VUJEVIC, P.

Thermal conditions of the Meteorological Observatory of Belgrade. Bul sc nat SAWU 32 no.9:151-153 '63.

1. Submitted October 12, 1962.

VUJEVIC, P.

Difference between summer and fall precipitation as a means for evaluating its maritime or continental character. p. 1. Vol. 46, 1955. (Srpska akademija nauka. Geografski institut. ZBORNIK RADOVA. Beograd)

SOURCE: East European Accessions List, (EEAL) Library of Congress, Vol. 5, No. 8, August, 1956.

VUJEVIC, Pavle, 1881- ed.

ZBORNIK radova posvecen Jovanu Cvijicu, povodom tridesetpetogodisnjice naucnog rada, od prijatelja i saradnika. Recueil de travaux offert a M. Jovan Cvijic par ses amis et collaborateurs a l'occasion de ses trente-cinq ans de travail scientifique. Beograd, Drzavna stamparija, 1924. 646 p. maps.

(29-4133) Q111.Z4

Vajevic, P. M.

551.571

8.3-237

Vajevic, P. M. Kombinovani klimatski elementi. [Combined climatic elements.] Yugoslavia. Hidrometeorološka Služba, Vesnik, 4 [illegible] Jan./June 1955. [illegible] tables, 19 refs. [illegible] DWB. Explains the nature, measurement and application of three climatological elements [illegible] wet bulb temperature and relative humidity. Subject Headings: 1. Hygrometric elements 2. Definitions.

VUJIC, B.

(1) B

SURNAME (in caps); Given Names

Country: Yugoslavia

Academic Degrees: [not given]

Affiliation: Institute of Veterinary Medicine of the People's Republic of Serbija (Veterinarski institut NRS) Belgrade

Source: Belgrade, Veterinarski glasnik, No 5, 1961, pp 377-382.

Data: "Administration of "Frantin" in the Prevention of Nematodirosis."

Authors:

VUJIC, B.
PETROVIC, K.
SEVER, N.

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YUGOSLAVIA

KRDZALIC, P.; VUJIC, B.; and BABIC, P., of the Veterinary Improvement Institute (Zavod za Unapredjenje Veterinarstva) in Belgrade, the Veterinary Center (Veterinarski Centar) in Sjenica, and the Galenika FIB /abbreviation not explained/ in Belgrade.

"Bronchial Pneumonia among Lambs in the Sjenica-Pester Highlands."

Belgrade, Veterinarski Glasnik, Vol 17, No 7, 1963, pp 641-644.

Abstract: In contrast to incidence among adult sheep, in which bronchial pneumonia is most likely to strike during times of transition from one season to another, bronchial pneumonia is most common among lambs in the Sjenica-Pester highlands during the hottest months of summer. The observations of the authors lead them to reject lung parasites and viruses as possible causes. Two factors seem to be the most important, viz., inadequate diet and the climate of the area in summer (extremely hot days and cold nights). Lambs need better feed and to be allowed to build up resistance.

Four illustrations, one table, no references.

1/1

VUJIC, B.K.

(30)

Belgrade, Acta Veterinaria, Vol 11, No 2, 1961

1. "Polypeptide Hydrolysis by Use of Micro-Waves" J. [illegible], D. [illegible], A. [illegible]; Institute for Chemistry and Institute of Roentgenology and Physiotherapy, Belgrade; (English Summary) pp 3-8.

2. "Effect of Kemithal on I 131 Uptake by the Thyroid" M. [illegible], GJ. [illegible], M. JOVANOVIC; Institute of Physiology, Veterinary Faculty, Belgrade (English Summary) pp 9-15.

3. "Vascular System of Liver in Gallus domesticus" O. JABLAN-PANTIC, N. ANDJELIJEVIC; Anatomical Institute, Belgrade; pp 17-27.

4. "Immunizing Chickens against Newcastle Disease by Administering Vaccine in the Drinking Water"; Z. CALIC L. [illegible]; Veterinary Institute NRS (Narodna Republika Srbija: People's Republic of Serbia) and 4th Department Veterinary Faculty, Belgrade; (English Summary) pp29-35

5. "Bacteriologic Content of Center Area of Hams and Shoulder-Cuts Following Pasteurization at 65 C. for 30 Minutes"; J. [illegible], P. ZIVANOVIC; Institute of Meat Technology, Belgrade; pp 37-44.

6. "Transmission of Nasal Trichomonads of Pigs to the Genital Tract of Cows and Sheep" J. VUJOSEVIC; Obstetric Clinic, Veterinary Faculty, Belgrade; (English Summary) pp 45-50.

7. "Effect of Excluding Venous Outflow of Ovine Udder on the Function of the Gland"; D.T. [illegible], M.K. [illegible]; Anatomical Institute and Clinic for Surgery, Oncology and Ophthalmology, Veterinary Faculty, Belgrade; (English Summary) pp 51-58.

8. "Effect of Ultrasound and Some Antiseptics on Trichomonas genitalis and Eggs of Toxocara Canis" A. KOSORIC; Institute of Parasitic Diseases, Belgrade; pp 59-70.

9. "Larval Forms of Digenea in River and Lake Snails in Serbia"; B.K. VUJIC, Parasitology Institute, Veterinary

30

Belgrade, *Acta Veterinaria*, Vol 11, No 2, 1961 (continued)

Faculty, Belgrade; pp 71-80.

10. "Histopathological Changes in Adrenals of Pigs," S.D. S[illegible]IC, Pathological Institute, Veterinary Faculty, Belgrade; pp [illegible]-93

1-Institut za Hemiju. 2-Institut za Rentgenologiju i Fizikalnu Terapiju. 3-Institut za Fiziologiju Veterinarskog Fakulteta. 4-Institut za Anatomiju. 5-Veterinarski Institut. 6-Institut za Tehnologiju Mesa. 7-Klinika za Porodiljstvo. 8-Klinika za Hirurgiju, Ortopediju i Oftalmologiju. 9-Klinika za Invazione Bolesti. 10-Institut za Parazitologiju. 11-Institut za Patologiju.

YUGOSLAVIA

VUJIC, Z., and PAVLOVIC, S., of the Institute of Parasitology (Institut za Parazitologiju) and the Institute for Veterinary Progress (Zavod za Unapredjenje Veterinarstva) in Belgrade.

"Coccidiosis in Lambs and the Factors Permitting It to Occur."

Belgrade, Acta Veterinaria, Vol 12, No 3-4, 1962, pp 101-106.

Abstract: [Authors' English summary modified] A case of coccidiosis among lambs on Mt Zlatibor is described. The disease appeared in two flocks of lambs 20 days old. Clinical coccidiosis with diarrhea developed in January 1962. Four lambs died with blood diarrhea and main lesions on the ileum, cecum, and colon. More than 300 lambs became affected between January and March 1962. Direct microscopic examination of feces revealed the existence of E. faurei, E. ninakohlyakimovi, and E. parva. [17] Changed nutrition was responsible. Soviet, US references

RES, Dusan, dipl. ing.: LOGAR, Franc; VUGRINEC, Jose

Apparatus for radio relay links, type RRM 1-400. Pt. 2. Elektr vest 17 no.1/2:25-31 Ja-F '66.

1. Institute of Automation, Research and Development Sector No.2, Ljubljana, Trzaska c. 2.

L 5022[illegible]
AM5013532

BOOK EXPLOITATION

YU/

Jadrijevic, Filip (Colonel); Vujcic, Ljubomir (Colonel); Jelaca, Milan (Colonel); Orlovic, Djordje (Colonel)

General tactics of the infantry (Opsta taktika kopnene vojske). Belgrade, ["Vojno delo"], 1964. 485 p. illus. Errata slip inserted. 7000 copies printed.

TOPIC TAGS: tactics, infantry tactics, armored forces tactics, guerilla tactics, defense tactics, combat tactics

PURPOSE: This book is designed to acquaint military personnel with general infantry tactics.

COVERAGE: The book covers the essentials of general tactics and deals particularly with the tactics used in the infantry and armored forces. Basic concepts of tactics, command, security procedures and defense and combat actions for military and guerill a units are discussed.

TABLE OF CONTENTS:

Foreword -- [illegible]

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SUB CODE: MS SUBMITTED: 0000064 NO REF SOV: 002

OTHER: 139

Card 2/2

VUJIC, B.

(32)

Belgrade, *Veterinarski Glasnik*, Vol 15, No 11, 1961

1. "Pulmonary Pathologic Changes in Lambs Vaccinated Against Pictyocaulosis" [illegible] [illegible], [illegible] [illegible]; [illegible] [illegible] V. [illegible], K. [illegible] and M. [illegible]; Institute for the Application of Nuclear Energy in Agriculture, Veterinary Medicine and Forestry (Institut za primenu nuklearne energije u poljoprivredi, veterinarstvu i sumarstvu) Belgrade; pp 841-850 (English summary).

2. "About the Method of Preserving and Shipping Ovine Sperm" [illegible] and A. [illegible] V. MIHAJLOVIC, [illegible] [illegible], [illegible] [illegible] Clinic of the Obstetrics and Artificial Insemination [illegible] i vestacko Veterinary Faculty (Klinika za [illegible] fakulteta) Belgrade, and [illegible] Veterinary Institute Artificial Insemination Center of the [illegible] Republic of Serbia [illegible] of the [illegible] Veterinarskog Instituta [illegible]) [illegible]; pp 855-861.

3. "Avitaminosis E As One Cause of Lamb Mortality on the Pester Highlands" B. VUJIC and [illegible] [illegible] Veterinary Institute People's Republic of Serbia, Belgrade; pp 893-8.

4. "Identifying [illegible] in Organs of Dead Calves" [illegible] [illegible] M. STOJKOVIC; [illegible] Institute of the Veterinary Faculty, Belgrade; [illegible].

5. "Low-Temperature [illegible] of the Cysts of Taenia hydatidigena in the [illegible]" [illegible] [illegible]; pp 903-4.

6. "Leptospirosis of Domestic Animals in Serbia" C. VICENTIJEVIC; Vet. Institute P.R. Serbia; pp 905-912.

7. "Temperature Course in Deep Layers of Bovine and Ovine Meats During Natural Cooling" [illegible] [illegible]; Slaughter-house (Klanica) Valjevo; pp 913-915.

8. "Animal Production Plan Demands Industrial Production of Meat and Eggs" M. [illegible]; pp 917-[illegible].

9. "Swine Losses in 1960" M. [illegible]; pp [illegible]-925.

10. "Johne's Disease in Cattle" M. [illegible], [illegible] [illegible], N. [illegible], I. [illegible] and [illegible] [illegible]; Institute of Microbiology (Institut za [illegible]) and Inst. of Pathology (Inst. za [illegible]) Veterinary Faculty, Belgrade; [illegible] ([illegible])

— 1/2 —

NEDELJKOVIC, Srecko, dr; JOSIPOVIC, Vladan, doc., dr; DURIC, Vukosava, dr; SPUZIC, Ivan, dr; PETRASKOVIC, Dragoslav, dr; VUJIC, Ljubica, dr

Myocardial infarct in subjects under 40 years of age. Med. glas. 15 no.3:139-144 Mr '61.

1. Interna klinika B. Medicinskog fakulteta u Beogradu (Upravnik: prof. dr R. Berovic) I Dom narodnog zdravlja u Beogradu (Upravnik: dr S. Jancic) Opsta bolnica u Bihacu (Upravnik: dr M. Tatlic)

(MYOCARDIAL INFARCT case reports)

VUJIC, M.

VUJIC, M. Comparison between reciprocating, turboprop, and jet engines on the basis of weight to power ratio. p. 51.

No. 45, 1955
ZBORNIK RADOVA
Beograd, Yugoslavia

So: Eastern European Accession Vol.5 No. 4 April 1956

VUJIC, M.

VUJIC, M. Theoretical possibilities of increasing heat transfer to oil in internal-combustion engines. p. 73.

No. 45, 1955
ZBORNIK RADOVA
Beograd, Yugoslavia

So: Eastern European Accession Vol. 5 No. 4 April 1956

VUJIC, M.; STAMBOLOVIC, L.

Case of acute ileus caused by giant entercocystoma. Acta chir. iugosl. 1 no.4:363-367 1954.

1. Hirursko odeljenje Gradske bolnice u Senti (Sef dr. Milan Vuljic) i Patolosko-anatomski institut Medicinske velike skole u Beogradu (Upravnik prof. dr. Ksenofon Sahovic)

(HEMARTOMA
enterocystoma, causing acute ileus, surg.)
(INTESTINAL OBSTRUCTION, etiol. & pathogen.
enterocystoma, surg.)

VUJIC, M

"Possibilities od Flight in the Universe", p. 198, (NAUKA I PRIRODA) Vol. 6, No. 5, 1953, Belgrad, Yugoslavia)

SO: Monthly List of East European Accessions L. C. Vol.3, No. 4, April 1954

VUJIC, M.

The study of complete inversion of the uterus. Srpski arh. celok. lek. 83 no.5-6:688-691 May-June 55.

1. Hirursko-ginekolosko odelenje Javne bolnice u Senti. Upravnik: Milan, M. Vujic.
(UTERUS, dis.
inversion, complete, surg., hysterectomy (Ser))

Vujic, M.

YUGO. ✓ 5444. COMPARISON BETWEEN RECIPROCATING, TURBO-PROP AND JET ENGINES ON BASIS OF WEIGHT TO POWER RATIO. Vujic, M. (Bull. Yougoslav. [illegible], July 1954, vol. 2, 18). Curves of weight to power ratio as a function of effective engine power were obtained from data on 145 reciprocating, [illegible] [illegible] [illegible] [illegible] at a flight speed of 720 km/h on the other. Reciprocating engines are divided into liquid- and air-cooled engines; jet engines are divided into engines with axial and radial centrifugal compressors. The conclusions are: weight per unit horse-power decreases with increased effective power for all engines in the small power range, but for reciprocating engines only to approximately [illegible] h.p. (takeoff), after which it begins to increase; reciprocating engines have a minimum mean value of about [illegible] kg/h.p. (liquid-cooled), [illegible].700 kg/h.p. (air-cooled), turbo-prop [illegible] about [illegible].300 kg/h.p. and jet engines [illegible] [illegible].200 kg/h.p. (axial compressor) or about 0.150 kg/h.p. (radial compressor); the difference in weight is offset to some extent by the fuel weight; the reciprocating engine is more inefficient than the turbo-prop and much more inefficient than the jet [illegible] as regards effective power and [illegible] weight to power ratio. [illegible]

VUKADINOVIC, Svetozar

Transportation problem of linear programming. Zeleznice Jug 19 no.9:12-18 S '63.

VUKALOVICH, M. I. (Dr.,Prof.)
Moscow Energetics Institute

"Thermal Properties of Imperfect Gases."

paper presented at Conf. on Thermodynamic and Transport Properties of Fluids, held by the Inst. of Mech. Engr., London, 10-12 July 1958.

VUKAJLOVIC, R.

Using aerial rifles in the preparation of firing, p. 71

VOJNI GLASNIK (Jugoslavenska narodna armija) Beograd, Yugoslavia.
Vol. 12, no. 1, Jan 1958

Monthly List of East European Accessions EEAI LC, Vol. 8, no. 6, June 1959
Uncla.

VUKALOVICH, M.P., doktor tekhn. nauk, prof.; GUREYEV, A.N., inzh.

Experimental study of the heat capacity c_p of carbon dioxide. Teploenergetika 11 no.8:80-83 Ag '64. (MIRA 18:7)

1. Moskovskiy energeticheskiy institut.

VUKALOVICH, M.P., doktor tekhn. nauk, prof.; ALTUNIN, V.V., kand. tekhn. nauk; GUREYEV, A.N., inzh., dissertant

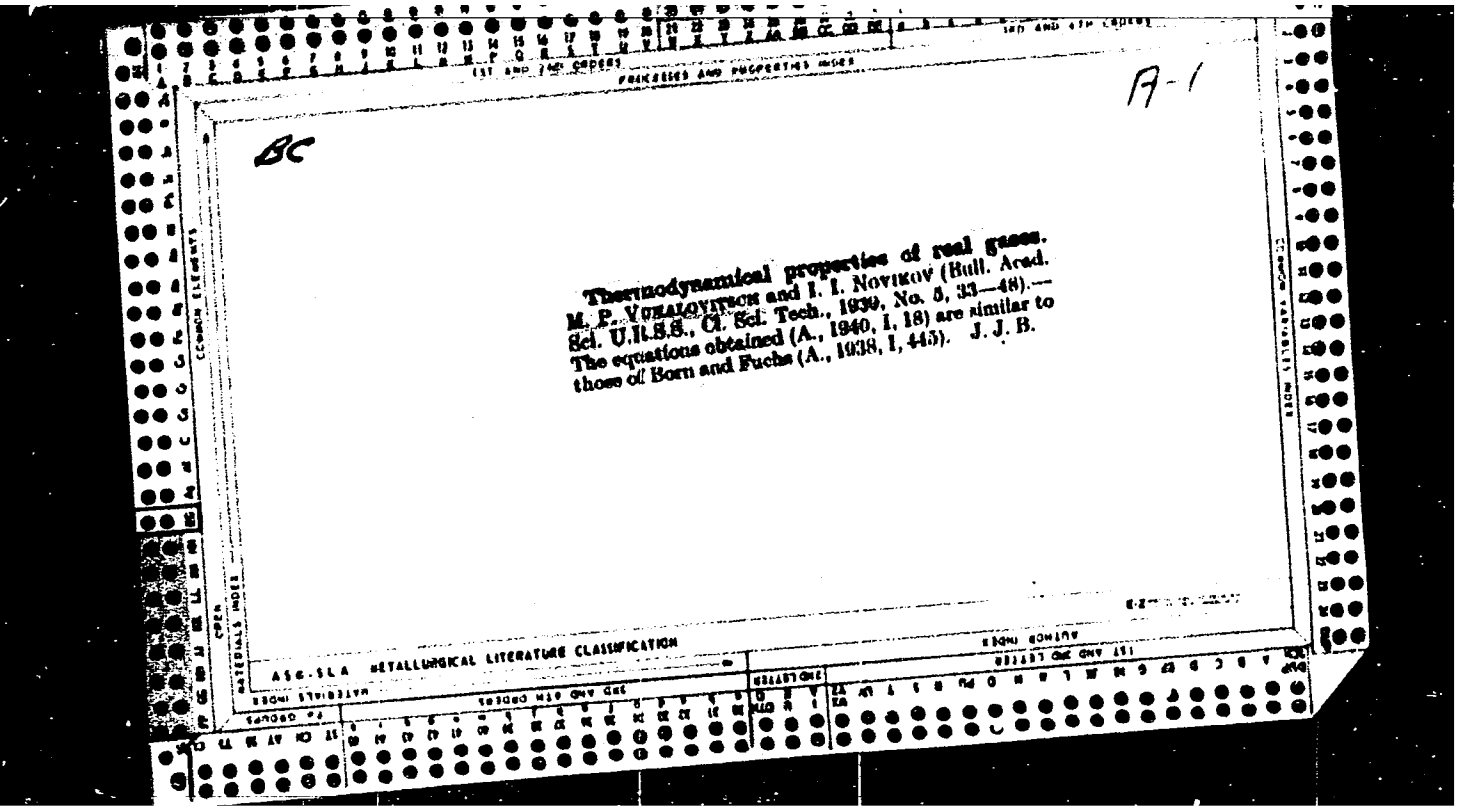
Experimental study of the cp heat capacity of carbon dioxide at high pressures. Teploenergetika 11 no.9:68-71 S '64. (MIRA 18:8)

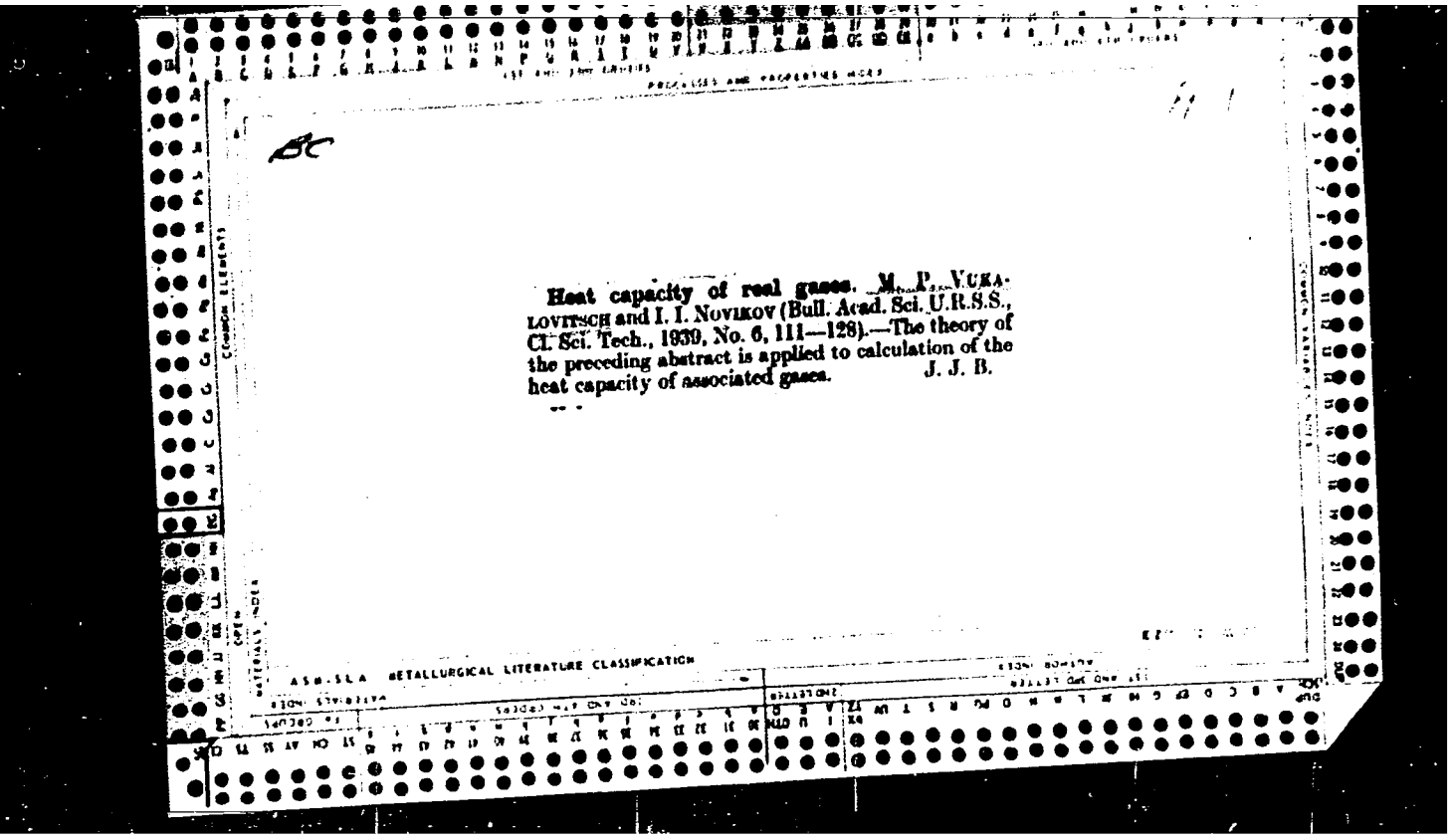
1. Moskovskiy energeticheskiy institut.

VUKALOVICH, M.P., doktor tekhn. nauk, prof.; ALTUNIN, V.V., kand. tekhn. nauk; GURBYEV, A.N., kand. tekhn. nauk

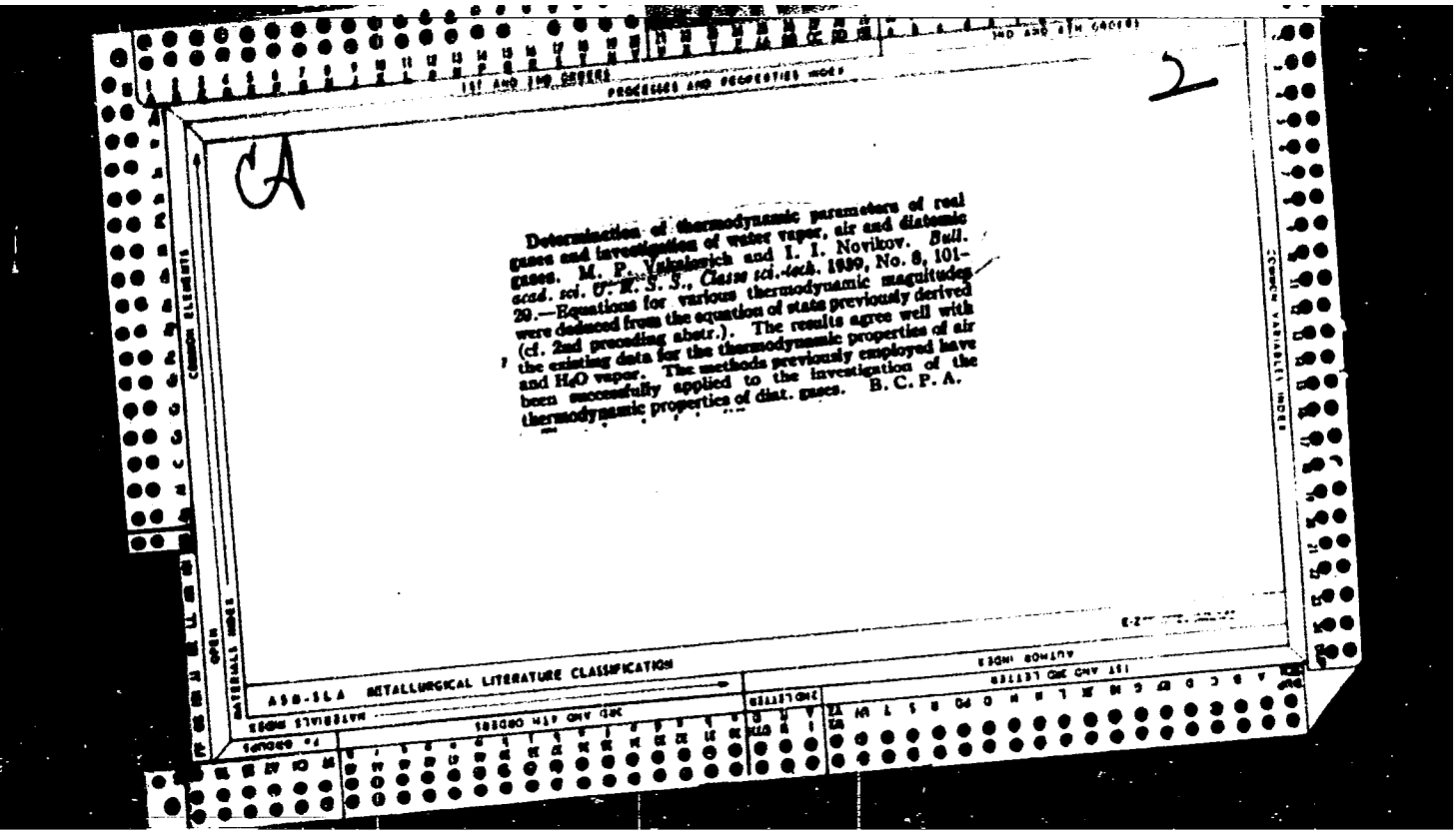
Experimental study of the heat capacity c_p of carbon dioxide at high pressures. Teploenergetika 12 no.7:58-62 Jl '65. (MIRA 18:7)

1. Moskovskiy energeticheskiy institut.





Heat capacity of real gases. M. P. Vukalovitsch and I. I. Novikov (Bull. Acad. Sci. U.R.S.S., Cl. Sci. Tech., 1939, No. 6, 111—128).—The theory of the preceding abstract is applied to calculation of the heat capacity of associated gases. J. J. B.



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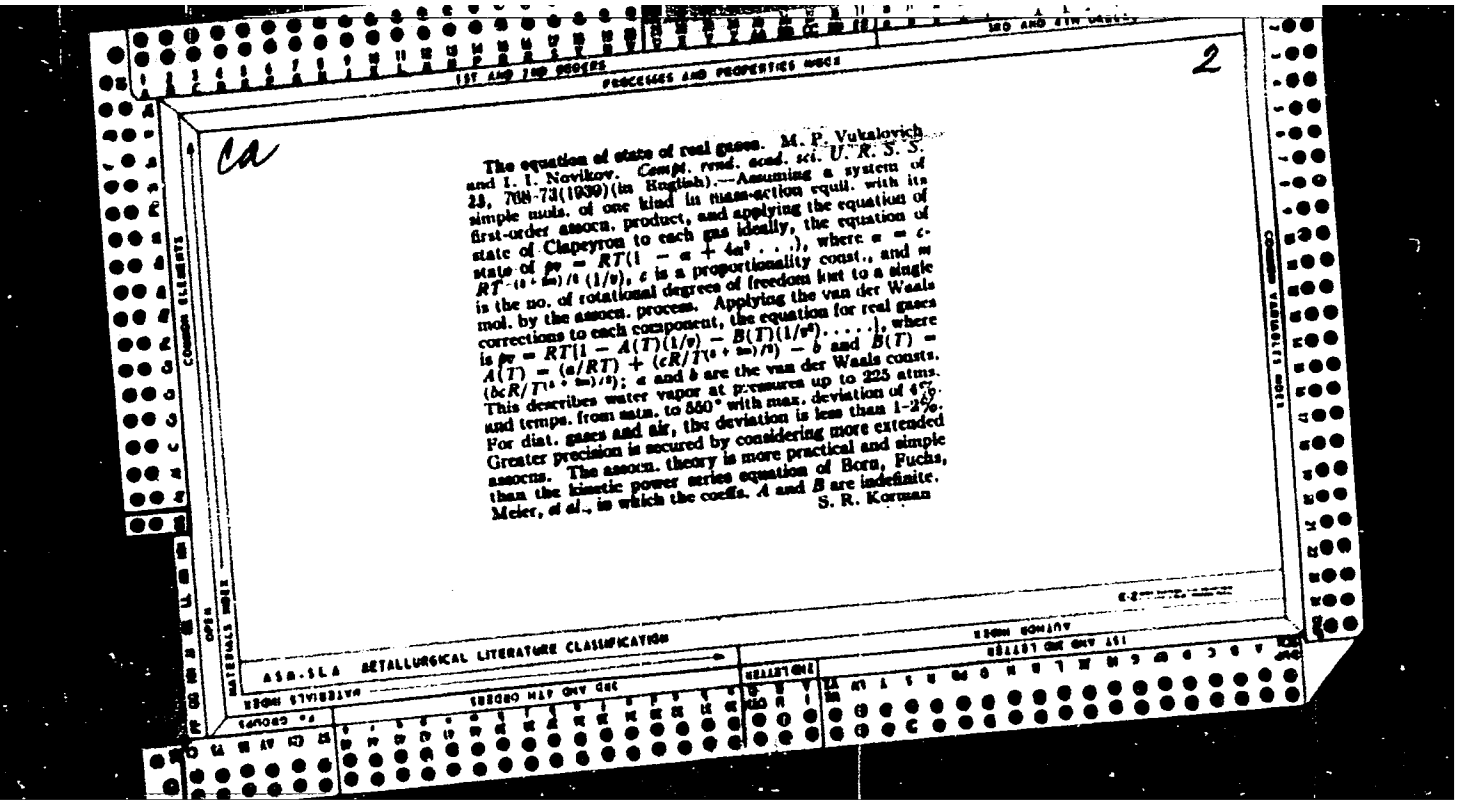
Determination of thermodynamic parameters of real gases and investigation of water vapor, air and diatomic gases. M. P. Vukalovich and I. I. Novikov. *Bull. acad. sci. U.R.S.S., Classe sci.-tech.* 1939, No. 8, 101–29.—Equations for various thermodynamic magnitudes were deduced from the equation of state previously derived (cf. 2nd preceding abstr.). The results agree well with the existing data for the thermodynamic properties of air and H_2O vapor. The methods previously employed have been successfully applied to the investigation of the thermodynamic properties of diat. gases. B. C. P. A.



Ca

2

The equation of state of real gases. M. P. Vukalovich and I. I. Novikov. *Compt. rend. acad. sci. U. R. S. S.* 23, 768-73(1939)(in English).—Assuming a system of simple mols. of one kind in mass-action equil. with its first-order assocn. product, and applying the equation of state of Clapeyron to each gas ideally, the equation of state of $pv = RT(1 - a + 4a^2 \ldots)$, where $a = c \cdot RT^{-(s+m)/6}(1/v)$, c is a proportionality const., and m is the no. of rotational degrees of freedom lost to a single mol. by the assocn. process. Applying the van der Waals corrections to each component, the equation for real gases is $pv = RT[1 - A(T)(1/v) - B(T)(1/v^2) \ldots]$, where $A(T) = (a/RT) + (cR/T^{(s+m)/6}) - b$ and $B(T) = (bcR/T^{(s+m)/6})$; a and b are the van der Waals consts. This describes water vapor at pressures up to 225 atms. and temps. from satn. to 550° with max. deviation of 6%. For diat. gases and air, the deviation is less than 1-2%. Greater precision is secured by considering more extended assocns. The assocn. theory is more practical and simple than the kinetic power series equation of Born, Fuchs, Meier, *et al.*, in which the coeffs. A and B are indefinite.

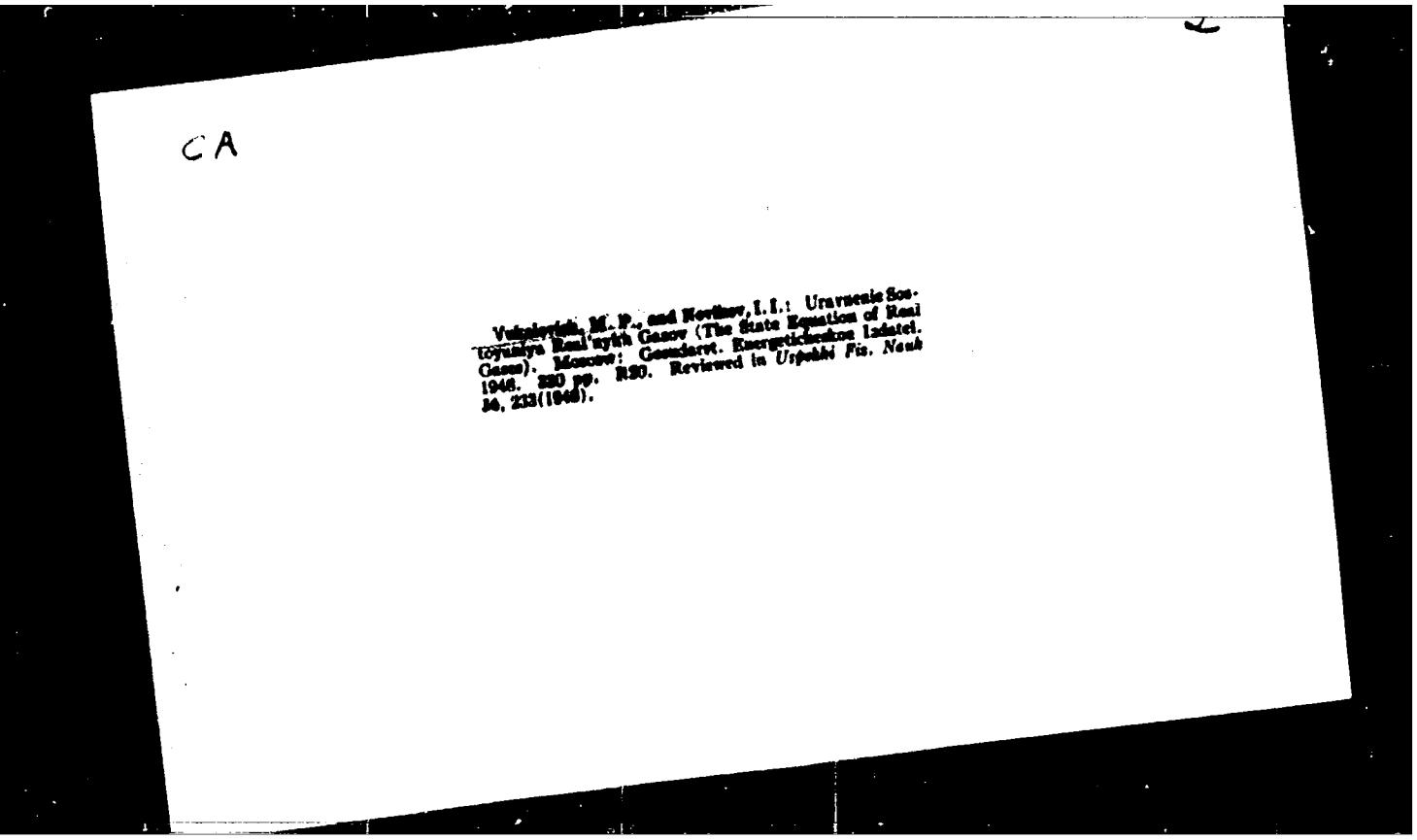
S. R. Korman

VUKALOVICH, M. P.

The thermodynamic properties of steam, tables and diagrams Moskva, Gos. energ. izd-vo, 1946. 87 p. (52-64171)

TJ268.V84

1. Steam. 2. Thermodynamics.



CA

Vukalovich, M. P., and Novikov, I. I.: Uravnenie Sostoyaniya Real'nykh Gazov (The State Equation of Real Gases). Moscow: Gosudarst. Energeticheskoe Izdatel. 1948. 280 pp. R20. Reviewed in *Uspekhi Fiz. Nauk* 34, 233(1948).

VUKALOVICH, M.P., doktor tekhn.nauk, prof.; ZUBAREV, V.N., kand.tekhn.nauk; PRUSAKOV, P.G., kand.tekhn.nauk; ALEKSANDROV, A.A., kand.tekhn.nauk

The is-diagram of steam at 800-1500°C temperatures and pressures up to 1000 bar. Teploenergetika 12 no.10:88-89 O '65. (MIRA 18:10)

1. Moskovskiy energeticheskiy institut.

VUKALOVICH, M. P.

"Heat Conductivity of Nonstationary Processes," by A.V.Lykov, Moscow-Leningrad State Power Press, 1948. Reviewed by M.P.Vukalovich, Sov. Kniga, No.7, 1949

VUKALOVICH, M.P., doktor tekhnicheskikh nauk, professor; PONOMAREVA, K.A., inzhener, redaktor; POPOVA, S.M., tekhnicheskiy redaktor.

[Thermodynamic properties of water and of water vapor] Termodinamicheskie svoistva vody i vodnogo para. 4-e izd. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1951. 93 p. (MLRA 8:2)
(Water) (Steam) (Thermodynamics)

VUKALOVICH, M. P.
PHASE I

TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 164 - I

Call No.: TJ265.V84

20 JAN 1954

BOOK

Author: VUKALOVICH, M. P. and NOVIKOV, I. I.
Full Title: TECHNICAL THERMODYNAMICS
Transliterated Title: Tekhnicheskaya termodinamika

Publishing Data

Originating Agency: None
Publishing House: State Publishing House of Literature on Power Engineering
No. pp.: 567 No. of copies: 15,000
Date: 1952
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Editors: Ayzenshtat, I. I. and Shpil'rayn, E. E.
Tech. Ed.: None
Editor-in-Chief: None
Appraiser: None
Others: Thanks for assistance are given to: Prof. A. S. Yastrzhembskiy; Prof. M. V. Nosov; Assistant Prof. A. E. Sheyndlin; Master of Eng. Sci. E. E. Shpil'rayn; Prof. V. A. Kirillin; Assistant Prof. D. D. Kalafati; and to the entire staff assigned to the Chair of Theoretical Principles of Heat Technology at the Moscow Institute of Power Engineering im. Molotov.

Text Data

Coverage: The authors present the thermodynamic laws and related problems with specific emphasis on their analytical aspects. The authors applied statistical interpretation to the energy distribution in thermodynamic

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Tekhnicheskaya termodinamika

processes and differential analysis to the characteristic functions of variable parameters. They also discuss the question of the equilibrium of thermodynamic systems and their different phases.

In view of the different approach, in comparison with that given in American and British publications, this part of the book maybe of interest in questions of combustion complex and of the reaction of certain liquid solutions.

Purpose: This textbook is approved by the Ministry of Higher Education for students of thermotechnical branches of technical colleges, engineers, scientific workers, and teachers.

Facilities: For problems on technical thermodynamics and their solutions the reader is referred to the book on problems by V. A. Kirillin and A. E. Sheyndlin.

No. of Russian and Slavic References: 21 (1947-52)

Available: Library of Congress.

VUKALOVICH, M.P.

MARTYNOVSKIY, V., professor, doktor tekhnicheskikh nauk; GOKHSHTEYN, D., professor, doktor tekhnicheskikh nauk.

"Techincal thermodynamics." M.P.Vukalovich, I.I.Novikov. Reviewed by V.Martynovskii, D.Gokhshtein. Khol.tekh. 30 no.4:76-77 O-D '53. (Thermodynamics) (Vukalovich, M.P.) (Novikov, I.I.)

VUKALOVICH, M. P.

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Thermodynamische Eigenschaften des Wassers und des Wasserdampfes (Wasserdampftafeln) Auszug aus einer Arbe it ...bearbeitet von Norbert Elsner. Berlin, Technik, 1954.
94 p. diagrs., folded in pocket on rear cover, tables.
Abstract from Russian publications by M. P. VUKALOVICH and I. I. NOVIKOV.

VUKALOVICH, M.P.

ACHERKAN, N.S., doktor tekhnicheskikh nauk, professor, glavnyy redaktor; ANTSYFEROV, M.S., kandidat fiziko-matematicheskikh nauk; ASTAKHOV, K.V., professor; VUKALOVICH, M.P., professor, doktor tekhnicheskikh nauk; KORELIN, A.I., kandidat tekhnicheskikh nauk; KRIPETS, E.S., inzhener; LAZAREV, L.P., kandidat tekhnicheskikh nauk; MAZYRIN, I.V., inzhener; MATYUKHIN, V.M., kandidat tekhnicheskikh nauk; NIKITIN, N.N., kandidat fiziko-matematicheskikh nauk; PANICHKIN, I.A., kandidat tekhnicheskikh nauk; PETUKHOV, B.S., kandidat tekhnicheskikh nauk; PODVIDZ, L.G., kandidat tekhnicheskikh nauk; SIMONOV, A.F., inzhener; SMIRYAGIN, A.P., tekhnicheskikh nauk; KHALIZEV, G.P., kandidat tekhnicheskikh nauk; FAYNZIL'BER, E.M., professor, doktor YAN'SHIN, B.I., kandidat tekhnicheskikh nauk; MARKUS, M.Ye., inzhener, redaktor; KARGANOV, V.G., redaktor graficheskikh materialov, inzhener; SOKOLOVA, T.F., tekhnicheskiy redaktor.

[A machinebuilder's manual in six volumes] Spravochnik mashinostroitelia v shesti tomakh. Izd. 2-e, ispr. i dop. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry. Vol. 2. 1954. 559 p. (MIRA 8:1)
(Machinery--Construction) (Mechanical engineering)

VUKALOVICH, M.P.

FUKS, G.I., doktor tekhnicheskikh nauk.

"Technical thermodynamics." M.P.Vukalovich, I.I.Novikov. Reviewed by G.I.Fuks. Elek.sta. 25 no.2:62-64 F '54. (MLRA 7:2)
(Vukalovich, M.P.) (Novikov, I.I.) (Thermodynamics)

VUKALOVICH, M.P., professor, doktor tekhnicheskikh nauk, laureat Stalinskoy premii. PONOMAREVA, K.A., inzhener, redaktor; UVAROVA, A.F., tekhnicheskiy redaktor.

[Thermodynamic properties of water and steam; tables and diagrams] Termodinamicheskie svoistva vody i vodianogo para; tablitsy i diagrammy. Izd.5-e, Moskva, Gos.nauchno-tekhn.izd-vo mashinostroitel'noi lit-ry, 1955. 89 p. (MLRA 8:11)
(Steam--Tables, calculations, etc.)
(Water--Tables, calculations, etc.)

Vukalovich, M.P.

VUKALOVICH, Mikhail Petrovich; NOVIKOV, Ivan Ivanovich; ANDRYUSHCHENKO, A.I., redaktor; FRIDKIN, A.M., tekhnicheskiy redaktor.

[Technical thermodynamics] Tekhnicheskaia termodinamika. Izd. 2-oe, perer. Moskva, Gos.energ.izd-vo 1955. 336 p. (MLRA 9:1) (Thermodynamics)

Vukalovich, M. P.

AID P - 4087

Subject : USSR/Power Eng.

Card 1/1 Pub. 110-a - 12/14

Author : Vukalovich, M. P., Dr. Tech. Sci. Prof.

Title : 50 years of the Moscow Power Institute im. V. M. Molotov.

Periodical : Teploenergetika, 12, 52-53, D 1955

Abstract : A report on the activities and functions of this Institute. One photo.

Institution : None

Submitted : No date

BOSHNYAKOVICH, F.; VUKALOVICH, M.P. [translator], redaktor; KIRILLIN, V.A., [translator], redaktor; RASSKAZOV, D.S., redaktor; SKVORTSOV, I.M., tekhnicheskiy redaktor

[Engineering thermodynamics. Translated from the German] Tekhnicheskaia termodinamika. Perevod s nemetskogo i red. M.P.Vukalovicha i V.A.Kirillina. Moskva, Gos. energ. izd-vo. Pt.2. 1956. 255 p. (MLRA 9:10)
(Thermodynamics)

VUKALOVICH, M.P.

[Thermodynamic properties of water and steam] Termodinamicheskie svoistva vody i vodianogo para. Berlin, VEB Verlag technik; Moskva, FEB Izd-vo Tekhnik, 1958. 245 p. (MIRA 14:10)
(Water--Thermal properties) (Steam--Thermal properties)

VORONIN, Grigoriy Ivanovich, prof. dokt.tekhn.nauk., VUKALOVICH, M.P., prof. dokt.tekhn.nauk, retsenzent.; PETUKHOV, B.S., prof., dokt.tekhn.nauk, retsenzent.; ZUBAREV, V.N., dots.,kand.tekhn.nauk, retsenzent.; ISACHENKO, V.P., dots.,kand.tekhn.nauk, retsenzent.; RASSKAZOV, D.S., inzh.,red.; PETROVA, I.A., izd.red.; PUKHLIKOVA, N.A., tekhn.red.

[Principles of thermodynamics and heat transfer] Osnovy termodinamiki i teploperedachi. Moskva, Gos. izd-vo obor., promyshl., 1958. 341 p. (MIRA 11:9)

(Thermodynamics)
(Heat--Transmission)

VUKALOVICH M P.

96-4-8/24

AUTHORS: Vukalovich, M.P., Dr. Tech.Sc. and Dzampov, B. V., Cand.Tech.Sc.

TITLE: Equations of state, thermo-dynamic functions and tables of reference points for water and super-heated steam up to 1000 atms and 1000°C. (Uravneniye sostoyaniya, termodinamicheskiye funktsii i tablitsy opornykh tochek dlya vody i peregretogo vodyanogo para do 1000 ata i 1000°C).

PERIODICAL: Teploenergetika, 1958, . . No.4, pp. 46-52 (USSR).

ABSTRACT: In an earlier work the authors proposed an equation of state to facilitate the preparation of steam tables. The earlier article gave results of preliminary calculations of thermal and calorific magnitudes derived from the equation of state over the pressure range of 100 - 650 atmospheres and the temperature range of 450 - 1000°C. Work done since the publication of that article made it possible to considerably extend the range of applicability of the equation of state and to make it somewhat more simple and accurate. At present the equation gives satisfactory agreement with experiment up to a pressure of 1000 atmospheres. The equation is then given. It is comparatively simple and can be used to calculate

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Equations of state, thermo-dynamic functions and tables of reference points for water and super-heated steam up to 1000 atms and 1000°C.

tables of the thermo-dynamic properties of water and steam, also to construct i - s, and T - s diagrams. The physical concept of interaction between molecules, which is the basis of the equation, and the very accurate experimental data used to determine the constants that enter into the equation, make it reliable for purposes of extrapolation. To check it against experimental results, calculations were made at pressures up to 1000 atmospheres in the temperature range 400-650°C, where reliable experimental data already exist. The results of the comparison are given in Table 1. As will be seen, up to a temperature of 500°C, the difference between calculated and measured values does not exceed 0.3%, and the average difference is about 0.12%. In the sub-critical range below 400°C the differences are greater, and reach 2%. This is also to be expected along the saturation curve. The comparison shows that agreement between calculated and experimental values is satisfactory at temperatures above 420°C, since the differences are within the limits of experimental error. By employing the equation of state for steam, and the

Equations of state, thermo-dynamic functions and tables of reference points for water and super-heated steam up to 1000 atms and 1000°C.

differential equations of thermo-dynamics, the authors obtained analytical expressions for thermo-dynamic functions and made calculations to check the formulae derived. The equation of state is first used to derive an expression for the enthalpy. This is compared with experimental data in Table 2, with satisfactory agreement. Expressions are then derived for the entropy and internal energy. The authors, using the equation of state and the existing Moscow Power Institute Tables of the thermo-dynamic properties of water and steam at pressures up to 300 atmospheres and temperatures up to 700°C, drew up tables of reference values of specific volumes, enthalpy and entropy for the pressure range 1 - 1000 atmospheres and the temperature range 0 - 1000°C. The results of the work are entered in Table 3; values are given every 50°C. Analysis of the reference values shows that they are suitable for the formulation of detailed tables within the stated range of pressure and temperature. Moreover, the table of reference-points is itself useful for a number of thermal calculations and for the construction

96-4-8/24

Equations of state, thermo-dynamic functions and tables of reference points for water and super-heated steam up to 1000 atms and 1000°C.

of i - s and T - s diagrams.
There are 3 tables and 11 references - 10 Russian, 1 Hungarian.

ASSOCIATION: Moscow Power Institute.
(Moskovskiy Energeticheskiy Institut).

AVAILABLE: Library of Congress.

Card 4/4

SOV/96-58-7-2/22

AUTHOR: Vukalovich, M.P. Dr. Tech.Sci., Sheyndlin, A.Ye., Dr.Tech.Sci. and Rasskazov, D.S. Cand.Tech.Sci.

TITLE: Investigation of the specific heat at constant pressure c_p of steam up to 700 atm and 700°C. (Issledovaniye teployemkosti c_p vodyanogo para do 700 ata i 700°C.)

PERIODICAL: Teploenergetika, 1958, No.7, pp. 7-9 (USSR)

ABSTRACT: This is a continuation of the work described in Teploenergetika No.11 1957, on the c_p of steam in the super-critical region from 300 to 500 atm. The same method and equipment were used in the present work. The work was done on the isobars 550, 600 and 700 atm at temperatures of 280 - 700°C. The errors are estimated not to exceed 2%. The 116 experimental values of specific heat obtained in the work are tabulated. Graphs of new experimental values of specific heat in co-ordinates of c_p-t, and also values obtained in the previous investigation, are given in Fig.1. The agreement between the two sets of work is illustrated in Figs.3. and 4. by graphs of c_p against pressure for various isotherms. The work in the previous article is also compared graphically with that of other authors in Fig.2;

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agreement is good and the reasons for such differences as exist are discussed. Data of other Soviet authors is included in Figs.3. and 4. and the new data are in reasonable agreement with old where they overlap. There are 4 figures, 1 table and 8 literature references (6 Soviet and 2 German)

ASSOCIATION: Moskovskiy Energeticheskiy Institut (Moscow Power Institute)

1. Steam - Specific heat 2. Steam - Pressure factors
3. Steam - Temperature factors

AUTHOR: Vukalovich, M.P., Dr.Tech.Sci., Zubarev, V.N., SOV/96-58-7-6/22
Cand.Tech.Sci. and Prusakov, P.G., Engineer.

TITLE: Experimental investigations on the enthalpy of steam
(Eksperimental'noye issledovaniye ental'pii vodyanogo para.)

PERIODICAL: Teploenergetika, 1958, No.7, pp. 22-26 (USSR)

ABSTRACT: Although extensive work has been done in the USSR on the properties of steam, there has so far been no attempt to determine directly the enthalpy of steam. Enthalpy figures have been calculated either from experimental data for c_p, the specific heat at constant pressure, or from the specific volume. Both methods are theoretically sound but subject to error, for example in integration, and appreciable differences have been found between results obtained by the two methods. The method of determining the enthalpy of steam used in the present work is accurate. In analogous work carried out in England by Callender and Egerton, the enthalpy error was within 0.1%. Havlicek and Miskovsky used the same method to determine the enthalpy of steam at pressures up to 400 kg/cm^2 with an accuracy of 0.25%. The equipment used for the present work is illustrated diagrammatically in Fig.1., and is described in detail. Water is distilled, de-aerated and cooled; it is then pumped at the rate of 14 litres per hour to a single-pass electric boiler. In the first stage of the boiler the temperature is raised to 200 - 250°C and

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in the second the required temperature is reached. The steam then passes to a pressure-and temperature-measuring chamber, and thence through two similar and separate throttling devices, in which the pressure is reduced to approximately atmospheric. Finally the steam passes to calorimeters. The rate of flow through one throttling device and calorimeter is twice that through the other. Under these conditions, by appropriate calculations, thermal losses beyond the measuring chamber can be allowed for. The experimental procedure is described and formulae used in the calculations are given. The heat extracted from the steam in the calorimeters is measured directly. A more detailed description of the construction of the apparatus is then given, including information about the calibration of the measuring equipment. The calorimeters used are illustrated in Fig.2. and described. The accuracy of determinations depends mainly on the accuracy of measurement of the temperature difference of the cooling water, which is estimated at 0.04 - 0.05%. The accuracy of weighing the condensate is about 0.01%. The tests were repeated several times. Other tests established that the losses in the two throttling and calorimeter installastions were equal. The maximum error in enthalpy determination is different for different regions of measurement, but should not be greater than 1.5 kcal/kg. The experimental data obtained in the work are given in Tables 1 - 7,

which range from 200 kg/cm^2, 470°C, to 400 kg/cm^2, 500°C. The tables show that the scatter of enthalpy values round the mean does not exceed ± 1.5 kcal/kg, the greatest scatter being obtained in one of the first tests at 200 kg/cm^2 and 470°C. Mean values of enthalpy of steam rounded off to even values of pressure and temperatures are given in Table.8, and are compated with other available data. Values obtained at pressures below 300 kg/cm^2 are also included. The new experimental data are in good agreement with those of Havicek and Miskovsky and with previous work of Vukalovich, but agreement with the tables of the All-Union Thermotechnical Institute is not so good. The next task before the authors is to make measurements at pressures up to 500 kg/cm^2 and temperatures up to 600°C; the

Experimental investigations on the enthalpy of steam. SOV/96-58-7-6/22

region not covered by previous work will be studied in most detail, because it is here than divergencies in enthalpy tables are greatest. When the work has been done it is hoped to correct the steam tables accordingly. There are 2 figures, 8 tables and 6 literature references (5 Soviet and 1 German)

ASSOCIATION: Moskovskiy Energeticheskiy Institut (Moscow Power Institute)

1. Steam - Enthalpy 2. Enthalpy - Determination

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SOV/96-59-10-14/22

AUTHORS: Vukalovich, M.P. (Dr.Tech.Sci.); Zubarev, V.N. (Cand. Tech.Sci.); Aleksandrov, A.A. (Engineer) and Kalinin, Yu.Ya. (Engineer)

TITLE: An Experimental Determination of the Specific Volumes of Water up to Pressures of 1200 kg/cm^2

PERIODICAL: Teploenergetika, 1959, Nr 10, pp 74-77 (USSR)

ABSTRACT: Available information about the thermo-dynamic properties of water at high pressures is inadequate and experimental data on the specific volume of water were required. The data are needed both to formulate tables of specific volume, and also to calculate calorific values of the specific heat at constant pressure and of the enthalpy of water at high pressures. Similar work is in hand in the U.S.A. by Kennedy, Knight and Holser. The equipment used was very similar to that described by Kirillin in Teploenergetika Nr 11, 1935. The piezometer was made of steel 1Kh18N9T, whose thermal coefficient of expansion is tabulated. Precautions taken to ensure accuracy of the experiments are described in considerable detail. Specific volumes of water were determined at six temperatures, and the experimental data are tabulated.

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SOV/96-59-10-14/22

An Experimental Determination of the Specific Volumes of Water up to Pressures of 1200 kg/cm^2

The maximum error of the test data calculated in the usual way is 0.06-0.08%, the latter figure relating to the maximum test temperature. The experimental data obtained in this work are compared with published American and Soviet data at each of the six temperatures. Agreement between the present work and published American work is good; such differences as there are lie within the total experimental error of the two sets of data. At low temperatures there is good agreement with the published Soviet data, but differences become appreciable at higher temperatures. This is evidently because values of specific volume at high pressure previously published were obtained by extrapolation of experimental data obtained at a pressure of 300 kg/cm^2. The previously published Soviet data of Vukalovich appear to be in need of correction. There are 2 tables, 1 figure and 8 refs, (5 Soviet, 3 English).

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ASSOCIATION: Moscow Power Institute
(Moskovskiy energeticheskiy institut)

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SOV/96-59-11-13/22

AUTHORS: Vukalovich, M. P., Doctor of Technical Sciences, and Altunin, V. V., Engineer

TITLE: An Experimental Investigation of the p-v-t Relationship of Carbon Dioxide

PERIODICAL: Teploenergetika, 1959, Nr 11, pp 58-65 (USSR)

ABSTRACT: Knowledge of the thermo-dynamic properties of carbon dioxide in the temperature range of 500 - 700°C and pressure range of 300 - 500 atm is required for atomic and gas-turbine power engineering. Previous work on this subject is reviewed and it is concluded that A. Michels' work is reliable in the range of 0 - 150°C and 16 - 3000 atm. Published work at higher temperatures is considered unreliable and it was accordingly decided to make the measurements at temperatures up to 500°C and pressures up to 300 kg/cm^2. Experimental procedures for studying the thermo-dynamic properties of carbon dioxide are briefly reviewed and the disadvantages of existing methods pointed out. A new method was accordingly developed, using an unballasted constant volume piezometer with one 'hot' valve. The quantity of gas contained in the piezometer is determined by adsorbing it in another vessel. With effective adsorbents the

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An Experimental Investigation of the p-v-t Relationship of Carbon Dioxide

residual pressure in the system may be kept low, and as the adsorbent vessel is not exposed to high temperature or pressure it may be kept light so that weighing is more accurate. The experimental equipment that was used is illustrated schematically in Fig 1 and is described. Gas is admitted to the piezometer and after equilibrium has been established, the temperature and pressure are measured. Then the gas is evacuated and adsorbed in a separate vessel. The next test is made at the same temperature but higher pressure, and in this way a series of isotherms are obtained. Two piezometers were made, one with a volume of 25 ml and the other of 75 ml. The material was steel 1Kh18N9T and the ratio of external to internal diameter was 3:1, so that the piezometers worked throughout in the region of elastic strain. The 'hot' valves comprised the constant-volume type developed by D. S. Tsiklis and a valve of the authors own design. Fig 2 gives a graph of the temperature distribution along the valve, as measured by thermocouples.

An Experimental Investigation of the p-v-t Relationship of Carbon Dioxide

It will be seen that the presence of the valve does not distort the piezometer temperature. The temperature in the piezometer was taken by platinum resistance thermometers. A piston manometer was used to determine the gas pressure. The gas adsorption vessel is illustrated diagrammatically in Fig 3 and is made of aluminium alloy; the weight of the vessel empty is about 60 g and the adsorbent 170 - 190 g. The most suitable adsorbent for carbon dioxide is activated charcoal. The greatest quantity of carbon dioxide adsorbed in a vessel is about 15 g, and amounts less than 5 g were rarely used. The method of determining the volume of the piezometer is explained. The commercial carbon dioxide used was first purified: the procedure used to ensure absence of air is described. It is considered that the error of determination of the specific volume of carbon dioxide is not greater than 0.2%. Control tests were made on two of the isotherms used by Michels for purposes of comparison. The results
Card 3/4 obtained in these tests are given in Tabs 1 and 2; they

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An Experimental Investigation of the p-v-t Relationship of Carbon Dioxide

agree with those of Michels within 0.2%. Some values of specific volume obtained during the initial tests are given in Tab 10. Three series of tests were made in which the specific volume of carbon dioxide was determined on nine isotherms over the temperature range of 75 - 500°C and the pressure range of 27.64 to 323.41 kg/cm^2; the results are given in Tabs 1 - 10. The measurements were made two or three times on each isotherm, and agreement between the three tests was good in all cases. The reproduceibility of the data was not worse than 0.1% in the value of pv, and was 0.25% in one case only. The results are plotted in a z-p diagram in Fig 4. They are briefly compared with those of other authors, and it will be seen from Fig 4 that the divergence increases with increase in temperature and pressure, indicating the need for further study of this question. There are 4 figures, 10 tables and 11 references, 8 of which are Soviet and 3 English.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Institute)

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BELINSKIY, Semen Yakovlevich; VUKALOVICH, M.P., red.; KIRILLIN, V.A., red.; KOMAROV, L.P., red.; MEYKLER, M.V., red.; TYURIN, P.Ya., red.; SKVORTSOV, A.A., red.; LARIONOV, G.Ye., tekhn.red.

[Heat and electric power plants and heating from central stations] Teplofikatsiia i teploelektrotsentrali. Moskva, Gos.energ.izd-vo, 1960. 86 p. (Biblioteka teplotekhnika, no.4). (MIRA 13:9)
(Heating from central stations)
(Electric power plants)

DIMENTBERG, F.M., doktor tekhn.nauk; LYUKSHIN, V.S., kand.fiz.-mat.nauk; NIBERG, N.Ya., kand.tekhn.nauk; OBMORSHEV, A.N., prof., doktor tekhn.nauk; PLUZHNIKOV, I.S., kand.fiz.-mat.nauk; UMANSKIY, A.A., prof., doktor tekhn.nauk; ACHERKAN, N.S., prof., doktor tekhn.nauk, red.; VUKALOVICH, M.P., prof., doktor tekhn.nauk, laureat Leninskoy premii, red.; KUDRYAVTSEV, V.N., prof., doktor tekhn.nauk, red.; PONOMAREV, S.D., prof., doktor tekhn.nauk, laureat Leninskoy premii, red.; SATEL', E.A., prof., doktor tekhn.nauk, red.; SERENSEN, S.V., akademik, red.; RESHETOV D.N., prof., doktor tekhn.nauk, red.; GIL'DEN-BERG, M.I., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Reference book for machinery designers in six volumes] Spravochnik mashinostroitelia; v shesti tomakh. Red.sovet: N.S.Acherkan i dr. Izd.3., ispr. i dop. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry. Vol.1. Pod red.N.S.Acherkana. 1960. 592 p. (MIRA 13:10)

1. AN USSR (for Serensen). (Machinery--Design)

VUKALOVICH, M.P., doktor tekhn. nauk, prof.; ZUBAREV, V.N., kand. tekhn. nauk; PRUSAKOV, P.G., inzh.

Experimental study of the enthalpy of steam. Teploenergetika 10 no.10:63-69 O'63 (MIRA 17:7)

1. Moskovskiy energeticheskiy institut.

BURDUN, Grigoriy Dmitriyevich, prof.; KALASHNIKOV, Nikolay Vasil'yevich; STOTSKIY, Lev Rudol'fovich; VUKALOVICH, M.P., prof., doktor tekhn. nauk, laureat Leninskoy premii, retsenzent; SHIROKOV, K.P., doktor tekhn. nauk, retsenzent; PERKOVSKAYA, G.Ye., red.

[International system of units] Mezhdunarodnaia sistema edinits. Moskva, Vysshaia shkola, 1964. 273 p. (MIRA 17:11)

1. Rukovoditel' kafedry teoreticheskikh osnov teplotekhniki Moskovskogo energeticheskogo instituta (for Vukalovich).
2. Rukovoditel' metrologicheskogo otdela Vsesoyuznogo nauchno-issledovatel'skogo instituta metrologii im. D.I. Mendeleyeva (for Shirokov).

ACCESSION NR: AP4044560 S/0096/64/000/009/0068/0071

AUTHORS: Vukalovich, M. P. (Doctor of technical sciences, Professor); Altunin, V. V. (Candidate of technical sciences); Gureyev, A. N. (Engineer)

TITLE: An experimental study of the heat capacity c_p of carbon dioxide at high pressures

SOURCE: Teploenergetika, no. 9, 1964, 68-71

TOPIC TAGS: carbon dioxide, heat capacity, flow rate/ PPTV 1 potentiometer, DM 8 differential manometer

ABSTRACT: Using an adiabatic calorimeter in a semiclosed circulation system with the experimental setup described by M. P. Vukalovich and A. N. Gureyev ("Teploenergetika" No. 8, 1964) the heat capacity c_p of CO_2 was measured on the basis of $c_p = \frac{Q-q}{G(\Delta t + \delta t_{tr})}$; where Q is the quantity of heat given off by the calorimeter heater controlled by a PPTV-1 potentiometer in the heater power supply (8-21 KJ/hr). The thermal losses q of the calorimeter at the experimental pressures employed and the temperatures $<100C$ are insignificant. The temperature differences (Δt is the gas temperature increase in the calorimeter with the heater in, δt_{tr} is the temperature difference caused by the throttling of the gas in the calorimeter) were

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ACCESSION NR: AP4044560

measured at the gas outlet with the gas inlet temperature maintained constant. G is the gas flow through the calorimeter, controlled by a differential manometer DM-8 and measured in a volume flow meter. The collected gas was thermally stabilized for 24 hours, and the volume V was calculated to determine G by $G = \frac{V\rho}{\tau} + k$, where: ρ is the CO_2 density, and k is a correction factor which, at the low collection pressure, was $< 0.01\%$. This calculation gave G with a maximum error $\sim 0.15\%$ over the flow range 2-5 kg/hr. The calorimetric temperature increase was limited to 4C, and the resulting c_p on the isobar was shown to be linearly dependent on the temperature. The experimental points plotted had a maximum scatter of 0.3%, which lies within the limit of reproducibility. The systematic error was calculated as 0.6%, giving a total error $< 0.9\%$. The c_p measurements for CO_2 were compared to measurements of V. E. Schrock (Nat. Adv. Comm. Aeronaut. Tech. Note No. 2838, 1952) which were found to be low by 2.5%, and to measurements by E. I. Workman (Phys. Rev, v. 36, 1083, 1930; v. 37, 1345, 1931; v. 38, 587, 1931) which were low by as much as 1%. A comparison with calculated values (including Circ 564, Nat. Bur. Stand., 1955) showed that the calculated values were considerably in error. Orig. art. has: 3 figures and 3 tables.

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ACCESSION NR: AP4044560

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Engineering Institute)

SUBMITTED: 00 ENCL: 00

SUB CODE: TD NO REF SOV: 003 OTHER: 008

Card 3/3

ACCESSION NR: AP4037641 S/0096/64/000/006/0056/0058

AUTHOR: Vukalovich, M. P. (Doctor of technical sciences, Professor); Rasskazov, D. S. (Candidate of technical sciences); Popov, V. N. (Candidate of technical sciences); Babikov, Yu. M. (Engineer)

TITLE: Thermophysical properties of monoisopropyldiphenyl

SOURCE: Teploenergetika, no. 6, 1964, 56-58

TOPIC TAGS: monoisopropyldiphenyl, Hagen Poiseuille equation, Vargaftik equation.

ABSTRACT: The authors present the results of an experimental investigation of the density, thermal conductivity, heat capacity, and viscosity of monoisopropyldiphenyl. The density was determined by the pyncometric method at room temperature and by the piezometric method for a constant volume at t = 50-350C. From the experimental results the authors determined that the temperature dependence of the density is

$$\rho = 984.3 - 0.473t - 0.811 \cdot 10^{-3}t^2, \ kg/m^3 \qquad (1)$$

Calculation and experiment agreed within 0.3%. Thermal conductivity was deter-

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mined at t = 30-230C. The experimental data are well described by the Vargaftik equation ("Teplofizicheskiye svoystva veshchestv," Gosenergoizdat, 1956.)

$$\lambda = B\rho^{4/3} \quad (2)$$

Calculation accuracy was within experimental error. Viscosity was computed according to the Hagen-Poiseuille equation

$$V = \frac{\pi \Delta p r^4 \tau}{8L\eta} \quad (3)$$

and was measured at t = 20-350C. Heat capacity was determined according to a formula obtained from the thermal balance of two calorimeters, and was measured at t = 38-212C. Experimental data are described by the following equation

$$c_p = 1.620 + 34.8 \cdot 10^{-4} t \quad (5)$$

ACCESSION NR: AP4037641

Discrepancy between calculation and experiment did not exceed 1.3%. All the above values agree within experimental error with those obtained by N. B. Vargaftik et al. ("Neft' i gaz" no. 7, 1963). Orig. art. has: 1 figure, 5 formulas, and 2 tables.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Institute)

SUBMITTED: 00 DATE ACQ: 22Jun64 ENCL: 00

SUB CODE: OC, TD NO REF SOV: 013 OTHER: 001

Card 3/3

ANTSYFEROV, M.S., kand.fiz.-mat.nauk; VUKALOVICH, M.P., prof., doktor tekhn.nauk, laureat Leninskoy premii; KRIPETS, E.S., inzh.; LAZAREV, L.P., prof., doktor tekhn.nauk; MAZYRIN, I.V., inzh.; NIKITIN, N.N., kand.fiz.-mat.nauk; OCHKIN, A.V., inzh.; PANICHKIN, I.A., prof., doktor tekhn.nauk; PETUKHOV, B.S., prof., doktor tekhn.nauk; PODVIDZ, L.G., kand.tekhn.nauk; SIMONOV, A.F., inzh.; SMIRYAGIN, A.P., kand.tekhn.nauk; TOKMAKOV, G.A., kand.tekhn.nauk; FAYNZIL'BER, E.M., prof., doktor tekhn.nauk; KHALIZEV, G.P., kand. tekhn.nauk; CHESACHENKO, V.F., kand.tekhn.nauk; YAN'SHIN, B.I., kand.tekhn.nauk; ACHERKAN, N.S., prof., doktor tekhn.nauk, red.; KUDRYAVTSEV, V.N., prof., doktor tekhn.nauk, red.; PONOMAREV, S.D., prof., doktor tekhn.nauk, laureat Leninskoy premii, red.; SATEL', E.A., prof., doktor tekhn.nauk, red.; SERENSEN, S.V., akademik, red.; RESHETOV, D.N., prof., doktor tekhn.nauk, red.; KARGANOV, V.G., inzh., red.graficheskikh materialov; GIL'DENBERG, M.I., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Manual of a mechanical engineer in six volumes] Spravochnik mashinostroitelia v shesti tomakh. Red.sovet N.S.Acherkan i dr. Izd.3., ispr. i dop. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Vol.2. 1960. 740 p. (MIRA 14:1)

1. AN USSR (for Serensen).
(Mechanical engineering) (Machinery--Construction)

24,5200

SOV/96-60-1-14/22

AUTHORS: Vukalovich, M. P., Doctor of Technical Sciences, and Dzampov, B. V., and Zubarev, V. N., Candidates of Technical Sciences

TITLE: Tables of the Thermal-physical Properties of Ammonia

PERIODICAL: Teploenergetika, 1960, Nr 1, pp 63-69 (USSR)

ABSTRACT: Extensive use is now being made of ammonia as a heat-transfer medium, but adequate tables of its thermal physical properties are not available. Accordingly, the authors decided to study, analyse and select the most reliable experimental and calculated data on the properties of ammonia and to work out the tables given in this article. The tables of pressure, volume and temperature cover the range of 40 - 290°C; those of specific heat at constant pressure are for the range 40 - 280°C; and the viscosity tables cover from 30 - 250°C. The pressure range is 1 - 800 kg/cm^2 in all cases. International published work on the properties of ammonia is critically reviewed and the best is used in formulation of the tables. Table 1 gives values of the specific volume of ammonia for temperatures up to 290°C; available values for higher temperatures were not

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Tables of the Thermal-physical Properties of Ammonia

used because there is evidence of decomposition of ammonia above 290°C. The values tabulated were obtained by calculation and graphical methods. There is satisfactory agreement with other authors and differences do not exceed 0.2 - 0.3%. Work done on the specific heat at constant pressure is reviewed. Values were calculated or determined graphically and the results are plotted in Fig 2. It was considered that the errors in this table may be 2 - 3%, and on the 150°C isotherm at pressures of 100 - 150 kg/cm^2 they may be somewhat greater. The properties of ammonia on the saturation line have been studied by several authors but the data remain inadequate; the thermo-dynamic properties of ammonia on the saturation line from temperatures of - 70 to + 132.4°C are given in Table 3. Work on the viscosity of ammonia is reviewed and values are given in Table 4. It is considered that the values in this table are accurate and reliable up to 250°C and 800 kg/cm^2. There are 1 figure, 4 tables and 13 references, 4 of which are Soviet, 8 English and 1 German.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Institute)

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VUKALOVICH, M.P., doktor tekhn.nauk; DZAMPOV, B.V., kand.tekhn.nauk; ZUBAREV, V.N., kand.tekhn.nauk

Thermodynamic properties of a 96 percent (by volume) solution of ethyl alcohol in water. Teploenergetika 7 no.2:70-77 F '60. (MIRA 13:5)

1. Moskovskiy energeticheskiy institut.
(Ethyl alcohol--Thermal properties)

VUKALOVICH, M.P., doktor tekhn.nauk; KIRILLIN, V.A.

Development of thermal power engineering in the U.S.S.R. and the problems of thermodynamics. Teploenergetika 7 no.7: 3-4 Jl '60. (MIRA 13:7)

1. Chlen-korrespondent AN SSSR (for Kirillin)
(Power engineering) (Thermodynamics)

VUKALOVICH, M.P., doktor tekhn.nauk; IZAMPOV, B.V., kand.tekhn. nauk; RASSKAZOV, D.S., kand.tekhn.nauk; REMIZOV, S.A. inzh.

Thermal properties of water under pressures up to 1200 kg/cm^2 and at temperatures up to 300°C. Teploenergetika 7 no.7:4-12 Jl '60. (MIRA 13:7)

1. Moskovskiy energeticheskiy institut.
(Water--Thermal properties)

VUKALOVICH, M.P., doktor tekhn.nauk; ZUBAREV, V.N., kand.tekhn.nauk; DZAMPOV, B.V., kand.tekhn.nauk

Calorific properties of the 96 per cent (by volume) ethyl alcohol water solution. Teploenergetika 7 no.10:63-67 O '60. (MIRA 14:9)

1. Moskovskiy energeticheskiy institut.
(Ethyl alcohol)

MEYKLYAR, Mikhail Vladimirovich; VUKALOVICH, M.P., red.; KIRILLIN, V.A., red.; KOMAROV, L.P., red.; TYURIN, P.Ya., red.; TROYANSKIY, Ye.A., red.; BORUNOV, N.I., tekhn. red.

[Engineering performance of the metal of a steam boiler] Kak rabotaet metall parovogo kotla. Moskva, Gos. energ. izd-vo, 1961. 93 p. (Biblioteka teplotekhnika, no.8) (MIRA 14:8)
(Boilers) (Metals)

VUKALOVICH, M.P. (Moskva); NOVIKOV, I.I. (Moskva)

Remarks on the equation describing the exponent of the adiabatic of wet steam. PMTF no.3:108-110 S-O '61. (MIRA 14:8)
(Differential equations) (Steam)

KIRILLIN, V.A.; VUKALOVICH, M.P., doktor tekhn.nauk

Future developments in power engineering and new problems in the physics of heat. Teploenergetika 8 no.6:3-5 Je '61. (MIRA 14:10)

1. Chlen-korrespondent AN SSSR (for Kirillin).
(Electric power) (Thermodynamics)

VUKALOVICH, M.P., doktor tekhn.nauk; DZAMPOV, B.V., kand.tekhn.nauk; RASSKAZOV, D.S., kand.tekhn.nauk

Thermal properties of water and steam at pressures up to 1000 kg./cm^2 and a temperature range of 300 to 1000° C. Teploener-getika 8 no.7:48-49 Jl '61. (MIRA 14:9)

1. Moskovskiy energeticheskiy institut.
(Water--Thermal properties)
(Steam--Thermal properties)

YUKALOVICH, M.P., doktor tekhn.nauk; [illegible], V.[illegible], kand.tekhn.nauk; [illegible], A.[illegible], ir.[illegible].

Experimental determination of the specific volume for water vapor under temperatures from 400° to 650° C and pressure up to 1200 kilogram per cubic centimeter. Teploenergetika 8 no.10:[illegible]-36 O '61. (MIRA 14:10)

1. Moskovskiy energeticheskiy institut.
(Steam)
(Thermodynamics)

VUKALOVICH, M.P., doktor tekhn.nauk; ALTUNIN, V.V., kand.tekhn.nauk

Thermodynamic properties of carbon dioxide. Teploenergetika 8 no.11:73-80 N '61. (MIRA 14:10)

1. Moskovskiy energeticheskiy institut.
(Carbon dioxide--Thermal properties)

VUKALOVICH, M.P., doktor tekhn.nauk; DZAMPOV, B.V., kand.tekhn.nauk; RASSKAZOV, D.S., kand.tekhn.nauk; REMIZOV, S.A., inzh.

Tables of Cp heat capacity of water and water vapor. Teploenergetika 8 no.12:70-77 D '61. (MIRA 14:12)

1. Moskovskiy energeticheskiy institut.
(Heat--Tables)

VUKALOVICH, Mikhail Petrovich; NOVIKOV, Ivan Ivanovich; KALAFATI, D.D., dots., kand. tekhn.nauk, retsenzent; SILETSKIY, V.S., red.; BORUNOV, N.I., tekhn. red.

[Technical thermodynamics] Tekhnicheskaia termodinamika. Izd. 3 perer. i dop. Pod red. M.P.Vukalovicha. Moskva, Gosenergoizdat, 1962. 304 p. (MIRA 15:7)

(Thermodynamics)

VUKALOVICH M.P., doktor tekhn.nauk, prof.; ZUBAREV, V.N., kand.tekhn.nauk; ALEKSANDROV, A.A., inzh.

Experimental determining of the specific volumes of steam at temperatures from 700° to 900° C and under a pressure up to 1200 Kilogram per square centimeter. Teploenergetika 9 no.1:49-51 Ja '62. (MIRA 14:12)

1. Moskovskiy energeticheskiy institut.
(Steam)

VUKALOVICH, M.P., doktor tekhn.nauk, prof.: ZUBAREV, V.N., kand.tekhn.nauk; PRUSAKOV, P.G., inzh.

Experimental study of the enthalpy of water vapor. Teploenergetika 9 no.3:56-63 Mr '62. (MIRA 15:2)

1. Moskovskiy energeticheskiy institut.
(Steam--Thermal properties)

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AUTHORS: Vukalovich, M.P., Doctor of Technical Sciences, Professor, Zubarev, V.N., Candidate of Technical Sciences, Fokin, L.R., Engineer

TITLE: Calculation of the thermodynamic properties of potassium vapour at temperatures up to 1300°C and pressures up to 25 kg/cm^2

PERIODICAL: Teploenergetika, no.8, 1962, 81-86

TEXT: Potassium vapours are a mixture of molecules of various atomicity (K_1, K_2 etc). The thermodynamic properties of the components such as K_1 and K_2 in the ideal gas condition have been calculated previously up to 2500°K but the properties of mixtures have apparently not been studied. This article shows that to a first approximation and up to the maximum pressures used (about 25 kg/cm^2) it is possible to ignore the reality of the vapours and also the possible presence of molecules K_3, K_4 and so on. Accordingly, the potassium vapours are considered as an equilibrium mixture of chemically reactive ideal monatomic and diatomic gases. Existing data on the following subjects is

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reviewed: heat of dissociation, saturated vapour pressure, equilibrium concentrations and properties of reacting mixture. The available results are used to calculate the values given in Table 2. These values apply on the saturation line. The results obtained are compared with those of other authors and are discussed. An enthalpy/entropy diagram for potassium is plotted. The likely errors in the results are assessed and are mostly of the order of a few percent. There is need for more accurate experimental knowledge of the heat of dissociation of the molecule K_2 and of other properties. The calculations are valid provided that thermodynamic equilibrium is set up in the mixture, but the extent to which this equilibrium is in fact observed, for example during supersonic flow of vapour, requires special consideration. In addition to the work described in this article, tables have been drawn up and diagrams of state constructed for superheated potassium vapour at temperatures up to 1300°C, including the specific heats at the speed of sound; and a more complete table of the properties of the saturated vapour has been drawn up. There are 3 figures and 2 tables.

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ASSOCIATION: Moskovskiy energeticheskiy institut
(Moscow Power Engineering Institute)

Table 2 - column headings:

1 - t, °C
2 - p, kg/cm^2
3 - α" (degree of dissociation)
4 - μ", kg/kmol (weight per kilomole)
5 - v", m^3/kg
6 - i', kcal/kg (enthalpy)
7 - i", kcal/kg (enthalpy)
8 - r, kcal/kg (specific heat of vapourization)
9 - s', kcal/kg °K (entropy)
10 - s", kcal/kg °K (entropy)

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VUKALOVICH, M.P., doktor tekhn.nauk, prof.; ALTUNIN, V.V., kand.tekhn.nauk; TIMOSHENKO, N.I., inzh.

Experimental study of the specific volumes of carbon dioxide under temperatures ranging from 200° C to 750° C and pressures up to 600 kg per square centimeter. Teploenergetika 9 no.5:56-62 My '62. (MIRA 15:4)

1. Moskovskiy energeticheskiy institut.
(Carbon dioxide--Thermal properties)

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AUTHORS: Yukalovich, M.P., Doctor of Technical Sciences, Professor;
Zubarev, V.N., Candidate of Technical Sciences,
Fokin, L.R., Engineer

TITLE: Calculation of thermodynamic properties of potassium at temperatures up to 1300°C and pressures up to 25 kg/cm^2

PERIODICAL: Teploenergetika, no.10, 1962, 65-72

TEXT: Gases dissociating at high temperatures according to $X_2 \rightleftarrows 2X$ are treated as reacting, ideal mono- and bi-atomic components of equilibrium mixtures. A table is compiled for partial derivatives of first order for pressure p, temperature T, degree of dissociation α, specific volume v, entropy s, enthalpy i and internal energy u. This table, compiled on the basis of published work, can also be used for the calculation of α_T - coeff. of heat expansion and isothermal and adiabatic compressibility β_T and β_S respectively. A detailed discussion of a number of thermodynamic properties in the regions of partly condensed vapour and along the saturation curve

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is given; it includes the differential Joule-Thomson effect α_{JT} for superheated vapour and by referring p, α, c_p to saturation curve it is possible to calculate the JT effect on the saturation curve, from the side of the single phase region. The Clausius-Clapeyron equation is used for the evaluation within the condensing vapour region. Detailed attention is given to the application of sound velocity in the analyses of flow processes in vapours. In the calculation of the former, it is assumed that the vapours comprise a hydrodynamically homogeneous medium of reacting ideal gases, their degree of dryness x, being sufficiently high to disregard the volume and compressibility of the liquid phase. The sound velocity is calculated from the Laplace equation, assuming infinitely small adiabatic perturbation propagated in the non-viscous and non (heat) conducting medium. Further assumptions are used in calculating the "thermodynamic" velocity of sound in superheated and saturated vapours on the side of the single phase region of the dissociating vapours. In actual calculations a concept of "sonic adiabatic indicator" was introduced, defined as

Calculation of thermodynamic ...

$k_s = -\frac{v}{p}\left(\frac{\partial p}{\partial v}\right)_s$, which in the case of dissociating gas was expressed as: $k_s = \frac{c_p}{c_v(1+\xi)}$, where $\xi = \frac{\alpha}{2}(1-\alpha)$.

The considerably more complex flow processes of the partly condensed vapour are also considered using largely formulae and conditions stipulated by I.I.Novikov and Yu.S.Trelin (Prikladnaya mekhanika i tekhnicheskaya fiziki, no.2, 1960). The latter are also used to compile a table of thermodynamic properties of potassium vapours from 500 to 1300°C, taking heat of dissociation $D_o^0(K_2) = 11842 + 1000$ kcal/mol and taking the values of saturation pressure by extrapolating the equilibrium vapour to liquid from 800 to 1300°C from the experimental enthalpy data of liquid potassium. The table of saturated potassium vapour lists: heat contents c_{sat}, c_p "sing.ph., c_v" sing.ph. and c_v"two ph.; differential JT effect α_{JT}"sing.ph. and α_{JT}"two ph. and the above k_s as k_s"sing.ph. and k_s"two ph. and also sound velocities a"sing.ph. and α"two ph.. Yet another table lists the

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Calculation of thermodynamic ...

following properties of superheated potassium vapours: α, specific volumes, i and s. Additional three diagrams give the results of calculations on the side of the superheated vapour viz. c_p vs t°C; k_s vs t°C and a vs s, the last including the region of condensing vapour up to 0.6. Brief general conclusions and error analysis are included. There are 3 figures and 3 tables.

ASSOCIATION: Moskovskiy energeticheskiy institut
(Moscow Power Engineering Institute)

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E194/E455

AUTHORS: Vukalovich, M.P., Doctor of Technical Sciences, Professor,
Altunin, V.V., Candidate of Technical Sciences,
Timoshenko, N.I., Engineer

TITLE: An investigation of the compressibility of carbon dioxide at high temperatures

PERIODICAL: Teploenergetika, no.2, 1963, 92-93

TEXT: Data on specific volumes of CO_2 in the temperature range of 200 to 750°C and at pressures up to 600 kg/cm^2 previously published (Teploenergetika, no.5, 1962) are supplemented by new data for the following isotherms: 650, 700, 750 and 803.34°C at pressures in the range 21 to 201 kg/cm^2. Possible errors in the results are discussed: they may be greatest at the highest temperature because a heater failed during the tests. The possibility of dissociation of the CO_2 during the tests and its possible reaction with the steel are discussed. There is 1 figure.

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VUKALOVICH, M.P., doktor tekhn.nauk, prof.; ALTUNIN, V.V., kand.tekhn.nauk; TIMOSHENKO, N.I., inzh.

Experimental determination of the specific volume of carbon dioxide at temperatures ranging from 40 to 150° C and pressures up to 600 kg./cm^2. Teploenergetika 10 no.1:85-88 Ja '63. (MIRA 16:1)

1. Moskovskiy energeticheskiy institut.
(Carbon dioxide)