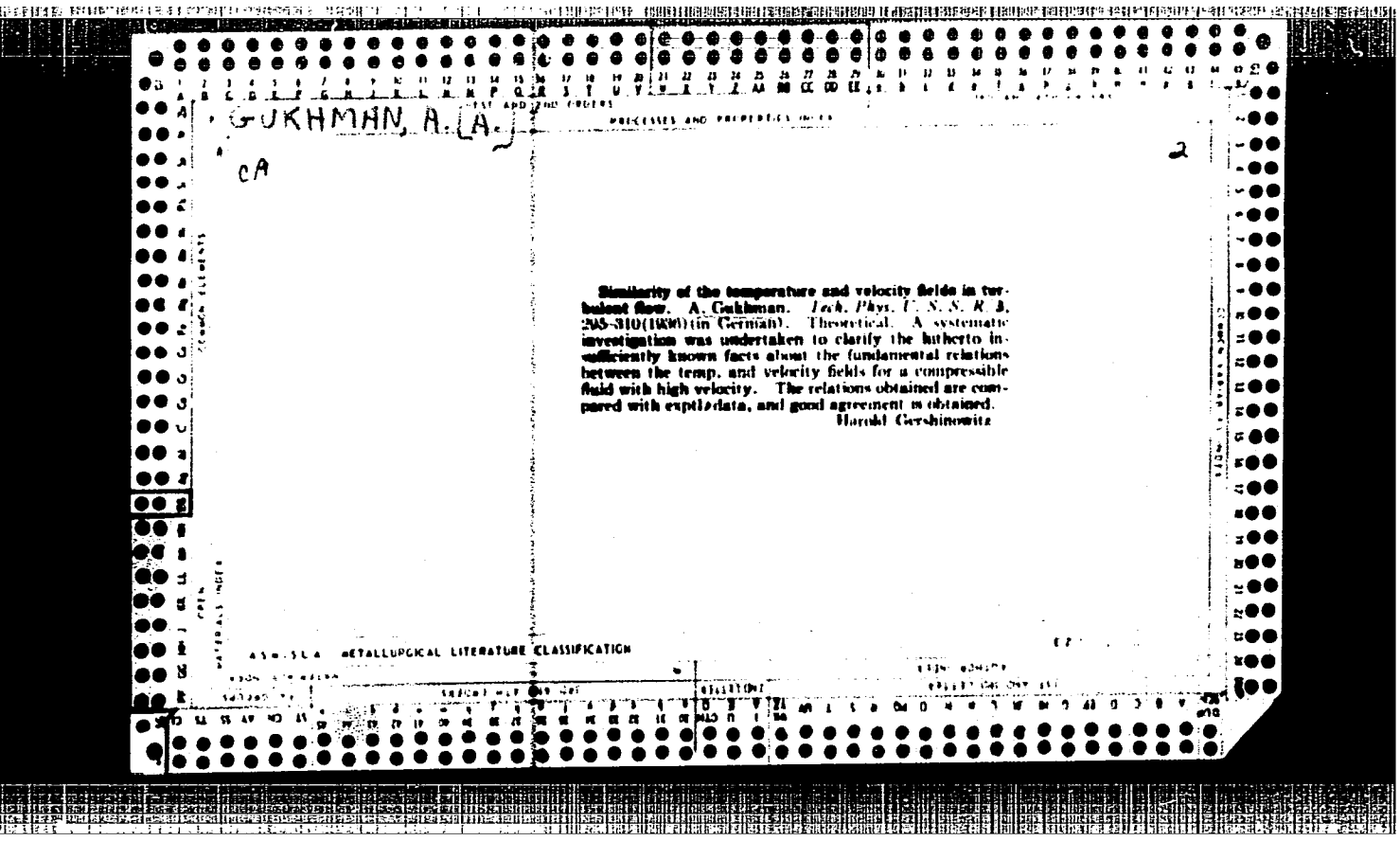
SO: Monthly List of Russian Accessions, Library of Congress, August 1952 1953, Uncl.

[redacted], A.A.

K voprosu o podobii mezhdu skorostiami i temperaturnymi poliami v gazodinamicheskikh usloviiakh. (In: Vsesoiuznaia konferentsiia po skorostnoi aviatsii. Moscow, 1935. Trudy, p. 119-126)

Title tr.: Similarity between velocity and temperature fields in gaseous flow.

SO. Aeronautical Science and Aviation in the Soviet Union. Library of Congress, 1955.



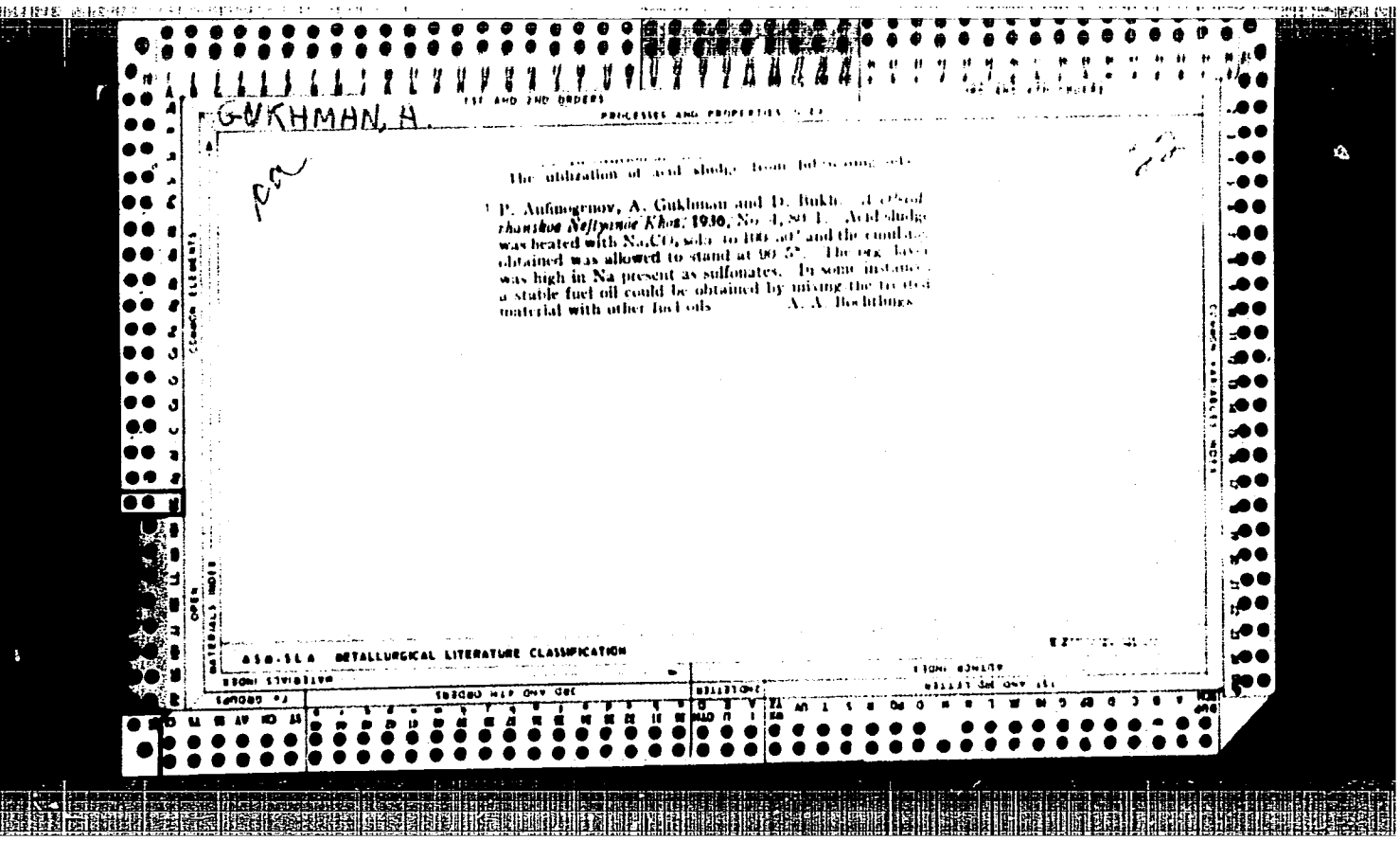
GUKHMAN, A. A.

CA

2

Similarity of the temperature and velocity fields in turbulent flow. A. Gukhman. *Zeit. Phys. U. S. S. R.* 3, 305-310(1936)(in German). Theoretical. A systematic investigation was undertaken to clarify the hitherto insufficiently known facts about the fundamental relations between the temp. and velocity fields for a compressible fluid with high velocity. The relations obtained are compared with exptl. data, and good agreement is obtained.
Harold Gershinowitz

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



GUKHMAN, A.A.

K voprosu o podobii temperaturnykh i skorostnykh polei turbulentnogo potoka. (Zhurnal tekhnicheskoi fiziki, 1936, v.6, no. 5, p. 845-857)

Title tr.: Similarity between temperature and velocity fields in turbulant flow.

QC1.248 1936

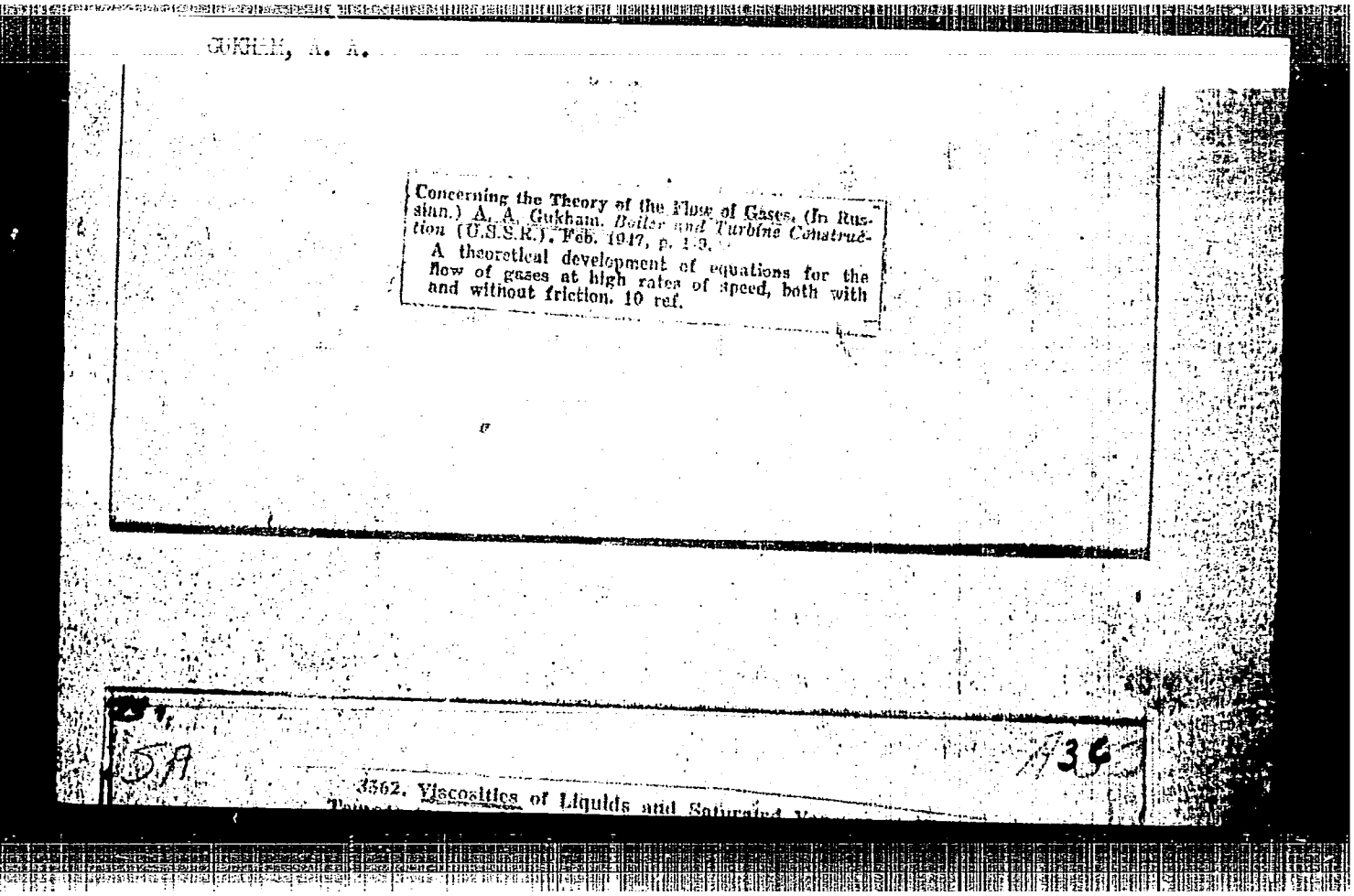
SO. Aeronautical Science and Aviation in the Soviet Union. Library of Congress, 1955.

GUKHMAN, A.

Solid nonparaffin hydrocarbons of lubrication oils. A. Gukhman. *J. Gen. Chem.* (U. S. S. R.) 9, [illegible] (1939). The oil was deparaffinized at −20° to give 1% of a solid, m. 63°, d^{20} 0.8108, n_D^{20} 1.4440, mol. wt. 4[illegible].7, which from the analysis (C 85.90, H 14.2%), high sp. gr. and high refraction is assumed to be a mixt. of naphthene hydrocarbons.

John Livak

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



GUKHAM, A. A.

Concerning the Theory of the Flow of Gases. (In Russian.) A. A. Gukham. *Boiler and Turbine Construction* (U.S.S.R.). Feb. 1947, p. 1-9.

A theoretical development of equations for the flow of gases at high rates of speed, both with and without friction. 10 ref.

3362. Viscosities of Liquids and Saturated

GUKHMAN, A.A., and N.V. ILYUKHIN.

Teploobmen pri dvizhenii gazov v trubakh s bol'shoi skorost'iu. Leningrad, TSKTI, 1949. (Teploperedacha i aerodinamika. Sbornik no. 12)

Title tr.: Heat exchange in a gas flow in pipes at high speed.

NCF

SO. Aeronautical Science and Aviation in the Soviet Union. Library of Congress, 1955.

GUKHMAN, A. A. and VEYNIK, A. I.

"The Theory of Heat Exchange Between Casting and Form: Selection of the Optimum Wall Thickness of the Metal Mold", Zhurnal Tekhnicheskoy Fiziki, Vol. 20, No. 9, pp 1029-1038, 1950.

SO: W-17131, 1 Mar 1951

Cukhman, A.A. and N.V. Iliukhin.

Osnovy ucheniia o teploobmene pri techenii gaza s bol'shoi skorost'iu. Moskva, Mashgiz, 1951. 226 p.

Title tr.: Fundamentals of heat exchange in a gas flow at high speed.

Reviewed by G.A. Varshavskii, in Sovetskaia kniga, 1951, no. 11, p.58-60.

QC320. G9

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955

Gukhman, A.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 290 - I

BOOK Call No. TJ265.T4

Authors: GUKHMAN, A., Prof. Dr. of Phys. Sc.; ILYUKHIN, N. V., Kand of Eng. Sc.; GANDEL'SMAN, A. F., Eng; and NAURITS, L. N., Eng.

Full Title: EXPERIMENTAL STUDY OF HEAT EXCHANGE AND RESISTANCE IN SUBSONIC REGION

Transliterated Title: Eksperimental'noe issledovanie teoloobmena i soprotivleniya b dozvukovoy oblasti

Publishing Data

Originating Agency: Ministry of Heavy Machine Building Industry. (Glavkotloturboprom). Central Scientific Institute on Boilers and Turbines. (TsKTI). This is an article from Teploperedacha i aerogidrodinamika. (Heat Transmission and Aero-hydrodynamics), book 21, #5, pp. 5-58.

Publishing House: State Scientific and Technical Publishing House of Literature on Machine Building.

Date: 1951 No. of copies: 2,000

Editorial Staff

Editor: Prof. Gukhman, A. A., Dr. Phys.-Math. Sci. Tech. Ed.: None

Editor-in-Chief: Golovin, S. Ya., Eng. Appraisers: None

Text Data

Coverage: The authors describe a systematic study of heat exchange in gas moving at subsonic speed. Experimental data are incorporated with the results of other investigators to form a general hydrodynamic theory of heat exchange based on dimensional analysis and the use of different criteria

Nu, Re, Pe, etc., 21 drawings and 7 tables.

The article presents methods of solution of those problems different from those usually given in American literature.

Purpose: The book is intended for workers in scientific research institutions and for designing engineers in the field of heat installation.

Facilities: The article is a continuation of a series of other articles on the same subject published in the periodicals of the Central Scientific Institute for Boilers and Turbines (TsKTI) and of the All-Union Heat Engineering Inst. (VTI)

No. of Russian References: 7 (1946-49)

Available: Library of Congress

GUKHMAN, A. A. and N. V. ILYUKHIN

"Fundamentals of the Study of Heat Exchange during Gas Flow at High Speed" 1951

A generalized theory of convection heat transfer in high-speed gas flow. Flow in conduits is emphasized. Phenomena of the flow through cascades of blades are discussed p. 156-173.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 293 - I

BOOK

Authors: GUKHMAN, A. A., Prof., Dr. Phys. Math. Sci.; ILYUKHIN, N. V., Kand. Eng. Sci.; NAURITS, L. N., Eng.; GNADEL'SMAN, A. F., Eng.

Call No.: TJ265.T4

Full Title: EXPERIMENTAL STUDY OF THERMOCOUPLE READINGS WITHIN LONGITUDINAL GAS FLOW AT HIGH VELOCITY

Transliterated Title: Eksperimental'noye issledovaniye prodol'no obtekayemoy termopary pri techenii gaza s bol'shoy skorost'yu

Publishing Data

Originating Agency: Ministry of the Heavy Machine-Building Industry. (Glavkotloturboprom). Central Scientific Institute of Boilers and Turbines (TsKTI). This is an article from teploperedacha i aerogidrodinamika (Heat Transmission and Aero-hydrodynamics). Book 21, #5, p. 83-110.

Publishing House: State Scientific and Technical Publishing House of Literature on Machine Building

Date: 1951

Editorial Staff

Editor: Prof. Gukhman, A. A., Dr. Phys.-Math. Sci.

Editor-in-Chief: Golovin, S. A., Eng.

No. of copies: 2,000

Tech. Ed.: None

Appraisers: None

Text Data

Coverage: The article deals with the experimental study of the significance of the location of thermocouple, within a stream of heated gas moving with high

1/2

Eksperimental'noye issledovaniye prodol'no obtekayemoy termopary pri techenii gaza s bol'shoy skorost'yu AID 293 - I

velocity. Experimental methods and equipment are described with 8 drawings. The test results are evaluated in 6 tables for magnitude of relative error due to thermodynamic and hydrodynamic conditions. 13 charts and 3 tables with test data.

The test equipment, method and final results appear to be interesting for workers in heat transmission.

Purpose: The book is intended for workers in scientific research institutions and for design engineers in the field of heat installations.

Facilities: Central Scientific Institute for Boiler and Turbines (TsKTI).

No. of Russian References: 3 (1938-49).

Available: Library of Congress.

GUKHMAN, A. A.

A. I. Veinik and A. A. Gukhman. Analysis of conditions of thermal interaction between casting and mold. P. 51

Moscow Inst. of Aviation Technology
Chair of Thermotechnics.
Jan. 10, 1950

SO: Journal of Technical Physics, Vol. 21, No. 1 (Jan. 1951)

GUKHMAN, A. A.

A. I. Veinik and A. A. Gukhman. Methods for calculating the crystallization processes in casting. P. 65

Moscow Inst. of Aviation
Technology
Chair of Thermotechnics
Jan. 15, 1950

FO: Journal of Technical Physics, Vol. 21, No. 1 (Jan. 1951)

GUKHMAN, A. A. , ILYUKHIN, N. V., GANDEL'SMAN, A. F. and NAURITB, L. N.

"Study of Local Values of the Resistance Coefficient in the Subsonic Region of Flow" MO Tm KTI (1952)

Gukhman, A.A.

602. Gukhman, A. A. G. N. Kruzhilin's formula on the interdependence of steam moisture and load (in Russian), *Izv. Akad. Nauk SSSR Otd. tekh. Nauk* no. 2, p. 280, Feb. 1952

GUKHMAN, A. A.

USSR/Physics - Heat Exchange May 52

"Effect of Thermal Factor on Intensity of Heat Exchange," A. A. Gukhman, N. V. Ilyukhin

"Zhur Tekh Fiz" Vol XXII, No 5, pp 784-793

Shows insufficiency of computational methods based on phys consts related to the av temp, and outlines the necessity to introduce a thermal factor as a supplementary argument. Proves that the direction of the heat stream has no effect on the intensity of heat exchange during motion of the gas in the tube. Received 16 Jan 52.

[redacted]80

Gukhman, A. A.

USSR.

1. The heat exchange during sublimation of ice in vacuum. A. A. Gukhman and E. A. Ermakova. *Zhur. Tekh. Fiz.* 23, 1307-18 (1953).—The speed of sublimation was measured by the wt. loss of the sample suspended from a spring balance in an evacuated bell jar. The speed of sublimation is inversely proportional to the pressure in the bell jar and it is higher, the lower is the temp. of the condenser (trap cooled with liquid air, Dry Ice, etc.). The temp. of the sample drops rapidly to −18.5° (condenser temp. −28.4°) and then remains practically const. This temp. is higher than the equil. temp. of sublimation. In the theoretical treatment it is stressed that sublimation in high vacuum depends primarily on the mass exchange between the ice and the surrounding medium. The calcd. coeff. for the heat loss is 20–30 cal./sq. m. hr. degree. S. Pakinver

SOKOLOV, V.S.; GUKHMAN, A.A., prof., red.; VESELKINA, A., red.; MALEK, Z., tekhn.red.

[Non-stationary heat exchange in construction] Nestatsionarnyi teploobmen v stroitel'stve. Pod red. A.A.Gukhmana. Moskva, Izd-vo VTsSPS Profizdat, 1953. 335 p. (MIRA 13:8)
(Heat--Transmission)

GURARIN, A.A.

USSR

123/114 532.542

The Study of the Coefficient of Resistance for Near-Sonic Velocities

Zh. tekh. Fiz. 24(12), 2234-2249 1954

A.E. Gandelsman, A.A. Gukhman, M.V. Ilyukhin and L.M. Naurits U.S.S.R.

The flow of compressible fluid in a straight cylindrical tube without heat exchange was studied for Re numbers in the interval of $2.9 \times 10^5 - 7.3 \times 10^5$ for all velocities up to M = 1. Coefficient of resistance was inversely proportional to Mach numbers. However, while up to M = 0.7 the resistance coefficient showed but gradual decrease, after M number exceeded 0.9, it fell steeply. While using for calculation purposes equations containing the coefficient of resistance its dependence on the Mach numbers should be taken into consideration, particularly for near-sonic velocities. (Bibl. 1)

GUKHMAN,

AID P - 1243

Subject : USSR/Engineering

Card 1/1 Pub. 110-a - 4/17

Authors : Gandel'sman, A. F., Eng., Gukhman, Doc. of Phys.-Math. Sci. and Il'yukhin, N. V., Kand. of Tech. Sci.

Title : Study of measurement of the resistance coefficient of a flow of gas moving with supersonic velocity

Periodical : **Teploenergetika**, 1, 17-23, Ja 1955

Abstract : Results are analyzed of experimental research on the flow of gas moving with supersonic velocity in a conic channel. A method of calculation is presented. Diagrams. Reference is made to 3 Russian books (1948-1954).

Institution : Central Boiler and Turbine Institute

Submitted : No date

GUKHMAN, A. A.
G,, Gukha

AID P - 2577

Subject : USSR/Engineering

Card 1/1 Pub. 110-a - 16/16

Authors : Gukhman, A. A., Doct., Phys. Math. Sci., Prof.
Shumayev, A. I. and A. I. Veynik, Docs. Tech. Sci., Profs.
Temkin, A. G., Kand. Tech. Sci.
Blokh, A. G., Kand. Tech. Sci.

Title : A. F. Chudovskiy Teplo obmen v dispersnykh sredakh (Heat Exchange in Dispersion media) Gosenergoizdat, 1954. (Book Review)

Periodical : Teploenergetika, 8, 60-64, Ag 1955

Abstract : The book is an analysis of large-grain dispersion material. The reviewers consider the book as a timely contribution to Soviet science, although it is not devoid of some small errors.

Institution : None

Submitted : No date

VEYNIK, Al'bert Iosifovich; GUKHMAN, A.A., professor, doktor fiziko-matematicheskikh nauk, redaktor; SUSHKIN, I.N., redaktor izdatel'stva; BERLOV, A.P., tekhnicheskiy redaktor

[Technical thermodynamics and principles of heat transmission] Tekhnicheskaia termodinamika i osnovy teploperedachi. Pod red. A.A.Gukhmana. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 448 p. (MLRA 9:9)
(Thermodynamics) (Heat--Transmission)

GUKHMAN, A.A., doktor fizike-matematicheskikh nauk, professor; VARSHAVSKIY, D.P., kandidat tekhnicheskikh nauk.

Letter to the editor. Teploenergetika 3 no.1:63 Ja '56.(MLRA 9:2)
(Turbines)

AUTHORS: Gukhman, A.A. (Professor, Dr. of Phys.Mathematical Science), Gandel'sman A.F. (Engineer) and Naurits L.N. (Engineer).

TITLE: On the Hydro-Dynamic Resistance in the Trans-sonic region of flow. (O gidrodinamicheskom soprotivlenii v transzvukovoy oblasti techeniya.)

PERIODICAL : "Energomashinostroyeniye" (Power Machinery Construction). 1957, No.7, Vol.3, pp.10-14. (U.S.S.R.)

114-7-3/14

ABSTRACT : It is now established that at trans-sonic rates of flow in channels the resistance coefficient changes appreciably. These changes are so great that it becomes impossible to consider the resistance coefficient as a specific characteristic of the channel which can be assumed constant for a given value of Reynolds number. The article considers a system of calculation based on another form of quantitative concept of energy dissipation. This system leads to a new hydro-dynamic characteristic of the channel which, unlike the resistance coefficient, remains practically constant over the length at very high rates of flow. An expression is written down for the quantity of energy dissipated under conditions of adiabatic flow. This relationship forms the basis of all the subsequent deductions. Its special value consists in that entropy is a unique parameter of the condition of a moving medium, change in which can be directly associated with the quantity of energy

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dissipated. For what follows it is essential that in high speed flow change in entropy along the axis of the channel occurs slowly compared with changes in all other parameters of condition, particularly in conditions of supersonic flow in an expanding channel when the geometry has an appreciable influence. Such a relationship between the intensity of change of entropy on the one hand, and all the other parameters on the other, provide the basis for approximation of the actual course of change of entropy over the length in a linear manner. As is shown below this assumption is confirmed by analysis of experimental data. In the fundamental expression the thermal equivalent of mechanical work multiplied by the work of friction on an elementary section related to unit mass of the moving medium is equated to the product of the thermodynamic temperature and the corresponding change in entropy. For further work, this equation is rewritten in dimensionless parameters It is shown that all the necessary data is available to compare the calculations with practice. Such a calculation has been made and will be published, and satisfactory agreement is found. A further magnitude is introduced to characterise the dynamic properties of the channel. The system of calculation based on the
2/4 application of the new coefficient can be applied in practice only after fairly extensive experimental material has been accumulated

On the Hydro-Dynamic Resistance in the Trans-sonic region of flow. (Cont.). 114-7-3/14

so that the numerical value of the coefficient can be selected in each particular case. Unfortunately there are as yet no reliable quantitative data on the laws of frictional resistance in a channel at supersonic speeds. A general procedure of calculation is then described. The direct problem is then defined as, being given the geometry of the channel (including the law of change of section with length) and the hydraulic characteristics of the channel to find the distribution of flow parameters along the length. The succession of operations in the calculations is described. The reverse problem is defined as, being given the geometry of the channel, its hydrodynamic characteristics and the relative speed to find the section in which the speed acquires the given value. Again the procedure for making the calculations is described. The article then proceeds to examine the available experimental data setting out in the first place to verify experimentally the "linearity hypothesis" which is the basic idea of the system of calculation. Results of the calculation are given in Fig.3 in the form of a family of curves and good agreement is shown with experimental results. Thus the available data goes to show that the underlying

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On the Hydro-Dynamic Resistance in the Trans-sonic region of flow. (Cont.)

4/4 assumptions of the new method are sound. 114-7-3/14

There are three figures and two literature references (Russian).

AVAILABLE :

Gurman, A.A.

AUTHOR: GURMAN,A.A. PA - 2816

TITLE: On the Article by P.V.DVORNICHENKO (in Zhurnal Tekhn. Fiz., 1956, Vol 26, Nr 7):"Some Considerations Concerning the Method of Computing the Heat Transfer and the Hydrodynamic Resistance in High Velocity Gas Flows" (Po povodu stat'i P.V.DVORNICHENKO "Nekotoryye soobrazheniya o metodike rascheta teploobmena i gidrodinamicheskogo soprotivleniya pri techenii gaza s bol'shoy skorost'yu, Russian)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 4, pp 875 - 876 (U.S.S.R.)

Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: Several statements made by DVORNICHENKO in his paper were found to be incorrect: 1) The fact that the quantity n is introduced as an argument into the equation (1) is, in itself, nothing remarkable. 2) It is not correct to say that in the equation (2) the resistance coefficient ξ does not replace the heat flow coefficient α. 3) What has been said about the part played by the number Pe is not correct. The number Pe is not contained in the equation (2) only because Pr = 1. It is also incorrect that the "equality of the number Pe imposes a limitation on the model and on the sample the consequence of which is the equality of Nu". In reality the condition Pe" = Pe' is satisfied with R" = R', and accordingly also Nu" = Nu'. It is quite wrong to compare "heat similarity in the widest sense"

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PA - 2816

On the Article by P.V.DVORNICHENKO: "Some considerations Concerning the Method of Computing the Heat Transfer and the Hydrodynamic Resistance in High Velocity Gas Flows."

with the similarity of temperature fields. 4) The equation (4) is not a "generalization of the relation (2)" with which it has nothing to do directly. That they correspond to each other is shown only later by the equation (3). A generalization of (2) is the equation (11).
(1 citation of a Slav publication)

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED: 26.1.1957
SUBMITTED: Library of Congress

Card 2/2

GAKHMAN, A.A.

AUTHOR: Zo^{z}ulya, N.V. (Cand.Tech.Sci) &Balitskiy S.A. (Engineer) 96-3-23/26

TITLE: Session on heat exchange during change of aggregate state of matter. (Sessiya po teploobmenu pri izmenenii agregatnogo sostoyaniya veshchestva.)

PERIODICAL: Teploenergetika, 1958, No.3. pp. 91-93(USSR)

ABSTRACT: The Commission on High Steam Conditions of the Power Institute of the Acad.Sci. of thw U.S.S.R. and the Institute of Thermal Engineering of the Acad.Sci. of the Ukrainian SSR, held a scientific and technical session in Kiev on September23-28, 1957 on questions of heat exchange during change of aggregate state of matter. The session was attended by scientific workers of academic and research institutes and colleges, and workers in design institutes and industry. Forty reports were read in the plenary and sectional sessions. The main tasks of the session were to consider the research work that had been carried out, to co-ordinate research work and to determine the most promising lines for investigation into heat exchange during change of aggregate state of matter. In his report 'Some problems of the theory of heat exchange during large volume boiling in tubes' corresponding member of the Acad.Sci. Ukrainian SSR, V.I. Tolubinskiy, critically examined the best known criterial equations for boiling liquid. Dr.Tech.Sci. S.S. Kubateladze, of the Central Boiler Turbine Institute made a report about 'Some problems of the theory of crises in the mechanism of boiling' which

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systematised the results of investigations on critical densities of heat flow during boiling in large volume tubes. Dr.Phys.Math.Sci. A.A. Gukhman of the Moscow Division of the Central Boiler Turbine Institute made a report 'On the mechanism of influence of mass-exchange on heat-exchange during boiling', which analysed the influence of the developing gas phase on heat exchange during evaporation. Dr.Tech.Sci. L.D. Berman of the All-Union Thermo-Technical Institute delivered a report on the interrelationship between thermal and mass exchange during evaporation of a liquid and condensation of the steam in the presence of permanent gases. Corresponding Member of the Acad.Sci. of the U.S.S.R., G.N. Kruzhilin, discussed Tolubinskiy's report. Dr.Tech.Sci., V.G. Fastovskiy of the All-Union Electro-Technical Institute, gave information about experimental data obtained during boiling of a number of organic liquids and mixtures of them with water. Dr.Tech.Sci., B.S. Petukhov, Moscow Power Institute, pointed out the need for profound study of the mechanism of boiling of liquids. Cand.Tech.Sci., D.A. Labuntsov, Moscow Power Institute, expressed a similar opinion. The session on heat exchange during boiling in the region of moderate thermal loading heard 7 reports. Dr.Tech.Sci., V.D. Popov, (KTIPP) made a report on 'Heat transfer during boiling of crystallising solutions', Cand.Tech.Sci., V.G. Garyazha (KTIPP) presented the results of an experimental investigation of heat

Session on heat exchange during change of aggregate state of matter. 96-3-23/26

transfer during the boiling of massecuite. Dr.Tech.Sci., I.I. Chernobyl'skiy (Institute of Thermal Engineering of the Acad.Sci. Ukrainian SSR, Engineer S.A. Balitskiy (same Institute) and Engineer F.P. Minchenko of the Central Boiler Turbine Institute reported the results of an experimental investigation of heat transfer during boiling of aqueous solutions of lithium bromide and chloride under vacuum. Cand.Tech.Sci. I.E. Veneraki, of the Kiev Polythechnical Institute, reported the results of investigations on heat transfer of a horizontal bundle of tubes to boiling water and sugar solution under conditions of free convection and vacuum. Cand.Tech.Sci. R.Ya. Ladiyev of the Kiev Polythechnical Institute reported on 'The use of approximate thermo-dynamic similarity to establish heat transfer relationships during boiling. Dr.Tech.Sci. I.I. Chernobyl'skiy of the Thermal Engineering Institute of the Acad.Sci. of the Ukrainian SSR and Cand.Tech.Sci. G.V. Patiani of the Power Institute of the Acad.Sci. Georgian SSR reported the results of investigations on the heat transfer co-efficient when boiling Freon 12 in large volume on horizontal tubes. Contributions to the discussion were made by Cand.Tech.Sci. V.Ya. Gol'tsov (M.I.Kh.M), V.D. Popov of KTIPP, Cand.Tech.Sci. V.M. Borishanskiy of the Central Boiler Turbine Institute, Cand.Tech.Sci. N.Yu. Tobilevich (TsINS). The session on heat

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exchange during boiling in the region of high thermal loadings heard 13 reports. Engineer V.G. Chakrygin, and Cand.Tech.Sci. V.A. Lokshin of the All-Union Thermo-Technical Institute, reported on the results of experimental investigation of the influence of non-uniformity of heat exchange round the perimeter of a horizontal steam raising tube. Cand.Tech.Sci. V.M. Borishanskiy (Central Boiler Turbine Institute) reported the results of experiments on heat transfer to boiling water at super-high and near critical pressures. Cand.Tech.Sci. E.I. Aref'eva and Cand.Tech.Sci. I.T. Alad'ev of the Power Institute of the Acad.Sci. of the U.S.S.R. reported on the influence of wetting on heat exchange during boiling. Cand.Tech.Sci. Z.L. Miropol'skiy and Cand.Tech Sci. M.E. Shitsman of the Power Institute of the Acad.Sci. of the U.S.S.R., gave the results of experiments on heat transfer and permissible specific thermal loading in the steam raising tubes of boilers. Cand.Tech.Sci. N.V. Tarasova of the All-Union Thermal Technical Institute, gave the results of investigation on critical thermal loadings and heat transfer from the walls of tubes to water, and steam-water mixture. Cand.Tech.Sci. I.T. Alad'ev, Engineer, L.D. Dodenov and V.S. Udalov of the Power Institute of the Acad.Sci. of the U.S.S.R. gave a report on 'Heat Transfer and Critical Thermal Fluxes during boiling of under heated water in Tubes'. Cand.Tech.Sci. E.K. Averin of the Power Institute

of the Acad.Sci. of the U.S.S.R., reported on Heat exchange during boiling under conditions of forced circulation of water'. Engineer G.G. Treshchev of the All-Union Thermo-Technical Institute, reported on 'Experimental investigation of the mechanism of the heat exchange during surface boiling'. Dr.Tech.Sci. S.S. Kutateladze and Cand.Tech. Sci. V.N. Moskvicheva of the Central Boiler Turbine Institute, considered the relationship between the hydro-dynamics of a two-phase layer with the theory of crises in the mechanism of boiling. Cand. Tech.Sci. L.S. Sterman, Engineers V.V. Morozov and S.A. Kovalev of the Moscow Division of the Central Boiler Turbine Institute, reported on 'A study of heat exchange during boiling of liquids in tubes at various pressures up to 85 atms'. Cand.Tech.Sci. E.A. Kazakova (GIAP) reported on questions of heat exchange during the critical point under conditions of natural convection. The following took part in the discussion:- Dr.Phys.Math.Sci. A.A. Gukhman, Dr.Tech.Sci. B.S. Petukhov, Corresponding Member of the Acad.Tech.Sci. Ukrainian SSR, V.I. Tolubinskiy, Cand.Tech.Sci. A.P. Ornatskiy, Dr.Tech.Sci. V.G. Fastovskiy and Cand.Tech.Sci. M.I. Korneyev. The section on heat exchange during condensation and evaporation heard 7 reports. Dr.Tech.Sci. L.D. Berman of the All-Union Thermo-Technical Institute reported on 'Heat and Mass exchange during condensation of steam from a moving steam-air mixture on horizontal tubes'. Cand.Tech.Sci. N.V. Zozuli of the Institute of Thermal Engineering

of the Acad.Sci. Ukrainian SSR considered the study of the process of heat exchange and the hydro-dynamics of flow of a film of condensate. Cand.Tech.Sci. O.A. Kremnev, of the Institute of Thermal Engineering of the Acad.Sci. Ukrainian SSR gave the results of an experimental investigation of heat and mass exchange in models of air, and water coolers used in deep mines. Cand.Tech.Sci. K.I. Reznikovich reported on a theoretical solution of the problem of calculating the parameters of a cooled steam gas mixture. Engineer A.L. Satanovskiy reported on 'Heat exchange during air-water evaporative cooling of equipment'. Engineer L.I. Gel'man of the Central Boiler Turbine Institute reported about investigations on heat transfer during condensation of mercury vapour on a steel wall. Dotsent V.F. Yanchenko of the Ural Polytechnical Institute, Cand.Tech.Sci. O.A. Kremnev, Dr.Tech.Sci. L.D. Berman and V.A. Smirnov of the Power Institute Acad.Sci. Ukrainian SSR contributed to the discussion. The session noted the need for further development of investigations of combined processes of heat and mass exchange; further development of study of heat exchange during change of aggregate conditions of promising new working substances; a profound study of the relationships and mechanism of the process of heat exchange and the production of data for practical calculations, and recommendations for the design of new power plant. The session directed the

Session on heat exchange during change of aggregate state of matter. 96-3-23/26

attention of the Acad.Sci. U.S.S.R. and Gosplan U.S.S.R. to the need for rapid study of the physical properties of new working substances. It was decided to call a session devoted to convective heat exchange in uniform media in Leningrad, in 1959.

AVAILABLE: Library of Congress.

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06403
SOV/170-59-2-21/23

10(5)

AUTHOR: Gukhman, A.A.

TITLE: Remarks on the Article by A.I. Veynik "On the Equation of the State of Gas"

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Nr 2, pp 145-149 (USSR)

ABSTRACT: This is a critical review of the above mentioned article by A.I. Veynik published in DAN BSSR, Volume I, Nr 1 for 1957. The reviewer analyzes the article in detail and comes to the conclusion that it was not well founded and therefore its final conclusions were erroneous. He adduces voluminous comments and arguments in supporting his viewpoint.

Card 1/1

AUTHOR: Gukhman, A.A. SOV/170-59-3-19/20

TITLE: On the Objections of A.I. Veynik (O vozrazheniyakh A.I. Veynika)

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Nr 3, pp 119-120 (USSR)

ABSTRACT: This is a reply of the reviewer, Gukhman, to the objections put forward by A.I. Veynik, an author of a paper published before, against the criticism by Gukhman. The original paper and criticism were published in DAN BSSR, I, 7, 1957 and IFZh, II, Nr 2, 1959.

Card 1/1

GUKHMAN A S

BADYL'KES, I.S., prof., doktor tekhn.nauk; BUKHTER, Ye.Z., inzh.; VEYNBERG, B.S., kand.tekhn.nauk; VOL'SKAYA, L.S., inzh.; GERSH, S.Ya., prof., doktor tekhn.nauk [deceased]; GUREVICH, Ye.S., inzh.; DANILOVA, G.N., kand.tekhn.nauk; YEFIMOVA, Ye.V., inzh.; IOFFE, D.M., kand.tekhn.nauk; KAN, K.D., kand.tekhn.nauk; LAVROVA, V.V., inzh.; MEDOVAR, L.Ye., inzh.; ROZENFEL'D, L.M., prof., doktor tekhn. nauk; TKACHEV, A.G., prof., doktor tekhn.nauk; TSYRLIN, B.L.; SHUMELISHSKIY, M.G., inzh.; SHCHERBAKOV, V.S., inzh.; YAKOBSON, V.B., kand.tekhn.nauk; GOGOLIN, A.A., retsenzent; GUKHMAN, A.A., retsenzent; KARPOV, A.V., retsenzent; KURYLEV, Ye.S., retsenzent; LIVSHITS, A.B., retsenzent; CHISTYAKOV, F.M., retsenzent; SHEYNDLIN, A.Ye., retsenzent; SHEMSHEDINOV, G.A., retsenzent; PAVLOV, R.V., spetsred.; KOBULASHVILI, Sh.N., glavnyy red.; RYUTOV, D.G., zam.glavnogo red.; GOLOVKIN, N.A., red.; CHIZHOV, G.B., red.; NAZAROV, B.A., glavnyy red.izd-va; NIKOLAYEVA, N.G., red.; EYDINOVA, S.G., mladshiy red.; MEDRISH, D.M., tekhn.red.

[Refrigeration engineering; encyclopedic reference book in three volumes] Kholodil'naia tekhnika; entsiklopedicheskii spravochnik v trekh knigakh. Glav.red. Sh.N.Kobulashvili i dr. Leningrad, Gostorgizdat. Vol.1. [Techniques of the production of artificial cold] Tekhnika proizvodstva iskusstvennogo kholoda. 1960. 544 p. (MIRA 13:12)

(Refrigeration and refrigerating machinery)

ALEKSANDROV, S.V.---(continued) Card 2.

1. Vsesoyuznyy institut rastoniyevodstva (for Sechkarev, Lizgunova, Brezhnev, Gazenbush, Meshcherov, Filov, Tkachenko, Kazakova, Krasochkin, Levandovskaya, Shabalina, Syskova, Makasheva, Ivanov, Martynov, Girenko, Ivanova, Shilova). 2. Gribovskaya ovoshchnaya selektsionnaya opytnaya stantsiya; chleny-korrespondenty Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk im. V.I.Lenina (for Alpat'yev, Solov'yeva). 3. Deystvitel'nyy chlen Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk im. V.I.Lenina (for Brezhnev).
(Vegetables--Varieties)

GUKHMAN, A. A.

"Similarity Theory Nature and Methods."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

Institute of Chemical Equipment Moscow

KIRPIKOV, V.A., kand. tekhn. nauk; KONDUKOV, N.B., kand. tekhn. nauk; GUKHMAN, A.A., doktor fiziko-matem. nauk, prof., red.

[Fundamentals of the thermodynamics of flows] Osnovy termodinamiki potoka; uchebnoe posobie. Pod red. A.A.Gukhmana. Moskva, Mosk. in-t khim. mashinostroeniia, 1961. 119 p. (MIRA 14:11)
(Thermodynamics) (Fluid dynamics)

GUKHMAN, A.A.

Reports presented at the Plenary Session of the Interuniversity Conference on Similitude Theory and uts use in Heat Engineering. Trudy MIIT no.139: 31-44 '61. (MIRA 16:4)

1. Moskovskiy institut khimicheskogo mashinostroyeniya.
(Heat engineering) (Dimensional analysis)

27249
S/170/61/004/009/008/013
B104/B125

11.7430

AUTHORS: Gukhman, A. A., Gandel'sman, A. F.

TITLE: Use of an entropy method for determining the thickness of displacement of an adiabatic flow in a supersonic nozzle

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 9, 1961, 73-75

TEXT: The adiabatic flow of a compressible fluid can satisfactorily be studied by the entropy method provided the velocities do not largely differ from the velocity of sound. The authors show a simple way for extending the application range of this method. The method is used to determine the thickness of displacement in the theory of two-dimensional flows. The adiabatic flow of a thermodynamically ideal gas in a supersonic nozzle of known shape is investigated. Pressure and temperature at the mouthpiece are known. Dissipative effects in the convergent part of the nozzle are neglected. In addition, μ is known, and it is assumed that $\mu = d\sigma/d\bar{x}$, whereby the intensity of energy dissipation in the divergent part of the nozzle is determined. The thickness of displacement may be found by comparing a real flow with a certain fictitious one-dimensional flow having

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Use of an entropy method for...

a homogeneous velocity field in each cross section. The latter is supposed to be identical with the former as regards flow rate, velocity distribution along the axis, and static pressure. Such a comparison is physically significant for investigating a perfectly isentropic fictitious flow and a flow in which the state of the moving medium varies only in the core outside the boundary layer. Denoting the cross sections by F and F' and the diameters by D and D', an axisymmetric channel will be given by: $\delta^* = (D-D')/2$; δ^* is the thickness of displacement. Thus, the problem is reduced to the determination of F' and F. Application of the entropy method permits an easy and simple solution of this problem. For a given value of μ, one easily finds the degree $f_s = F_s/F_*$ of extension for the equivalent isentropic flow, i.e., for a flow that has the same velocity distribution as the ideal one. In this manner, one obtains the desired pressure distribution and the distribution λ' of reduced velocities: $P = P_s \exp(-\mu\bar{x})$ and $1 - \frac{k-1}{k+1}\lambda'^2 = (P'/P_0)^{(k-1)/k}$. f' ($F' = f'F$) and f_s may be taken from tables of gas-dynamic functions. There are 1 figure and 1 Soviet reference.

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27249
S/170/61/004/009/008/013
B104/B125

Use of an entropy method for...

ASSOCIATION: Institut khimicheskogo mashinostroyeniya, g. Moskva (Institute of Chemical Engineering, Moscow)

SUBMITTED: May 19, 1961

Card 3/3

KIRPIKOV, Vladimir Arkad'yevich; GUKHMAN, A.A., doktor fiz.-matem. nauk, prof., red.; FEDOROVA, T.P., red.; CHIZHEVSKIY, E.M., tekhn. red.

[Introduction to the thermodynamics of chemical and phase transitions] Vvedenie v termodinamiku khimicheskikh i fazovykh prevrashchenii. Moskva, Rosvuzizdat, 1963. 50 p. (MIRA 16:9)

(Chemical equilibrium)

AM4024181 BOOK EXPLOITATION S/

Gukhman, Aleksandr Adol'fovich

Introduction to the theory of similitude (Vvedeniye v teoriyu podobiya) Moscow, "Vy*sshaya shkola", 63. 0253 p. illus. 10,000 copies printed. Textbook for students of U.S.S.R. technical colleges.

TOPIC TAGS: similarity, similitude, dimensional analysis, models, generalized variable, transport theory, heat transport, motion of continuous body, liquid motion, temperature field of solid, dimensional analysis

PURPOSE AND COVERAGE: This book is the outgrowth of a booklet "The Gist of Similarity Theory" written by Ye. A. Yermakova together with the author as a text for students of Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Chemical Machinery). It is intended as an introduction to the principles of similarity

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theory, defined as the study of generalized variables that characterize each given process, and deals with methods for constructing and using these variables. To accent the physical nature of similarity, the connection between the initial physical notions of similarity theory and its mathematical formalism is clarified. Some of the most typical problems in this field are used as illustrative examples. Emphasis is on transport processes in moving media.

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III. Transport of heat in a moving medium.)
Ch. IV. Similarity - - 183
(I. Similarity transformations, II. The method of models.)
Ch. V. Dimensionality analysis - - 218

SUB CODE: MM, IE SUBMITTED: 10Aug63 NR REF SOV: 000

OTHER: 000 DATE ACQ: 20Mar64

Card 3/3

L 10383-63 EPR/EPA(b)/EPF(c)/EPF(n)-2/EWT(1)/BDS--AFFTC/AEDC/
AFMDC/ASD/SSD--Ps-4/Pd-4/Pr-4/Pu-4--WW
ACCESSION NR: AP3003046 S/0170/63/000/006/0037/0044

AUTHOR: Gukhman, A. A.; Gandel'sman, A. F.; Naurits, L. N.; Usanov, V. V.

TITLE: Characteristic features of supersonic flows directly adjoining the transonic region

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 6, 1963, 37-44

TOPIC TAGS: transonic flow, supersonic nozzles, heat transfer, hydrodynamic theory

ABSTRACT: The relationship between heat transfer and hydrodynamic resistance in the transonic region of a gas flow has been investigated experimentally using a test section consisting of a water-cooled nozzle. The following parameters were measured: air-flow rate, static pressure along the nozzle length, stagnation temperature along the cross section before the test section, outside wall temperature of the nozzle, and amount of condensate. Thirteen test runs made

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ACCESSION NR: AP3003046

covering three basic regimes for the temperature ranges 547.0--548.5K, 629.5--630.5K, and 698.5--699.0K. The results obtained are given in the form of graphs showing pressure and heat-flux distribution, temperature variations, distribution of the coefficient of hydraulic resistance, and of the Stanton number. It is shown that the passage through transonic velocity is accompanied by a disturbance in the normal form of the relationship between the intensity of heat transfer and the hydraulic resistance; beginning with the value of the thermal conductivity of the wall of the nozzle, Lambda = 1.35, the basic relationship of the hydrodynamic theory of heat transfer can be applied with accuracy sufficient for practical engineering problems. Orig. art. has: 5 figures, 12 formulas, and 1 table.

ASSOCIATION: none

SUBMITTED: 03Apr63 DATE ACQ: 22Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 007 OTHER: 000

ph/pe
Card 2/2

GUKHMAN, A. A.; YERMAKOVA, Ye. A.

"Some results of experimental investigation of the evaporation process from a solid state in vacuum."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Moscow Inst of Chemical-Mechanical Engineering.

GUN[illegible], A.A.

Theory of similitude, its essence, methods and possibilities for practical application. Khim.prom. 41 no.7:481-488 Jl '65.
(MIRA 18:8)

GUKHMAN, B. S.

PA 28/49T5

USSR/Chemistry - Nitrocellulose, Moisture Content — Oct 48

Chemistry - Analysis, Interferometric

"Interferometric Method of Determining Moisture of Nitrocellulose Materials," B. S. Gukhman, B. I. Petrov, T. I. Yakovlev, 1 p

"Zavod Lab" Vol XIV, No 10

Devises new method to analyze nitrocellulose materials by determining displacement of interference bands for a concentration of calcium nitrate, diluted by moisture from the analyzed material. Tests method for specimen of high

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USSR/Chemistry - Nitrocellulose, Moisture Content (Contd) — Oct 48

moisture collodion, and finds it accurate within 0.4%. Analysis requires only 10-15 minutes.

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Gukhman, B.S.

AUTHORS: Gukhman, B. S., Matrosova, N. S. 64-8-10/19

TITLE: Portable Electrical Gas Analyzer of the Type ПГФ for the Determination of Combustible Gases and Vapors in the Air (Perenosnyy elektricheskiy gazoanalizator tipa ПГФ dlya opredeleniya goryuchikh gazov i parov v vozdukhe).

PERIODICAL: Khimicheskaya Promyshlennost', 1957, Nr 8, pp. 41-45 (USSR)

ABSTRACT: The gas analyzer ПГФ serves for the determination of combustible gases and vapors in the air and was produced in two variants: ПГФ 11-54 and ПГФ2-ВЗТ. The device belongs to the type of thermochemical gas analyzers by means of which the thermal effect of the catalytic combustion of the analyzed gas-mixture-component which is heated by means of a platinum wire up to a certain temperature, can be measured. The device was produced for the first time in 1949 and differed from the other analogous devices by the fact that the gas does not trickle through the device and the gas sample is analyzed in a closed chamber. The greatest deflection of the needle of the galvanometer occurs at the moment the current is switched in. In order to carry out the gas analysis according to this maximum deflection it is necessary to garantee a thermal symmetry in the

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measuring- and comparison chamber. For this purpose the resistances of the platinum wires have to remain equal in the entire temperature range. The construction parameters of the device are determined according to the calculation- and experimental data. The basic characteristic of the gas analyzer with heated wire is: $\Delta t = f(Q)$. Δt is the temperature drop between the wire and the surrounding medium in °C, Q - the total heat liberated at the wire in the given current in the time unit, in cal/sec. Here the basic equation for the thermochemical gas analyzers is derived. According to this equation the sensitivity of the device is determined by 4 factors: By the sensitivity of the bridge scheme, the conditions for the heat transfer from the heated wire, the calorimetric constant of the analyzed gas, and the velocity of the catalytic reaction.

The gas analyzer ТГФ 11-54 is at present produced in portable style with a metal cover which is spraying- and dust proof 102 x 200 x 104 mm, with straps and a weight of 2,5 kg. With the gas analyzer it is possible to determine separately methane and hydrogen, in the case that both are present simultaneously in the gas mixture.

The device is furthermore also produced in an explosion-proof style ТГФ 2- ВЗТ. The dimensions are the following: 230 x 115 x 137 mm, weight 5,6 kg. It is destined for the analysis of combustible gases and vapors of the first, second, and third category of the groups А, Б, and Т and can be used in closed chambers of the category В-1 and В-1А (chambers where combustible gases and vapors are separated in such a quantity that explosive mixtures can be produced). Both types were confirmed by the committee for norm, measures, and measuring devices of the Cabinet-Council of the USSR. The first device ТГФ 11-54 serves for the determination of methane, hydrogen, and of the benzene Б-70-vapors, the device ТГФ 2-ВЗТ - for the analysis of methane, coke gas, benzene Б-70-vapors, divinyl, ethylene, propane, ethyl-alcohol-vapors, and of the diethyl ester. The amounts of the measured concentrations can be increased up to the double by dilution with pure air which can be sucked in the ratio 1:1 to the analyzed gas.
The devices were worked out by: M. M. Faynberg, M. M. Smakov, N. I. Pushkarskaya, B. S. Gukhman, N. G. Goryachev,

Portable Electrical Gas Analyzer of the Type ПГФ for the Determination of Combustible Gases and Vapors in the Air 64-8-10/19

N. K. Prokof'yev, S. S. Temina.
The devices are produced in series by the works of Khar'kov of the trust Khimelektromontazh (city of Khar'kov).
There are 4 figures, 2 tables.

ASSOCIATION: Experimental-Construction-Office for Automation of the MKhP (Opytno-konstruktorskoye byuro avtomatiki MKhP).

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GUKHMAN, B.S.; MATROSOVA, N.S.

Portable electric gas analyzer of the PGF type for the determination of flammable gases and vapors in the air. Khim. prom. no.8:489-493 D '57. (MIRA 11:2)

1. Opytno-konstruktorskoye byuro avtometkhaniki Ministerstva khimicheskoy promyshlennosti.
(Gas detectors)

33940
S/665/61/000/003/004/018
E039/E420

26.2532

AUTHORS: Baranov, R.Kh., Gukhman, G.A., Okhotin, A.S., Eydinova, G.T.

TITLE: An investigation of the thermoelectric properties of tellurium compounds

SOURCE: Akademiya nauk SSSR. Energeticheskiy institut. Teploenergetika. no.3, 1961. Poluprovodnikovyye preobrazovateli solnechnoy energii. 37-57

TEXT: The effectiveness of semiconductor thermoelements in converting heat to electricity depends primarily on their physical properties and working temperatures. Data on new materials is inadequate but nevertheless efficiencies up to 10% have been obtained. In this paper an investigation is described of the thermoelectric properties of the following binary compounds of tellurium: PbTe; Bi_2Te_3; FeTe; CoTe; PdTe; GeTe; AgTe; Ag_3Te_2; Ag_2Te; InTe; In_2Te; SnTe and Sb_2Te_3 (some with added impurities). PbTe exhibits n type conductivity and has a high thermal emf increasing with temperature, which is only slightly dependent on the impurity content. Its electrical conductivity σ

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An investigation of the thermo- ...

is high; at room temperature it is about 900 $\Omega^{-1}cm^{-1}$ and depends slightly on the added copper impurity. PbTe + 0.08% Cu appeared to be the best material examined with a maximum z value of $2.5 \times 10^{-3}°C^{-1}$. It has excellent characteristics for use as a thermoelement. The properties of Bi_2Te_3 were examined with and without CuBr impurity. With increasing CuBr content the thermal emf was reduced. The compounds FeTe, CoTe and PdTe exhibit n type conductivity. They all have small thermal emf's and large thermal conductivities, hence the z values are small and the compounds are unsuitable as thermoelements. The characteristics of GeTe with and without iodine as an impurity were studied. Its z values were small. Of the silver compounds Ag_2Te was the best with a z value of $0.5 \times 10^{-3}°C^{-1}$ at 150°C which makes it suitable as a thermoelement. The indium compounds had very low z values. SnTe + 0.5% I and SnTe + 1% I show p type conductivity and have good z values, about $10^{-3}°C^{-1}$. The thermoelectric properties of Sb_2Te_3 were also measured and confirm the results of other workers, with z values of $1.8 \times 10^{-3}°C^{-1}$ at 100°C falling to $0.5 \times 10^{-3}°C^{-1}$ at 300°C. The best materials for

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use as thermoelements were shown to be Ag_2Te, SnTe, Sb_2Te_3, PbTe and Bi_2Te_3. These compounds have the largest z values. An expression derived for z enables the important conclusion to be drawn that with increasing molecular weight the compounds become more effective as thermoelements. This confirms the experimental results. L.S.Stil'bans has derived the expression

$$z = 1.2 \times 10^{-7} \frac{\mu}{\lambda_p} \left(\frac{m^x}{m_o} \frac{T}{T_o} \right)^{3/2} e^r \qquad (17)$$

where $m_o = 9.1 \times 10^{-28}$ g and $T_o = 300°K$; m^x - the effective mass; μ - chemical potential; r - the dispersion factor; λ_p - thermal conductivity due to vibrations of the atoms in the lattice. Using this expression, values of z have been computed and compared with experimentally derived values at room temperature (Table 2). The investigation also shows that the introduction of small quantities of impurity may improve the thermoelectric properties of the majority of compounds. There are 16 figures, 2 tables and 7 Soviet-bloc references.

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E114/E184

AUTHORS: Baranov, R.Kh., Gukhman, G.A., Okhotin, A.S., and Eydinova, G.T.

TITLE: Investigation of thermo-electric properties of tellurium compounds

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i ...ergetika, no.9, 1962, 2, abstract 9 B9. (Teploenergetika, no.3, M., AN SSSR, 1961, 37-57)

TEXT: Thermo-e.m.f. ϱ and the specific heat conductivity of binary alloys of the following tellurium compounds were investigated in the range between room temperature and 400 °C: I - FeTe (32% by weight Fe); II - CoTe (32% by weight Co); III - GeTe (38% by weight Ge); IV - PdTe (44% by weight Pd); V - AgTe (46% by weight Ag); VI - Ag_3Te_2 (56% by weight Ag); VII - Ag_2Te (65% by weight Ag); VIII - InTe (49% by weight In); IX - In_2Te (62% by weight In); X - SnTe (48% by weight Sn); XI - Sb_2Te_3 (39% by weight Sb); XII - PbTe (62.7% by weight Pb); XIII - Bi_2Te_3 (54% by weight Bi). Molecular weights of the alloys were as follows: I - 183.5; II - 186.5;

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III - 200.2; IV - 234; V - 235.5; VI - 578.9; VII - 342; VIII - 242.4; X - 246; XI - 626.3; XII- 334.8; XIII - 800.8. The object of the investigations was to study the possibility of using these alloys (which are actually chemical compounds) for the manufacture of thermocouples. In some of the compounds, the relationship was studied between the semiconducting properties and the presence of impurities (Cu and I). It is shown that alloys I, II, IV, VII, XII and XIII have electron conductivity; the compounds III, V, VI, VIII-XI have hole conductivity. The compounds II, IV, IX and X are near to the degenerated state and V, VI, VIII, XI and XII near to the non-degenerated state. The compound III is degenerated at room temperature but with increase of temperature it nears the non-degenerated state. VII and X-XIII have the greatest z-factor and are the best materials for thermocouples. I, II, V and VI have small values of z and are less suitable for use as thermocouples. If 0.1% by weight Cu is added to V and VI, their thermo-electric characteristics are somewhat improved. Compound VI with the addition of 1.5% by weight I becomes a very good material for

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thermocouples but it becomes unstable above 100 °C and therefore it is best utilized for refrigeration. IV, VIII and IX are unsuitable for thermocouples. It is shown that the curve of the mobility of the current carriers of the 2-atom tellurium compounds have the form $\mu = 0.75\ m^{2.5}$ and in the case of 5-atom compounds $\mu = 4.75\ m^{5}$. As the molecular weight of the compounds increases, their thermo-electric properties improve. Analysis of experimental data shows that the curve for z obtained earlier by Stillbanks is true only qualitatively, and the higher the temperature the worse is the agreement. Introduction of a small quantity of impurities improves the thermo-electrical properties of most of the investigated compounds.
7 references.

[Abstractor's note: Complete translation.]

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40326

S/194/62/000/006/102/232
D288/D308

26.2532

AUTHORS: Baranov, R.Kh. Gukhman, G.A., Okhotin, A.S., and Eydinova, G.T.

TITLE: Investigation of thermo-electrical properties of tellurium compounds

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, abstract 6-4-42 a (V sb. Teploenergetika, no. 3, M., AN SSSR, 1961, 37-57)

TEXT: Thermo-e.m.f. E, electrical conductivity σ, thermal conductivity λ and other characteristics of tellurium compounds are investigated. To obtain the E(T) dependence, the temperature of one end of the specimen was maintained at room temperature T_x, the other end was heated to $T_g \cdot T_x$ and T_g were measured by thermocouples; analogous branches of the latter being used to measure E. E(T) dependence was taken at constant T_x. Graphic differentiation yielded $\alpha = dE/dT$. For small $T_g - T_x$ α was obtained according to $\alpha =$

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Investigation of thermo-electrical ...

= $E/(T_g - T_x)$. The specimen was pressed, by means of a weight, to a water cooler. The hot end was heated by a flat Mo heating element, current being supplied to it through the mounting bracket. To avoid oxidation of the specimens and ensure reliable operation of the heater, the whole equipment was placed in vacuum. Connections to the installation were led through the plate by threaded seals, evacuation was by a pump PBH-20 (RVN-20). Pressure was measured by vacuum meter ВИТ-1 (VIT-1). For Hall effect measurements a magnetic field of 6100 oe was applied. The following compounds were investigated: FeTe, CoTe, GeTe, PdTe, AgTe, Ag_3Te_2, Ag_2Te, InTe, In_2Te, SnTe, Sb_2Te_3, PbTe, Bi_2Te_3. The Te-metal alloys were prepared at varying Te concentrations - in 10 % steps, and in the zone of chemical compounds - in 2 % steps. The composition of chemical compounds was established by measuring thermal e.m.f. Measurement results are given: 1) PbTe. Curves of λ, σ, α and z vs. T are plotted, for pure PbTe and for PbTe with 0.05 %; 0.08 %; 0.01 % admixture of Cu. /α/ increases with T and does not change much with Cu content, σ drops with increasing T. At room temperatures σ changes little

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with Cu content and is about 900 $ohm^{-1}cm^{-1}$. With increasing concentration of the admixture the drop of $\sigma(T)$ slows down. $\lambda(T)$ curves have a minimum in the cases 1, 2, 3 and a maximum in case 4. PbTe + + 0.08 Cu is best for thermo-elements, in which case Z changes little up to 400°C, with a maximum $z = 2.5 \cdot 10^{-3}$ 1/deg. From the constancy of the sign of the Hall constant and α it is concluded that the sign of electrical conductivity (electron conduction) is constant. The temperature dependence of mobility $\mu(T)$ is given. In pure PbTe at high T, $\mu \sim T^{-5/2}$ (2-photon processes), at low T, $\mu \sim T^{-3/2}$. Effective mass values, derived from formulas for thermo-e.m.f., for different Cu concentration are correspondingly 1.5; 3; 1; $1 \cdot 10^{-7}$g at $T \sim 293$°K. 2) Bi_2Te_3. Curves of z, σ, λ, and α vs. T are plotted for pure Bi_2Te_3 with admixture of CuBr. Bi_2Te_3 + 0.1 % CuBr has $z = 1.1 \cdot 10^{-3}$ 1/deg. Effective mass was derived from formulas for concentration and thermo-e.m.f. taking degeneration into account. 3) Ag_2Te differs sharply from other Ag - Te compounds. /α/ increases with T, α is small and changes little with T, z increases with T and is $0.5 \cdot 10^{-3}$ 1/deg at 150°C. Destruction of the compound takes

place at 150 - 200°C, $\mu \sim T^{-2}$. 4) SnTe. SnTe + 1 % J is best for thermoelements, then $z = 0.8 \cdot 10^{-3}$ 1/deg at 350°C. Values of z and α are stable up to 350°C, those of λ and σ - up to 500°C. 5) Sb_2Te_3. Curve for z has a maximum at 100°C; $\mu \sim T^{-1}$; α and λ increase and σ decreases with rising T. The 5 compounds described are considered as most suitable for thermo-elements. All compounds were investigated against PbTe as standard. From the obtained data of z it is concluded that the efficiency of a compound in thermo-elements increases with rising molecular weight. 7 references. [Abstracter's note: Complete translation.]