TSUKERVANIK, I.P.; MANSUROV, M.U.

Condensation of beta-chloroethyl esters of benzene sulfonic acid and chlorosulfonic acid with benzene. Dokl.AN Uz.SSR no.11:29-33 '56. (MIRA 13:6)

1. Sredneaziatskoy gosudarstvennyy universitet imeni V.I.Lenina i Sredneaziatskiy politekhnicheskiy institut. 2. Chlen-korrespondent AN UzSSR (for TSukervanik).
(Benzene) (Sulfonic acids)

TSUKERVANIK, I.P.; KOVINA, I.M.; BUGROVA, L.V.

Condensation of 1-chloro-3-bromopropane with benzene. Uzb. khim.zhur. no.5:69-75 '58. (MIRA 12:2)

1. Sredneaziatskiy gosudarstvennyy universitet. 2. Chlen-korrespondent AN UzSSR (for TSukervanik).
(Propane) (Benzene)

ROZHKOVA, N.K.; TSUKERVANIK, I.P.

Alkylation of aromatic compounds in the presence of metallic zirconium. Dokl.AN Uz.SSR no.1:21-24 '59. (MIRA 12:4)

1. Chlen-korrespondent AN UzSSR (for TSukervanik). 2. Institut khimii AN UzSSR.
(Aromatic compounds) (Alkylation)

GOLOVYASHKINA, L.F.; TSUKERVANIK, I.P.

Condensation of 1,1,1-trichloroethanol with benzene. Dokl. AN Uz.SSR no.2:23-24 '59. (MIRA 12:4)

1. Sredneaziatskiy gosudarstvennyy universitet im. V.I. Lenina. Chlen-korrespondent AN UzSSR (for TSukervanik).
(Ethanol) (Benzene) (Condensation products (Chemistry))

MANSUROV, M.U.; TSUKERVANIK, I.P.

Alkylation of benzene with the d-chlorobutyl ester of benzenesulfonic acid. Dokl.AN Uz.SSR no.9:23-26 '58. (MIRA 11:12)

1. Chlen-korrespondent AN UzSSR (for Tsukervanik). 2. Sredneaziatskiy gosudarstvennyy universitet im. V.I.Lenina.
(Benzene) (Benzenesulfonic acid) (Alkylation)

MEL'KANOVITSKAYA, S.G.; TSUKERVANIK, I.P.

Homolytic alkylation of aromatic series. Izv. AN Uz. SSR. Ser. khim. nauk. no.3:51-66 '57. (MIRA 11:9)

1.Chlen-korrespondent AN UzSSR (for TSukervanik).
(Alkylation)

TSUKERVANIK, L.P.; ROZHKOVA, N.K.

New metallic catalysts in the alkylation of aromatic compounds.
Dokl. AN Uz.SSR no.7:23-26 '58. (MIRA 11:10)

1. Institut khimii AN UzSSR. 2. Chlen-korrespondent AN UzSSR (for TSukervanik).
(Aromatic compounds) (Alkylation) (Catalysts)

MEL'KANOVITSKAYA, S.G.; TSUKERVANIK, I.P.

Radical and ionic alkylation in aromatic series. Part 7: Butylation of benzene, naphthalene, phenol and anisole. Zhur. ob. khim. 28 no. 8:2032-2038 Ag '58. (11:10)

1. Institut khimii AN UzSSR.
(Alkylation)

TSUKERVANIK, I.P.;BELINSON, Z.Ya.

Condensation of trichlorotoluene with benzene in the presence of aluminum chloride. Zhur. ob. khim. 28 no. 8:2038-2042 Ag '58. (MIRA 11:10)

1. Sredneaziatskiy gosudarstvennyy universitet.
(Toluene)
(Benzene)
(Condensation products(Chemistry))

AUTHOR: Tsukervanik, I. P. SOV/20-120-4-33/67

TITLE: Acylation of the Nucleus of Aromatic Compounds in the Preserce of Metals (Atsilirovaniye yadra aromaticheskikh soyedineniy v prisutstvii metallov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 12o, Nr 4, pp. 809-811 (USSR)

ABSTRACT: Already in earlier papers which were dealing with the investigation of Tsinke's reaction several experiments were described dealing with the acylation of aromatic hydrocarbons by chloro acetic anhydrides in the presence of zinc dust and iron (Refs 1 - 4). Good yields were obtained in the case of acylation of naphthalene (for the synthesis of 1,5-dibenzoyl--naphthalene, patent Ref 5). As basis the author used his papers on a homolytic alkylation of the aromatic nucleus (Refs 8 - 10) and he investigated the acylation as mentioned in the title. The mixtures were heated to temperatures of 90 - 150°. Copper, tungsten- and molybdenium powder were used with chloro acetic anhydride. The condensation proceeds under an intensive separation of HCl which ceases after 4 - 16 hours. In connection with the use of copper a certain amount of

Card 1/3

Cu_2Cl_2 is formed; other metals do not change considerably and may be used for repeated experiments. The results of acylation depend on the boiling temperature of chloroanhydride and the mobility of the hydrogen atoms of the aromatic nucleus. The benzoylation of anisole and m-xylol is achieved most easily. The yields produced are close to those theoretically found. Control experiments without catalyst under the same conditions did not give ketones. Considerable yields of 4-methoxy-benzophenone (95 %), 2,4-dimethylbenzophenone (97 %) and 4-methoxy-caprophenone (60 %) were produced. Table 1 shows the results of some reactions. The constants correspond to the data mentioned in publications. In the case of toluene only 50 % of methylbenzophenone were obtained, in the case of benzene 20 % of benzophenone and in the case of chlorobenzene only ketone traces. Benzene and toluene could not be acylated. In the case of m-xylol 20 % of 2,4-dimethyl-acetophenone and in the case of anisole - 30 % of 4-methoxyl-benzophenone were obtained. The favorable conditions have apparantly not been found hitherto. The author is of opinion that the method of acylation of the aromatic compounds offers advantages compared with the reaction in the

Acylation of the Nucleus of Aromatic Compounds in the Presence of Metals

presence of aluminum chloride. There are 1 table and 10 references, 4 of which are Soviet.

ASSOCIATION: Sredneaziatskiy gosudarstvennyy universitet im. V. I. Lenina (Central Asia State University imeni V. I. Lenin)

PRESENTED: February 5, 1958, by A. A. Balandin, Member, Academy of Sciences, USSR

SUBMITTED: February 4, 1958

1. Cyclic compounds--Acylation 2. Chloroacetic anhydrides--Chemical reactions 3. Metal powders--Catalytic properties 4. Substitution reactions

Card 3/3

USSR/weeds and their Control N

Abs Jour : Ref Zhur-Biol., No 2, 1958, 6410

Author : Tsukervanik I. P. Romanova I. B.
Inst :
Title : New Preparations for Acceleration of Cotton Picking

Orig Pub : Dokl. AN UzSSR, 1956, No 6, 11-14

Abstract : As indicated by tests conducted at the Institute of Argiculture of AN UZbek SSR at the Plant Protection Station of All-Union Scientific-Research Institute, thiourea and its derivatives (dithio carbamate of ammonium, mercaptonbenzothiazole, phenylthiourea, and others) appear to be good preparations for pre-harvesting removal of cotton leaves. Ethers in unlimited amounts accelerated the opening of immature bolls.

Card 1/1

GOLOVYASHKINA, L.F.; TSUKERVANIK, I.P.

Condensation of 1,1,1 - trichloro butyl alcohol with benzene.
Dokl. AN Uz. SSR no.6:33-35 '57. (MIRA 11:5)

1. Sredneaziatskiy gosudarstvennyy universitet im. V.I. Lenina.
2. Chlen-korrespondent AN UzSSR (for TSukervanik).
(Butyl alcohol) (Benzene)
(Condensation products (Chemistry))

TSUKERVANIK, I.P.

Acylation of the aromatic nucleus in the presence of metals. (MIRA 11:8)
Dokl. AN SSSR 120 no 4:809-811 Je '58.

1. Sredneaziatskiy gosudarstvennyy universitet. Predstavleno akademikom A.A.Balandinym.

(Acylation)
(Ring(Chemistry))

SOKOL'NIKOVA, M.D.; TSUKERVANIK, I.P.

Amino derivatives of 1,1-diphenylethane. Dokl. AN Uz. SSR no.9: 29-31 '57. (MIRA 11:5)

1. Institut khimii AN UzSSR. 2. Chlen-korrespondent AN UzSSR (for TSukervanik).

(Ethane)

GOLOVYASHKINA, L.S.; TSUKERVANIK, I.P.

Condensation of 1,1,1-trichloroisopropyl alcohol with benzene.
Dokl. AN Uz. SSR no.2:31-33 '58. (MIRA 11:5)

1.Chlen-korrespondent AN UzSSR (for TSukervanik). 2.Sredne-aziatskiy gos. universitet im. V.I. Lenina.
(Propanol) (Benzene)
(Condensation products (Chemistry))

Tsukervanik, I.P.

MANSUROV, M.U.; TSUKERVANIK, I.P.

Reaction of β-chloroethyl ester of chlorosulfonic acid with aromatic compounds. Dokl. AN Uz. SSR no.12:23-26 '57. (MIRA 11:5)

1.Chlen-korrespondent AN UzSSR (for TSukervanik).
2.Sredneazaitskiy gos. universitet im. V.I. Lenina.
(Chlorosulfonic acid) (Cyclic compounds)

TSUKERVANIK, I.P.

MEL'KANOVITSKAYA, S.G.; TSUKERVANIK, I.P.

Radical and ionic alkalation of the aromatic ring. Part 6: Chlorodiphenylmethane reaction with toluene and benzene. Zhur. ob. khim. 28 no.1:11-15 Ja '58. (MIRA 11:5)

1.Institut khimii Akademii nauk Uzbekskoy SSR.
(Methane) (Benzene) (Toluene)

TSUKERVANIK, T.I.

Regeneration of vegetation on waste lands. Trudy TashGU no.187: 167-174 '61. (MIRA 15:3)

1. Tashkentskiy gosudarstvennyy universitet imeni Lenina.
(Angren Valley--Botany)

TSUKERVANIK, Ya. P.

The Chulak-Kurgan Bolide of 25 January 1929, Miroved., Vol 18 (1929)

TSUKERZIS, Ya.M. [Cukerzis, J.]

Interspecific relations between the crayfishes Astacus astacus L. and Astacus leptodactylus Esch. in the lakes of eastern Lithuania. Zool. zhur. 43 no.2:172-177 '64. (MIRA 17:6)

1. Institut zoologii i parazitologii Akademii nauk Litovskoy SSR (Vil'nyus).

ACC NR: AP6034103 SOURCE CODE: UR/0089/66/021/004/0300/0302

AUTHOR: Tskhvirashvili, D. G.; Vasadze, L. Ye.; Tsukh, A. S.

ORG: none

TITLE: Distribution of the corrosion products of structural materials and neutron irradiation

SOURCE: Atomnaya energiya, v. 21, no. 4, 1966, 300-302

TOPIC TAGS: corrosion, neutron irradiation, boiling water reactor, aluminum, carbon steel, radioactivity measurement

ABSTRACT: The authors describe experiments on the determination of the coefficients of distribution of corrosion products of aluminum and carbon steel in an experimental apparatus made of 1Kh18N9T stainless steel irradiated with neutrons and kept under a pressure of 78—176 bar. The main purpose of the investigation was to ascertain what fraction of the corrosion products finds its way from water into steam in boiling-water reactors. The test apparatus (Fig. 1) was designed to be filled with a prescribed amount of bidistillate and kept in the reactor channel for a specified time. Samples of steam and water were then taken, and if the activity of the steam sample exceeded the background activity, the experiment was regarded as complete; otherwise, the experiment was continued. The main activity was produced by Na^{24} in the case of aluminum and Co^{58} or Fe^{59} in the case of carbon steel. The experimental results were plotted in the form of the dependence of the distribution coefficient (the ratio of

 UDC: 621.039.534.4

ACC NR: AP6034103

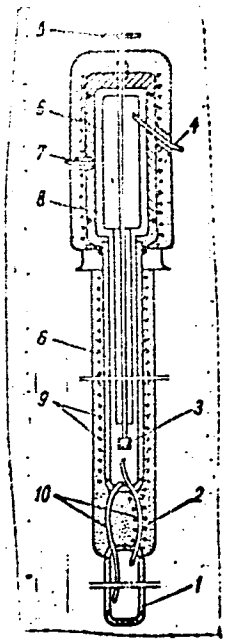


Fig. 1. Diagram of measuring apparatus. 1 - Cartridge; 2 - heat insulation; 3 - filter; 4 - steam sampling; 5 - tee; 6 - steam jacket; 7 - tube to manometer; 8 - housing; 9 - electric heaters; 10 - circulation tubes.

the activities of the samples of steam and water) on the ratio of the solvent phase densities. The distribution coefficients of Na^{24} agree well with the distribution coefficients of NaOH in the absence of neutron irradiation. In the case of steel, the distribution coefficients turn out to be close to those of the corrosion products of other heavy metals (Co, Ni, Cu, Mn, Cr). These distribution coefficients are appreciable not only at superhigh pressures but also at medium pressures, and neutron irradiation has no influence on the transition of the corrosion products to the vapor state, the governing factor being the radius of the hydrate molecule, which is not changed by neutron bombardment. Orig. art. has: 4 figures.

SUB CODE: 18/ SUBM DATE: 12Mar66/ ORIG REF: 007

Card 2/2

TSUKHA, Kh.

S/035/61/000/012/011/041
A001/A101

AUTHORS: Knayyakava, S., Khayyashi, S , Ito, K., Igarigaki, J., Nishina, [illegible]
Okhiyama, N., Tsukha, Kh., Tsudshi, Kh.

TITLE: The chemical composition of cosmic rays and origin of elements

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 12, 1961, 39, abstract 12A327 ("Tr. Mezhdunar. Konferentsii po kosmich. lucham, 1959, v. 3", Moscow, AN SSSR, 1960, 191 - 195)

TEXT: The authors note that the relative content of heavy nuclei and carbon is very high in primary cosmic radiation, whereas the neon content is very low. An attempt is made to explain these facts on assumption that cosmic rays are accelerated in the early stage of Supernova explosions. The temperature of envelopes during the explosion attains approximately 10^{9}°K, density of envelope is ~(1-100) g/cm^3. Under these conditions aynthesis of heavy nuclei is possible, based on the rapid processes of neutron capture. Since the most important neutron source is neon, its considerable fraction will vanish, and its relative content will decrease. Production of α-particles may proceed as a result of the rapid C-N cycle. In this process the role of beta-decay will be insignificant.

Card 1/2

S/035/61/000/012/011/043
A001/A101

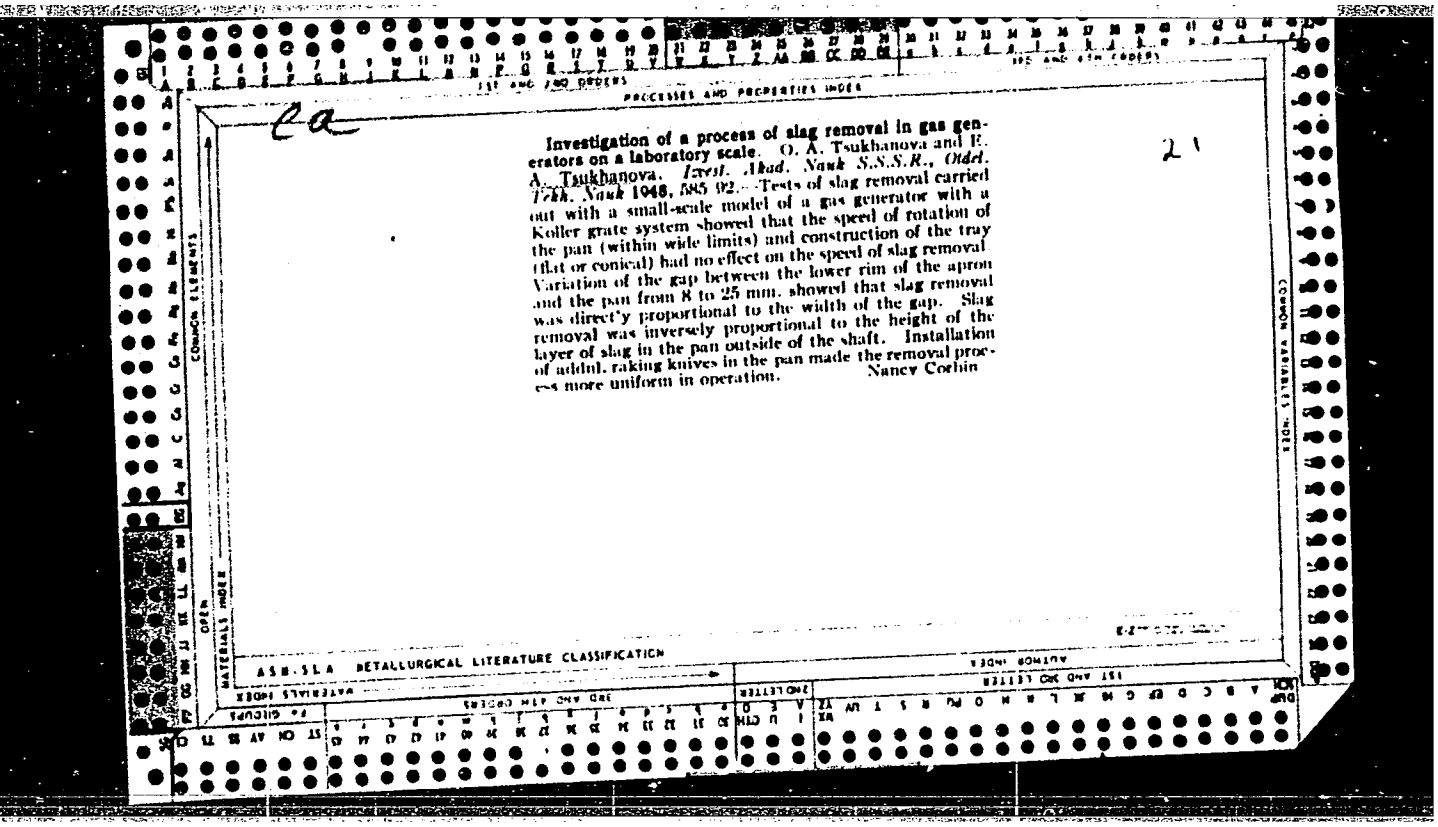
The chemical composition ...

and therefore the relative content of carbon will be increased. Particles produced in Supernova envelope undergo acceleration and a part of them acquire energies of the order of cosmic ray energies. There are 14 references.

L. Dorman

[Abstracter's note: Complete translation]

Card 2/2

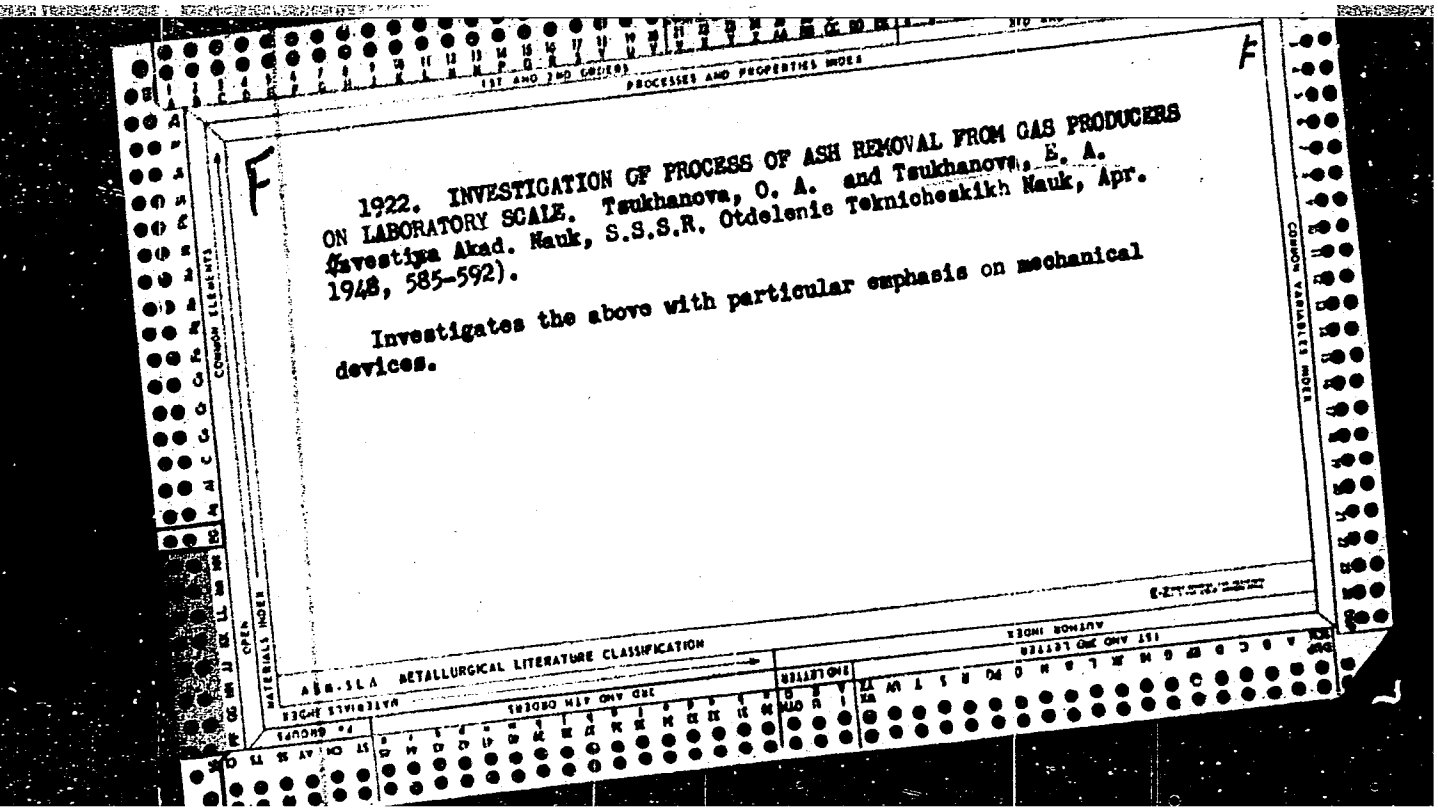


Investigation of a process of slag removal in gas generators on a laboratory scale. O. A. Tsukhanova and E. A. Tsukhanova. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* **1948**, 585-92.—Tests of slag removal carried out with a small-scale model of a gas generator with a Koller grate system showed that the speed of rotation of the pan (within wide limits) and construction of the tray (flat or conical) had no effect on the speed of slag removal. Variation of the gap between the lower rim of the apron and the pan from 8 to 25 mm. showed that slag removal was direct'y proportional to the width of the gap. Slag removal was inversely proportional to the height of the layer of slag in the pan outside of the shaft. Installation of addnl. raking knives in the pan made the removal process more uniform in operation. Nancy Corbin

TSUKHANOVA, A.A.

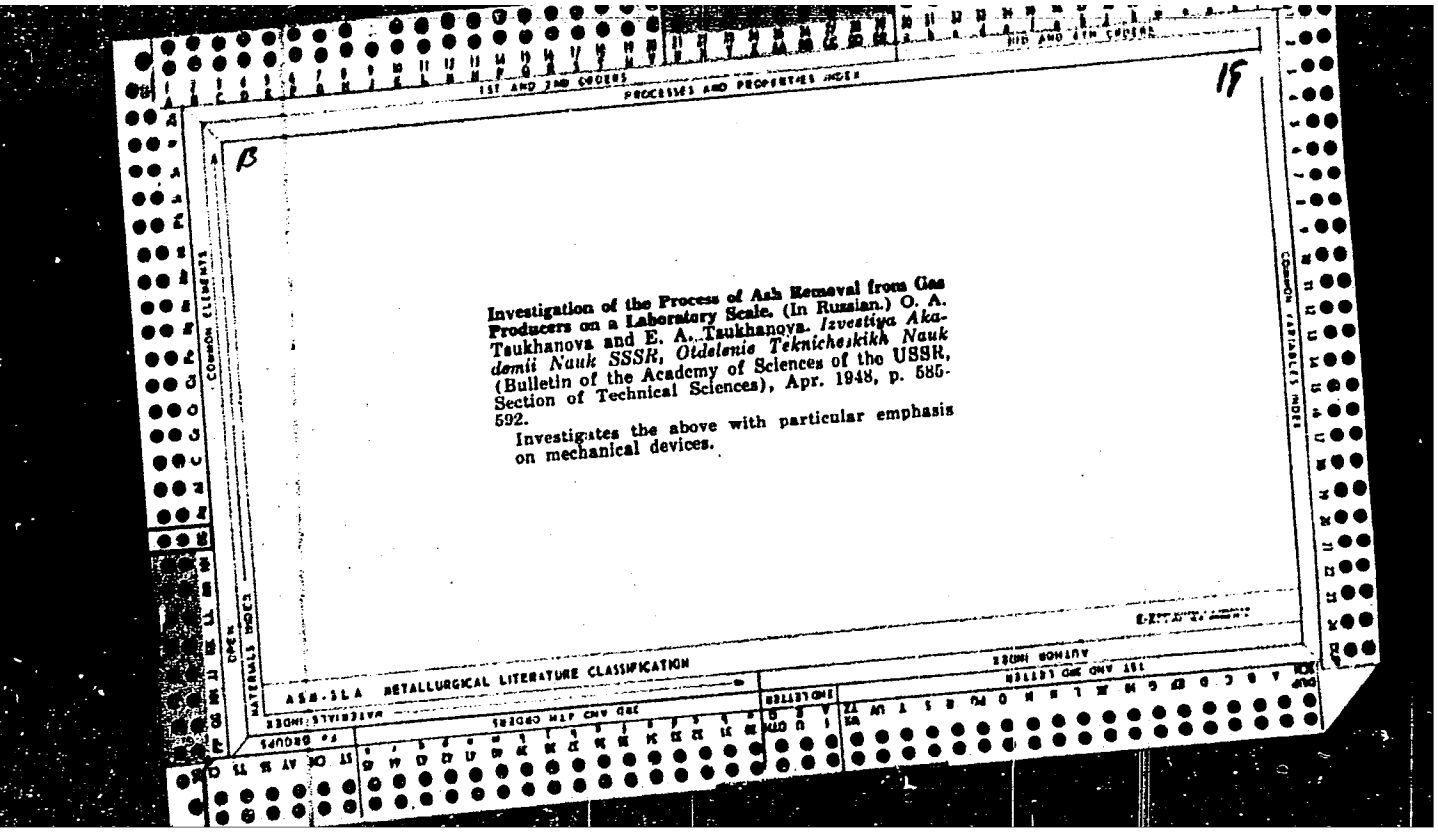
Chondroma of the ethmoidal labyrinth in a 12-year-old boy. Vest. otorin. 22 no.1:88-90 Ja-F '60. (MIRA 14:5)

1. Iz otdeleniya bolezney ukha, gorla i nosa (zav. - dotsent F.F.Malomuzh) Moskovskoy detskoy klinicheskoy bol'nitsy imeni F.E.Dzerzhinskogo.
(NOSE, ACCESSORY SINUSES OF--TUMORS)



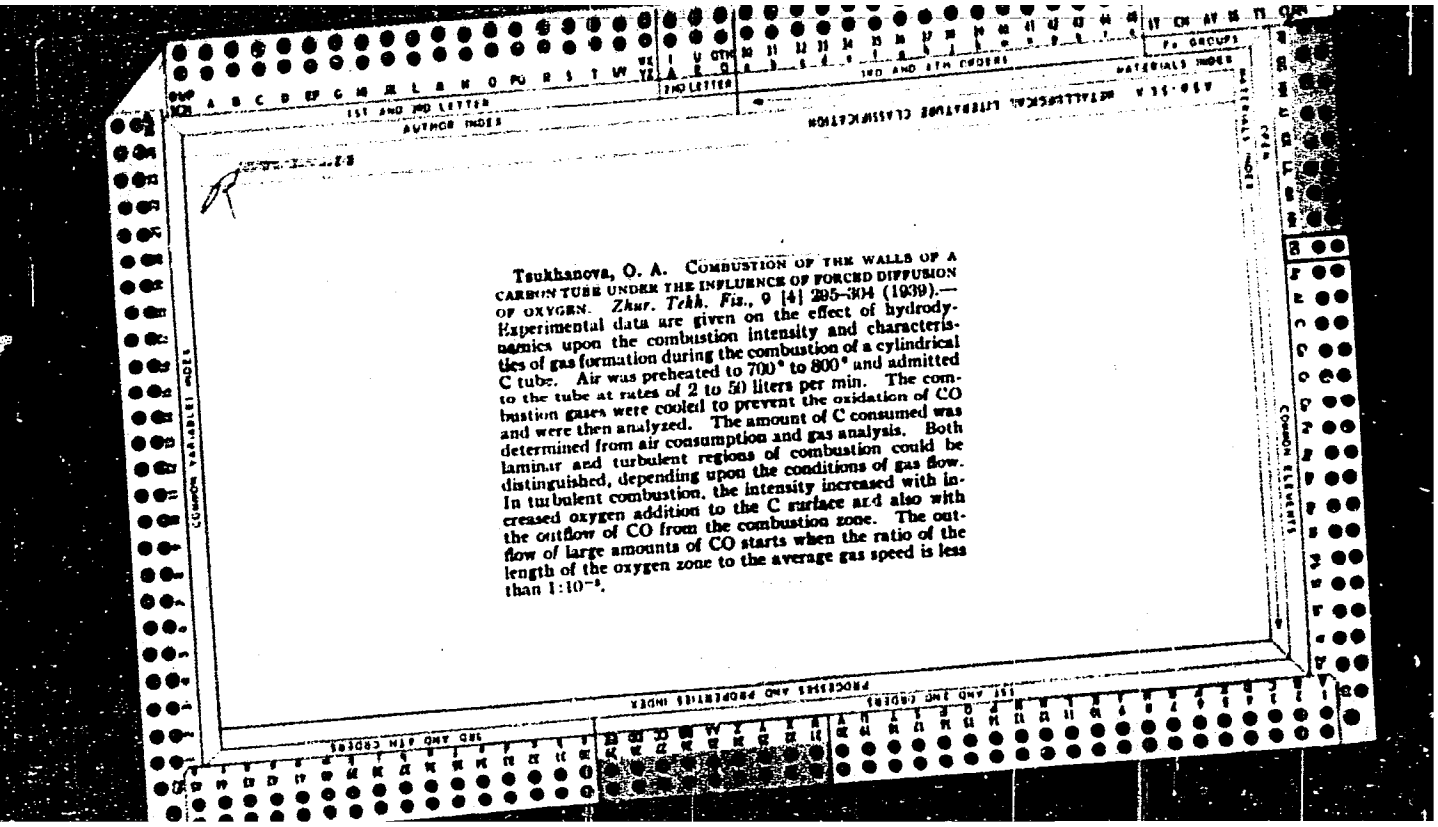
1922. INVESTIGATION OF PROCESS OF ASH REMOVAL FROM GAS PRODUCERS ON LABORATORY SCALE. Tsukhanova, O. A. and Tsukhanova, E. A. Izvestiya Akad. Nauk, S.S.S.R. Otdelenie Tekhnicheskikh Nauk, Apr. 1948, 585-592).

Investigates the above with particular emphasis on mechanical devices.

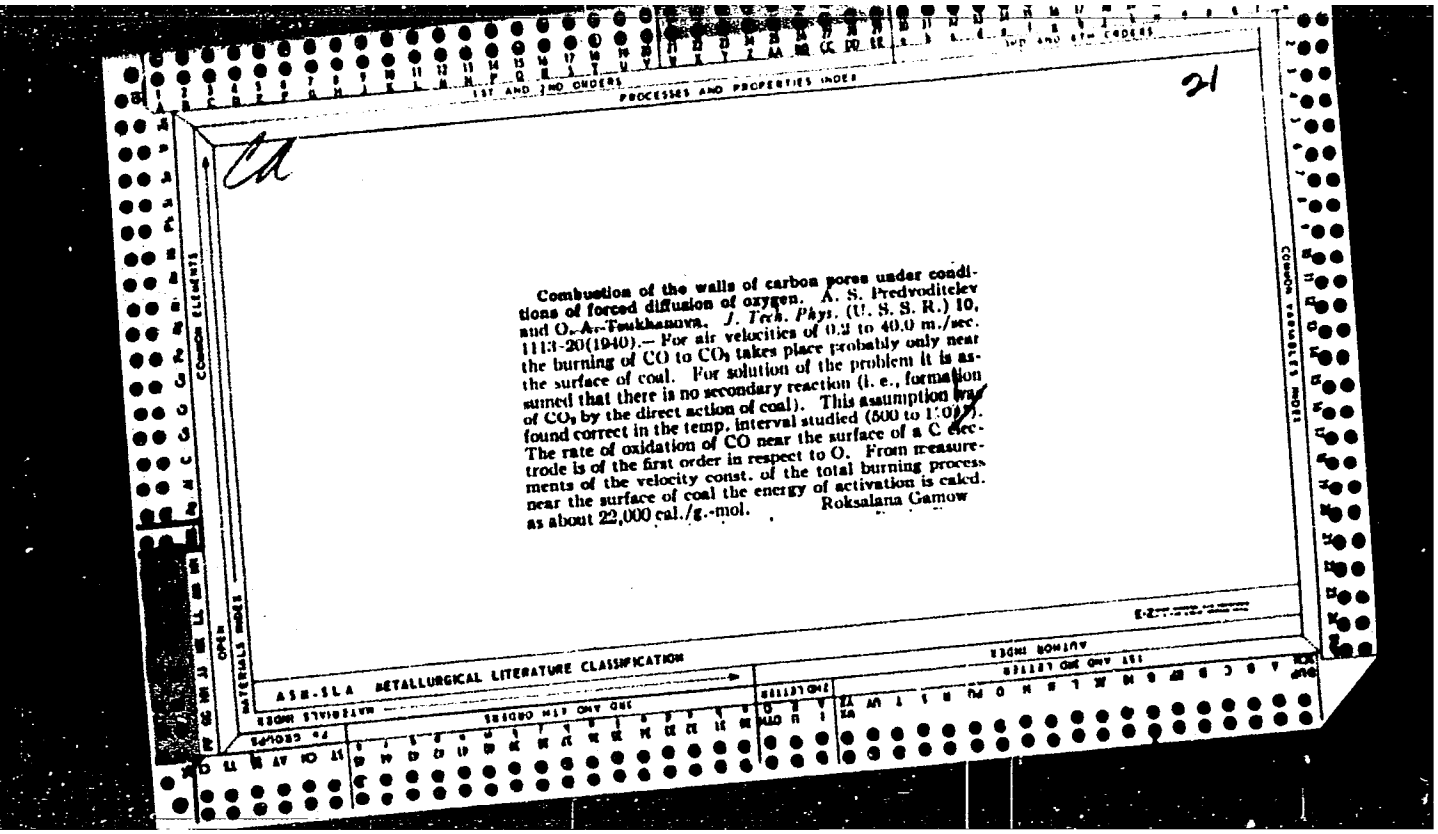


Investigation of the Process of Ash Removal from Gas Producers on a Laboratory Scale. (In Russian.) O. A. Taukhanova and E. A. Taukhanova. *Izvestiya Akademii Nauk SSSR, Otdelenie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences), Apr. 1948, p. 585-592.

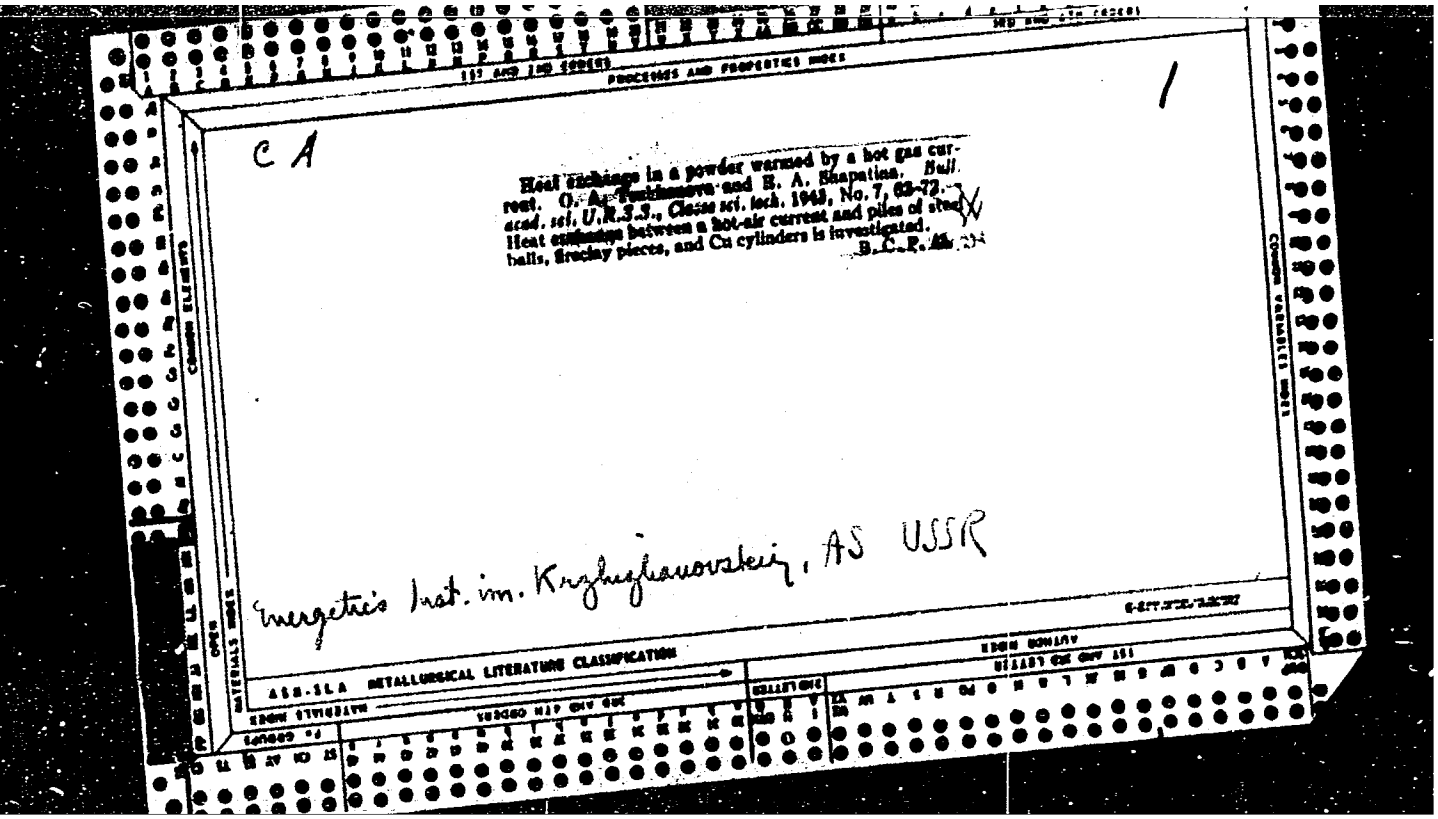
Investigates the above with particular emphasis on mechanical devices.

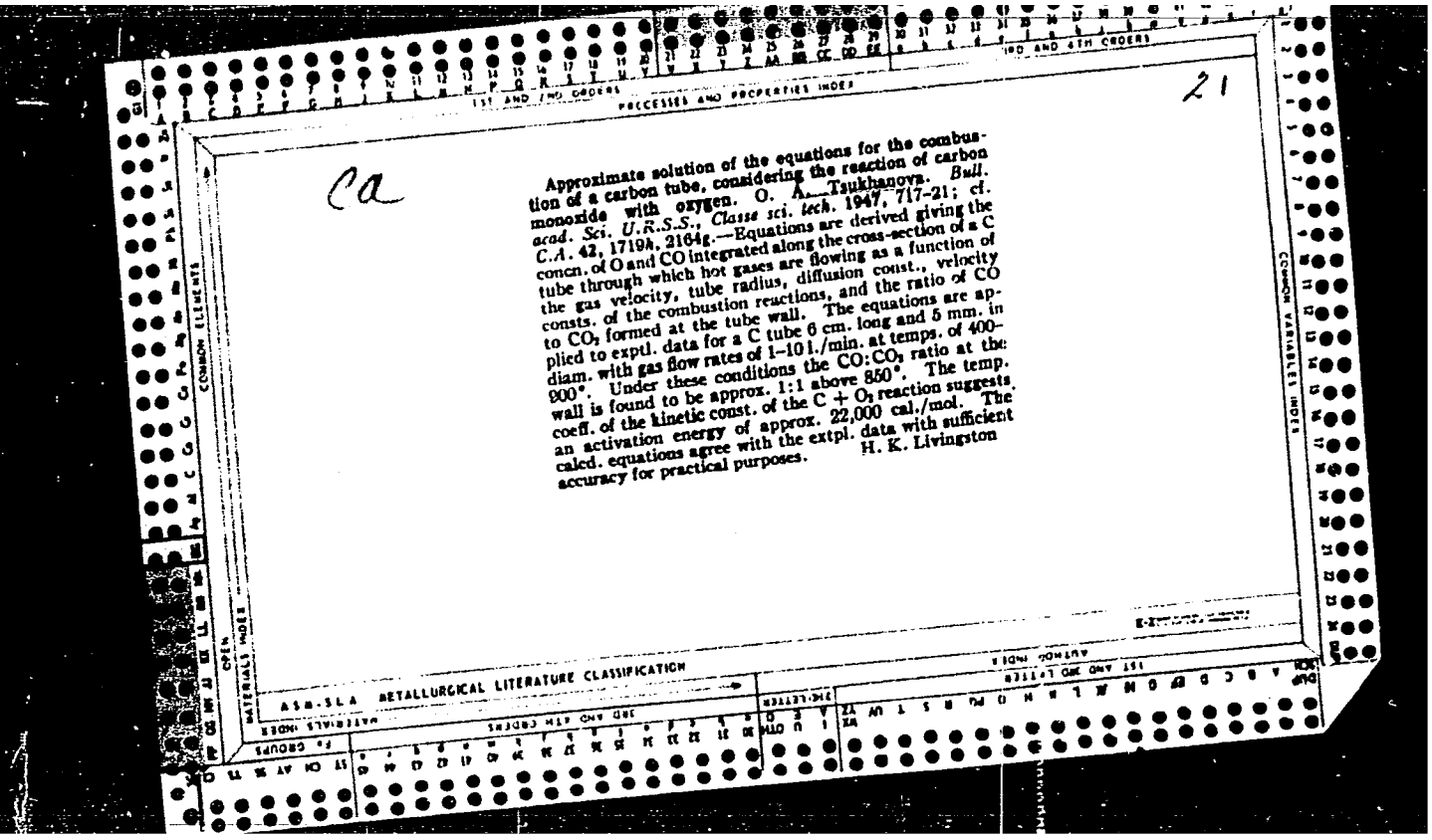


Tsukhanova, O. A. COMBUSTION OF THE WALLS OF A CARBON TUBE UNDER THE INFLUENCE OF FORCED DIFFUSION OF OXYGEN. *Zhur. Tekh. Fiz.*, 9 [4] 295–304 (1939).—Experimental data are given on the effect of hydrodynamics upon the combustion intensity and characteristics of gas formation during the combustion of a cylindrical C tube. Air was preheated to 700° to 800° and admitted to the tube at rates of 2 to 50 liters per min. The combustion gases were cooled to prevent the oxidation of CO and were then analyzed. The amount of C consumed was determined from air consumption and gas analysis. Both laminar and turbulent regions of combustion could be distinguished, depending upon the conditions of gas flow. In turbulent combustion, the intensity increased with increased oxygen addition to the C surface and also with the outflow of CO from the combustion zone. The outflow of large amounts of CO starts when the ratio of the length of the oxygen zone to the average gas speed is less than $1:10^{-2}$.



Combustion of the walls of carbon pores under conditions of forced diffusion of oxygen. A. S. Predvoditelev and O. A. Tsukhanova. *J. Tech. Phys.* (U. S. S. R.) 10, 1113-20(1940).— For air velocities of 0.2 to 40.0 m./sec. the burning of CO to CO_2 takes place probably only near the surface of coal. For solution of the problem it is assumed that there is no secondary reaction (i. e., formation of CO_2 by the direct action of coal). This assumption was found correct in the temp. interval studied (500 to 1,000°). The rate of oxidation of CO near the surface of a C electrode is of the first order in respect to O. From measurements of the velocity const. of the total burning process near the surface of coal the energy of activation is calcd. as about 22,000 cal./g.-mol. Roksalana Gamow





Ca

21

Approximate solution of the equations for the combustion of a carbon tube, considering the reaction of carbon monoxide with oxygen. O. A. Tsukhanova. *Bull. acad. Sci. U.R.S.S., Classe sci. tech.* 1947, 717–21; cf. *C.A.* 42, 1719*h*, 2164*g*.—Equations are derived giving the concn. of O and CO integrated along the cross-section of a C tube through which hot gases are flowing as a function of the gas velocity, tube radius, diffusion const., velocity consts. of the combustion reactions, and the ratio of CO to CO_2 formed at the tube wall. The equations are applied to expt. data for a C tube 6 cm. long and 5 mm. in diam. with gas flow rates of 1–10 l./min. at temps. of 400–900°. Under these conditions the CO:CO_2 ratio at the wall is found to be approx. 1:1 above 850°. The temp. coeff. of the kinetic const. of the C + O_2 reaction suggests an activation energy of approx. 22,000 cal./mol. The calcd. equations agree with the expt. data with sufficient accuracy for practical purposes.

H. K. Livingston

TSUKHANOVA, O. A.

Apr 1947

USSR/Carbon
Combustion

"The Effect of Secondary Reactions on the Combustion of Carbon," O. A. Tsukhanova, 6 pp

"Izv Ak Nauk Tekh Nauk" No 4

Setting up of differential equations descriptive of the subject phenomenon, their solutions for known conditions. Two curves showing the empirical relationships between the temperature of the coal and the percentage composition of the various resultant gases emerging from a pipe of certain dimensions. Tables of results.

9T96

TSUKHANOVA, O. A.

PA 26T18

USSR/Engineering — Sep 1947
Fuels, Pulverized
Heating

"Calculating the Speed of Heating by Burring Two Mixtures of Powdered Fuels at Different Temperatures," O. A. Tsukhanova, G. D. Salamandra, 5 pp

"Iz Ak Nauk Tekh Nauk" No 9

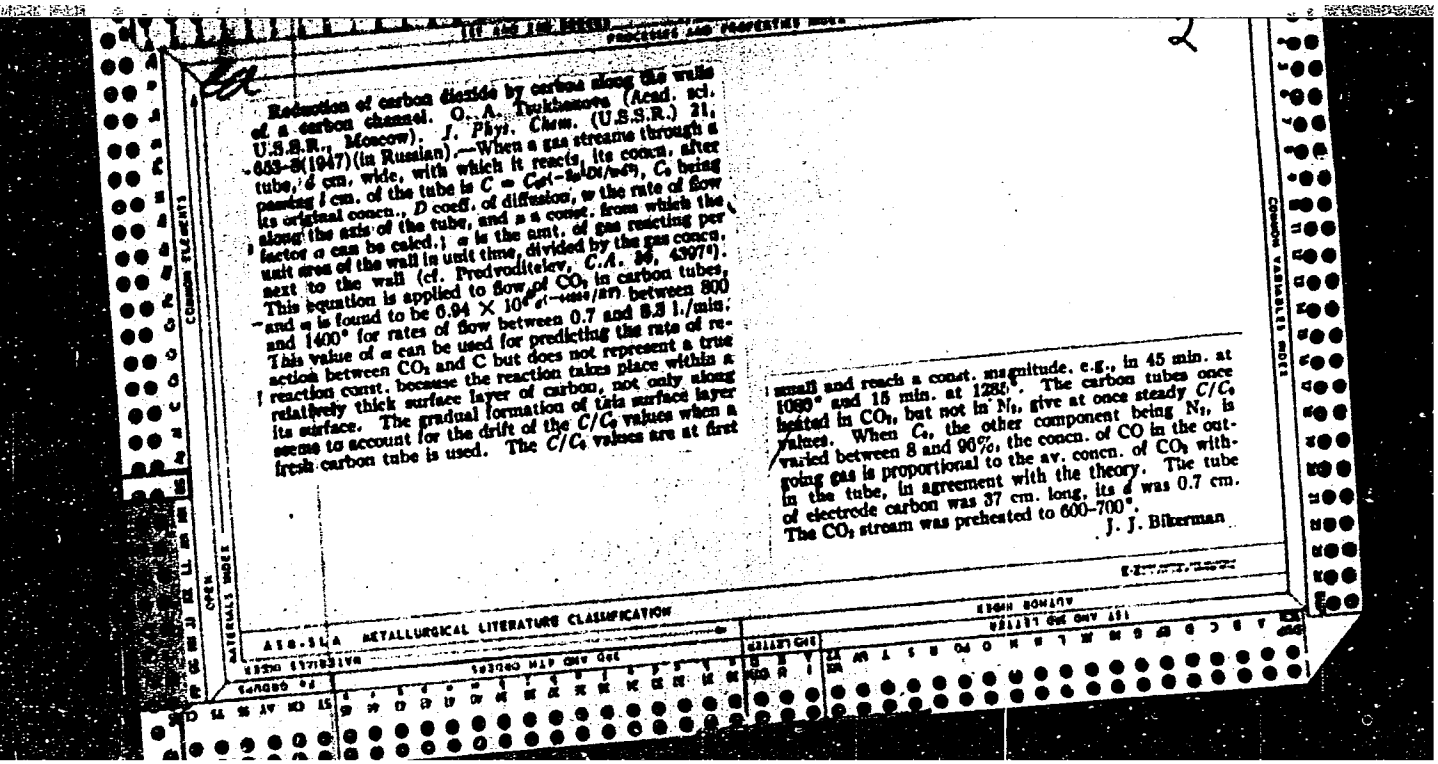
In many cases a cold powdered fuel is mixed with a hot powdered fuel before it is fed into the combustion chamber. This article gives mathematical formulae and graphs which deal with the speed of change of the internal temperature of the fuels as a result of this mixing. Diagram of the equipment

26T18

USSR/Engineering (Contd) — Sep 1947

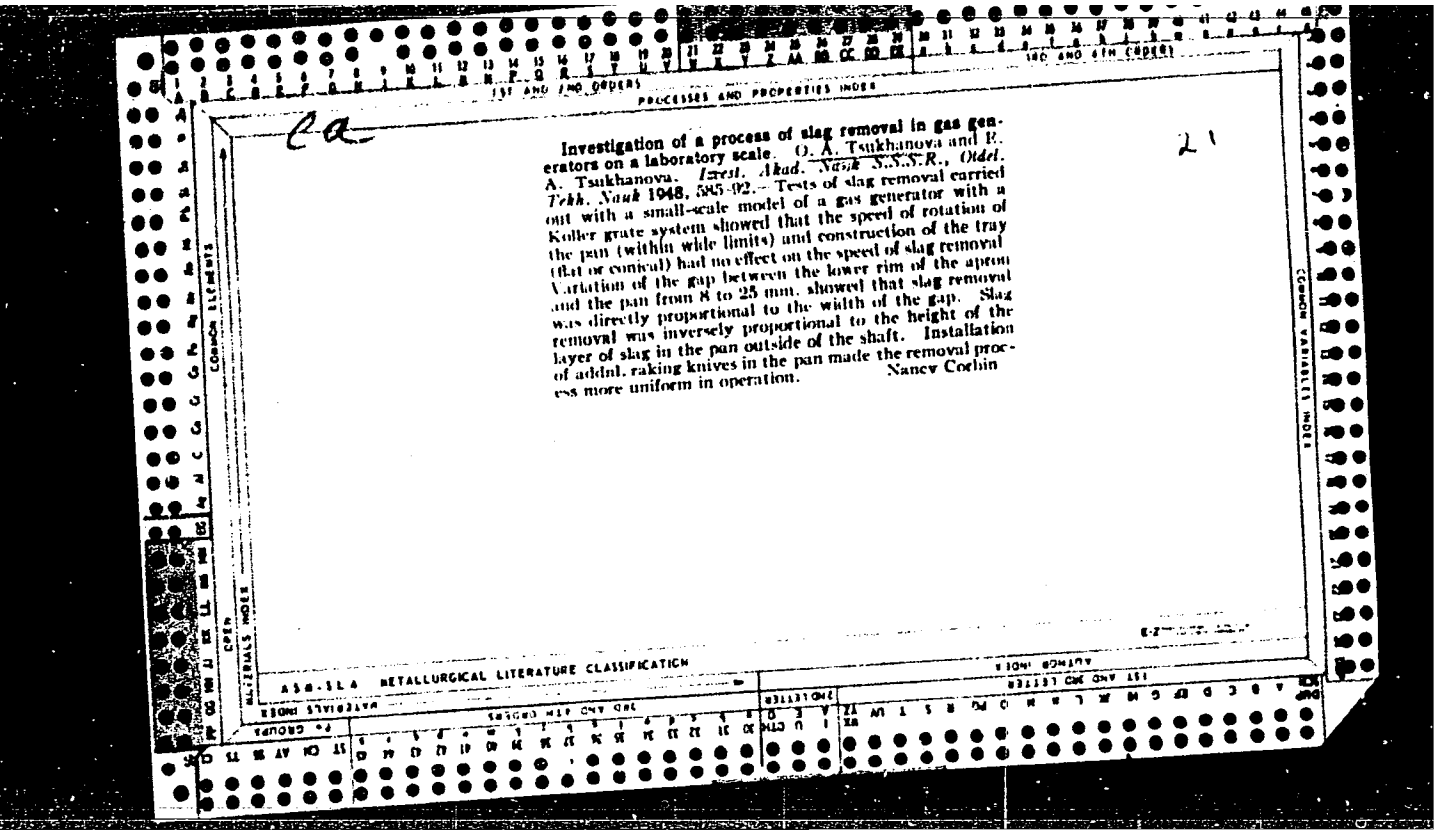
used in conducting experiments. Submitted by M. V. Kirpichev, at the Jan 1946 meeting of the Energy-Chemical Section of the Institute of Energetics imeni G. M. Krzhizhanovskiy, Academy of Sciences of the USSR.

26T18



Reduction of carbon dioxide by carbon along the walls of a carbon channel. O. A. Tsukhanova (Acad. sci. U.S.S.R., Moscow). *J. Phys. Chem.* (U.S.S.R.) 21, 603–8(1947)(in Russian).—When a gas streams through a tube, d cm. wide, with which it reacts, its concn. after passing l cm. of the tube is $C = C_0 e^{-k_0 l/wd}$, C_0 being its original concn., D coeff. of diffusion, w the rate of flow along the axis of the tube, and a a const. from which the factor α can be calcd.) α is the amt. of gas reacting per unit area of the wall in unit time, divided by the gas concn. next to the wall (cf. Predvoditelev, *C.A.* **36**, 4397⁶). This equation is applied to flow of CO_2 in carbon tubes, and α is found to be 0.94×10^{-4} cm./sec. between 800 and 1400° for rates of flow between 0.7 and 8.8 l./min. This value of α can be used for predicting the rate of reaction between CO_2 and C but does not represent a true reaction const. because the reaction takes place within a relatively thick surface layer of carbon, not only along its surface. The gradual formation of this surface layer seems to account for the drift of the C/C_0 values when a fresh carbon tube is used. The C/C_0 values are at first small and reach a const. magnitude, e.g., in 45 min. at 1000° and 15 min. at 1285°. The carbon tubes once heated in CO_2, but not in N_2, give at once steady C/C_0 values. When C_0, the other component being N_2, is varied between 8 and 90%, the concn. of CO in the outgoing gas is proportional to the av. concn. of CO_2 within the tube, in agreement with the theory. The tube of electrode carbon was 37 cm. long, its d was 0.7 cm. The CO_2 stream was preheated to 600–700°.

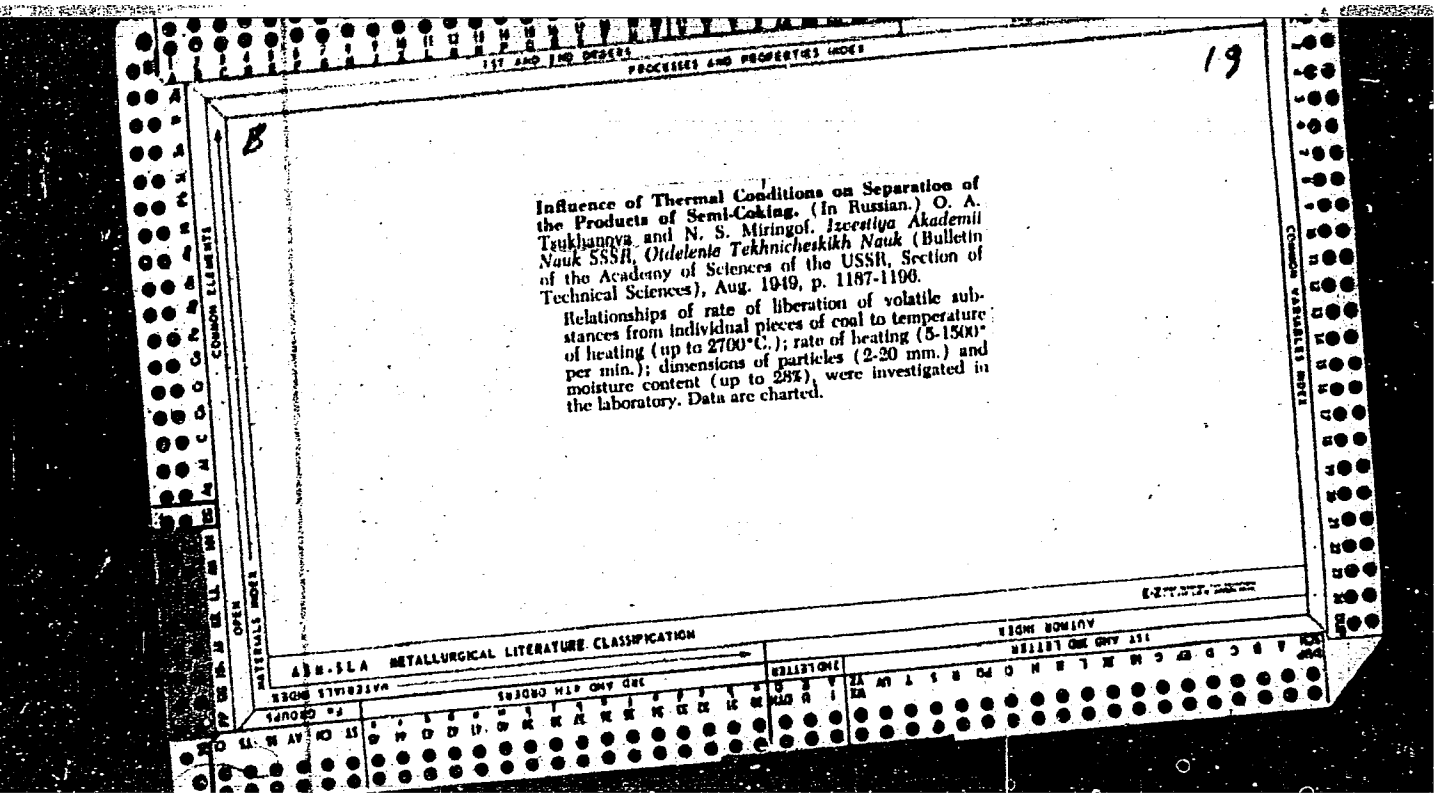
J. J. Bikerman



Investigation of a process of slag removal in gas generators on a laboratory scale. O. A. Tsukhanova and P. A. Tsukhanova. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1948, 585-92.— Tests of slag removal carried out with a small-scale model of a gas generator with a Koller grate system showed that the speed of rotation of the pan (within wide limits) and construction of the tray (flat or conical) had no effect on the speed of slag removal. Variation of the gap between the lower rim of the apron and the pan from 8 to 25 mm. showed that slag removal was directly proportional to the width of the gap. Slag removal was inversely proportional to the height of the layer of slag in the pan outside of the shaft. Installation of addnl. raking knives in the pan made the removal process more uniform in operation. Nancy Coehin

TSUKHANOVA, O. A.

Predvoditelev, A. S., Khitrin, L. N., Tsukhanova, O. A., Kolodtsev, Kh. I., and Grodzovskiy, M. K., "Combustion of Carbon. Experiments in Building Up the Physicochemical Principles of the Process." Academy of Sciences USSR, 1949, 408 pp, 2,500 copies.



Influence of Thermal Conditions on Separation of the Products of Semi-Coking. (In Russian.) O. A. Tsukhanova and N. S. Miringof. *Izvestiya Akademii Nauk SSSR, Otdelenie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences), Aug. 1949, p. 1187-1196.

Relationships of rate of liberation of volatile substances from individual pieces of coal to temperature of heating (up to 2700°C.); rate of heating (5-1500° per min.); dimensions of particles (2-20 mm.) and moisture content (up to 28%), were investigated in the laboratory. Data are charted.

TSUKHANOVA, O. A.

"Solving Some Problems of Heterogeneous Combustion by the Method of Averaging Equations" a paper submitted at the Sixth International Symposium on Combustion, New Haven, Conn., 19-24 Aug 56.

Tsukhanova, Institute of Energetics, AS USSR, Moscow, USSR

168T 81

TSUKHANOVA, O. A.

USSR/Physics - Combustion
Gasification

Jul 50

"Combustion of Carbon," L. N. Khitrin, O. A. Tsukhanova

"Uspekh Fiz Nauk" Vol XLI, No 3, pp 311-331

Discusses basic characteristics of combustion process, concept of coefficient of reaction gas exchange, basic laws of process, role of secondary reaction, and influence of admixtures on gasification. Includes graphs of speed of combustion of anthracite vs temperature, etc.

168T81

TSUKHANOVA, O. A. Cand. Phys.Math. Sci.

"Solving Some Problems of Heterogeneous Combustion by the Method of Averaging Equations," a paper presented at the 6th International Symposium on Combustion, Yale University, 19-24 Aug 56.
Inst. of Energetics, AS USSR, Moscow

Abstract of papers E-4519, Branch 5

7317

S/124/60/000/011/002/005
A005/A001

11.7200

Translation from: Referativnyy zhurnal, Mekhanika, 1960, No. 11, pp.36-37,#14288

AUTHOR: Tsukhanova, O.A.

TITLE: Calculation of the Total Reaction Rate and the Velocity of Flame Propagation in Gas Mixtures

PERIODICAL: V sb.: Issled. protsessov goreniya. Moscow, AN SSSR, 1958, pp. 81 - 90

TEXT: The author proposes an approximate method for the experimental determination of the form of the function of the total chemical reaction rate in a flame by measuring its normal elocity of propagation. For flame having similar fields of temperature and fuel concentration, the author obtains approximate expressions connecting the normal flame propagation velocity and the second derivatives of velocity with respect to relative contents of fuel and oxygen in the burning mixture with parameters characterizing the total reaction rate: the total orders of reaction by fuel and oxygen; the common effective order of reaction which is equal to the sum of the orders by fuel, oxygen, and active admixtures: the total activation energy; the reaction rate constant. For determining these parameters,

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87317
S/124/60/000/011/002/005
A005/A001

Calculation of the Total Reaction Rate and the Velocity of Flame Propagation in Gas Mixtures

it is necessary to measure experimentally the magnitude of the normal flame propagation velocity, the magnitudes of the second derivatives of velocity with respect to relative contents of fuel and oxygen for two mixtures, and the dependence of the temperature on the fuel combustion, which is obtained taking into account the dissociation by means of thermodynamic calculations. The correctness of the method can be checked in the following ways: 1) Comparison of the calculation results with the experimental data for the reaction rate which are obtained by the direct method. A comparison performed for fuels from mixtures of carbon monoxide with air and oxygen at 1 at pressure and T_{init} = 20°C yielded satisfactory agreement. 2) Utilization of the values of the coefficients, found from the dependence of the normal velocity on the concentration, for determining the dependence of the normal velocity on other parameters, as an example, the temperature of the initial preheating. Such a verification was also carried out for mixtures of carbon monoxide with air and oxygen. Also in this case a sufficient corroboration of the method was observed.

V.B. Librovich

Translator's note: This is the full translation of the original Russian abstract.
Card 2/2

S/112/59/000/014/009/085
A052/A001

11.7200

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, No. 14, p. 19, # 28651

AUTHOR: Tsukhanova, O. A.

TITLE: Calculation of the Summary Rate of Reaction and of the Flame Velocity in Gas Mixtures

PERIODICAL: V sb.: Issled. protsessov goreniya. Moscow, AN SSSR, 1958, pp. 81-90

TEXT: Approximate methods of determining the rate of chemical reaction are suggested, which have a great importance for the calculation of combustion processes. The calculation equations are derived by applying the law of similarity of temperatures and concentrations to the solution of the differential equation of energy at definite boundary conditions. Calculation formulae for determining the rate of reaction and expressions for derivatives of the squared flame velocity with respect to fuel and oxygen concentration are obtained. These equations make it possible to find constant mean coefficients in the equation of the summary rate of reaction, which depend on the temperature and composition

Card 1/2

S/112/59/000/014/009/085
A052/A001

Calculation of the Summary Rate of Reaction and of the Flame Velocity in Gas Mixtures

VB

of the initial mixtures only. The results of checking the accuracy of the proposed methods are given. They show that the calculation formulae agree fairly well with the experimental data, describe adequately the dependence of the flame velocity on the composition of the mixture, and enable one to analyze the effect of the magnitude of activation energy and summary orders on the curve shape and the boundaries of flame distribution.

A. D. A.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

TSUKHANOVA, O. A.

24(8) PHASE I BOOK EXPLOITATION SOV/2267

Akademiya nauk SSSR. Energeticheskiy institut

Kinetika i rasprostraneniye plameni; sbornik dokladov na obshchemoskovskom seminare po goreniyu pri energeticheskom institute AN SSSR (Kinetics and Propagation of Flame; Collection of Reports at the All-Moscow Seminar on Combustion) Moscow, Izd-vo AN SSSR, 1959. 51 p. Errata slip inserted. 2,500 copies printed.

Ed.: L. N. Khitrin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A. G. Prudnikov; Tech. Ed.: O. M. Gus'kova; Seminar Council: L. N. Khitrin, Corresponding Member, USSR Academy of Sciences (Chairman), G. F. Knorre, Doctor of Technical Sciences, Honored Worker in Science and Technology, Professor (Deputy Chairman); Ye. S. Shchetnikov, Doctor of Technical Sciences, Professor (Deputy Chairman); A. P. Vanichev, Doctor of Technical Sciences; V. V. Voyevodskiy, Corresponding Member, USSR Academy of Sciences; N. V. Golovanov, Candidate of Chemical Sciences; D. S. Zhuk, Candidate of Chemical Sciences; N. V. Inozemtsev, Doctor of Technical Sciences, Honored Worker in Science and Technical, Professor; B. V. Kantorovich, Doctor of Technical Sciences; S. M. Kogarko, Doctor of Chemical Sciences; B. P. Lebedev, Candidate of Technical Sciences; K. A. Nikitin, Candidate of Technical Sciences; A. S. Sokolik, Doctor of Chemical Sciences; and Ye. S. Golovina, Candidate of Technical Science (Scientific

Card 1/4

Kinetics and Propagation of Flame (Cont.) SOV/2267

Secretary).

PURPOSE: This book is intended for engineers and specialists in thermal power production, gas combustion, heat engineering and related fields.

COVERAGE: The collection contains three articles which deal with the combustion reaction rate and flame velocity in gaseous mixtures and the influence of ozone on the kinetics of hydrocarbon combustion. References appear at the end of each article.

TABLE OF CONTENTS:

Card 2/4

Kinetics and Propagation of Flame (Cont.) SOV/2267

The influence of ozone on the burning velocity of butane was investigated at atmospheric pressure in air mixtures, and in oxygen mixtures at a pressure of 10 mm Hg.

AVAILABLE: Library of Congress

Card 4/4

IMS/mg
10-5-59

10(2) PHASE I BOOK EXPLOITATION SOV/2162

Akademiya nauk SSSR. Energeticheskiy institut.

Fizicheskaya gazodinamika (Physical Gas Dynamics) Moscow, 1959. 167 p. 3,000 copies printed.

Resp. Ed.: A.S. Predvoditelev, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: R.I. Kosykh; Tech. Ed.: Ye. V. Makuni.

PURPOSE: This collection of articles is intended for scientific workers, instructors, engineers, and advanced vuz students specializing in the field of gas dynamics and the physics of combustion.

COVERAGE: This collection of articles is concerned with the results of work performed at the Power Institute, Academy of Sciences, USSR, during the years 1952-1955. Problems of gas dynamics and thermodynamic properties of air at high temperatures (up to 12,000° K) in a wide range of pressures from 0.001 to 1,000 atm. are discussed. Methods are presented for calculating a normal shock with consideration of the dissociation and ionization of air. Some of the papers of the collection deal with hydrodynamic phenomena associated with electric discharges in water. References follow most of the papers.

TABLE OF CONTENTS:

In this paper, photographic studies of flame propagation in a combustion chamber are used as a basis for calculating the process of shock-wave formation ahead of a flame front. The paper presents a detailed description of the test apparatus, the method of conducting the tests, and the data obtained. On the basis of the observed fact that elementary disturbances are reflected from the flame front, the motion of the gas ahead of the flame front is treated by analogy to the motion of a gas ahead of a piston. It is shown that the problem can be treated by application of the graphical method of characteristics or by use of Hugoniot's formulas for the motion of a gas ahead of a piston. Calculated values of the distance from the ignition point to the point of shock-wave formation are found to be in good agreement with experiment. In the case of short combustion chambers the disturbances caused by the flame may not build up into a shock wave be-

Card 10/11

fore reaching the end of the chamber. It is shown that in such cases shock waves may arise as a result of the superposition of disturbances reflected from the end of the chamber or from the flame front.

This paper is devoted to the description of the photographically observed phenomena occurring in a combustion chamber. The tests were conducted with several mixtures of hydrogen and oxygen and combustion chambers of different lengths. Detailed descriptions are given of the process which occurs when a previously formed shock wave passes through a flame front and also when a shock wave in the process of formation interacts with a flame front. A number of excellent photographs, clearly showing the described phenomena are presented.

AVAILABLE: Library of Congress

IMM/bg
9-21-59

Card 11/11

LINCHEVSKIY, Vadim Pavlovich, prof. [deceased]; RAVICH, M.B., prof., red.; TSUKHANOVA, O.A., kand.fiz.-matem.nauk, red.; VAGIN, A.A., red. izd-va; ISLENT'YEVA, P.G., tekhn.red.

[Fuel and combustion] Toplivo i ego szhiganie. Izd.3., ispr. i dop. Pod red. M.B.Ravicha i O.A.TSukhanovoi. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1959. 398 p. (MIRA 12:11)

(Fuel) (Combustion)

TSUKHANOVA, O. A.

"The Investigation of the State of Explosion Products Behind the Shock Wave."

report submitted for the 8th Intl. Symposium on Combustion, Pasadena, California, 29 Aug - 2 Sept 1960.

31291
S/124/61/000/010/026/056
D251/D301

11.7200

AUTHOR: Pyatnitskiy, L.N. and Tsukhanova, O.A.

TITLE: Numerical integration of a system of equations of energy with a source for different ratios of the coefficient of diffusion to the coefficient of temperature-conduction

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 10, 1961, 82, abstract 10 B587 (V sb. 3-e Vses. soveshchaniye po teorii goreniya, v. 1, M., 1960, 35-43)

TEXT: A verification was carried out of the approximate relationships expressing the normal velocity of the spreading of flame by means of parameters which characterize the total kinetics of the chemical reactions, the activation energy E, the pre-exponential multiplier k_o, the total series of reactions t, and the series of reactions according to fuel n. The purpose of these verifications was to ascertain the accuracy, with which the kinetic coeff-

Card 1/3

Numerical integration...

icients of chemical reaction can be determined from data on the velocity of flame-spreading, making use of the relationships mentioned. The numerical integration of the equation of thermal conductivity with a source was carried out. The coefficients of the equation are reckoned to be constants, the function of the evolution of heat corresponds to simple reactions, whose total series was chosen in the range 0.33 - 2.0, and the activation energy was chosen in the range 20 - 90 kcal/mole. The equation was integrated for various compositions of the initial mixture. The results gave the relation of the velocity of normal spreading, obtained by integration to the velocity calculated according to the approximation formulae. These relations depend on E and γ but do not depend on the initial composition of the mixture. The effect is estimated of the ratio of the coefficient of diffusion to the coefficient of temperature-conduction on the effective kinetic coefficients of the reactions. It is assumed that in the case of different coefficients of diffusion and temperature-conduction the velocity of spreading may be defined by the same formulae as in the case of equality of these coefficients.

Card 2/3

Numerical integration...

It is necessary, however, to change the function of the evolution of heat to some "effective" function having a similar form to that of the second "effective" kinetic coefficient. The effective function of evolution of heat is calculated from the temperature field and the velocity distribution of the chemical reaction in the zone of combustion, obtained by L.N. Pyatnitskiy by the numerical integration of the system of equations of diffusion and thermal conductivity (Tr. V Konferentsii molodykh uchenykh. Energ. in-t. AN SSSR, v. 2, M., 1960, 34-43). It was found that by applying the ratio of the coefficient of diffusion to the coefficient of temperature-conduction in the region 1 - 10, the effective coefficient E varies by not more than 20%, n by 40%, and l by 100%, and the magnitude of the effective k_o changes by several degrees. The authors conclude that the data on the velocity of flame-spreading cannot be taken at the present time as a source of detailed and trustworthy information on the mechanism of chemical reactions. [Abstracter's note: Complete translation]

Card 3/3

X

28336 S/124/61/000/006/009/027
A005/A130

11.8200

AUTHOR: Tsukhanova, O.A.

TITLE: The transmission of explosions through capillaries

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 6, 1961, 15, abstract 6 B 75. (V sb.: 3-ye Vses. soveshchaniye po teorii goreniya. T. 1. Moscow, 1960, 187 - 192)

TEXT: The author studied the transmission of an explosion of a hydrogen-oxygen mixture through capillaries from one chamber into another for different capillary sizes and for different volume concentrations of hydrogen in the mixture. The experimental set-up consisted of two steel cylinders 30 mm in diameter interconnected by a steel capillary. The length of the cylinder in which the explosion took place was varied from 90 to 611 mm. The capillaries used were 36 - 250 mm long and 0.25 - 0.7 mm in diameter. The concentration of hydrogen was varied from 14 to 83.65%. The principal recording method consisted in photographing the process by the penumbra method under development conditions. It turned out that the limiting hydrogen concentrations for explosion transmission are determined by the ratio of the square of capillary diameter to capillary length. The velocity

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28336 S/124/61/000/006/009/027
A005/A130

The transmission of explosions through capillaries

of the flame front in the capillary is lower than for stationary detonation but higher than the velocity of sound in the initial mixture and decreases with decreasing diameter of the capillary. Experiments with a capillary of rectangular cross section 0.4 x 36 mm and 80 mm long (slit) showed that the front velocity also decreases with the length of the slit.

V. Gordeyev

[Abstracter's note: Complete translation.]

Card 2/2

5.4700,10.0000,24.5300

77320
SOV/57-30-2-17/18

AUTHOR: Tsukhanova, O. A.

TITLE: A Method of Investigation of the State of Explosion Products by Measuring Shock Wave Parameters

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 2, pp 242-247 (USSR)

ABSTRACT: During gas combustion in a closed volume one may obtain some information on the state of gas in the combustion region by studying the parameters of shock waves produced during the accelerated motion of the flame later propagating through the products of explosion. In the case when these waves can be considered plane and quasi-stationary, one may apply the usual equations of conservation: conservation of the mass

$$D\rho_1 = (D - \Delta u)\rho_2, \qquad (1)$$

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conservation of impulses

$$D^2\rho_1 - \Delta u^2\rho_2 = p_2 - p_1, \tag{2}$$

conservation of energy

$$i_1 + \frac{D^2}{2g} = i_2 + \frac{(D-\Delta u)^2}{2g}. \tag{3}$$

and the equations of state

$$p_1 = \rho_1\left(\frac{R}{\mu_1}\right)T_1, \tag{4}$$

$$p_2 = \rho_2\left(\frac{R}{\mu_2}\right)T_2. \tag{5}$$

Here D is velocity of propagation of the shock wave relative to the gas; n is gas velocity $\Delta u = u_2 - u_1$; ρ is density; p is pressure; T is temperature; i is enthalpy; μ = molecular weight; and R is the universal gas constant. Index 1 refers to the gas in front of the shock wave; and 2 refers to the gas behind it. The author describes how one can use the data about the pressure and gas velocity in regions 1 and 2 to calculate the density distribution inside the chamber, the variation in time of the quantity $p/\rho = RT/\mu$, and the enthalpy of the gas, i_2. Introducing the notation

$$E_1 = i_1 + \frac{D^2}{2g}, \quad E_2 = i_2 + \frac{(D-\Delta u)^2}{2g} \text{ and } \Delta E = E_2 - E_1.$$

one can draw conclusions in the following manner: If ΔE turns out to be zero, one may assume that there were no significant chemical changes in the gas; $\Delta E > 0$ means that there take place exothermic reactions of residual burning; $\Delta E < 0$ shows that dissociation processes with a degree of dissociation higher than those in equilibrium are taking place in front of the shock wave. Observing wave fronts of consecutive reflected waves occuring with a time delay, the author was able to deduce the time necessary for the explosive mixture to reach the equilibrium state. The experimental set-up consisted of a chamber 585 mm high and 30 mm in diameter. The gaseous mixture was exploded by a spark near one end of the chamber. The author shows a photograph of the explosion taken by the Tepler method. Pressures were registered by means of piezoelectric feelers with membranes 15 mm in diameter. Self-frequency of the feeler was 10^4 c/sec. The pulses were observed by means of an oscillograph; time measurements were done with a

10^{-6} sec precision and distances measured with an accuracy of 0.15 mm; pressure was measured with a precision of 0.2 atm. The author found gas velocities to be between 100 and 500 m/sec which corresponds to Rheinold's numbers exceeding $2 \cdot 10^4$. In this region the maximum velocities of flow are close to the average velocities. Some results are in Table 2. The author concludes from the data that the energy Eq. (3) is sufficiently well satisfied after excluding the early part of the second wave. The burning process must have already ended at this point, yielding for the combustion time an interval smaller than 10^{-3} sec. (Note of the Abstracter: The present article contains at this point an error. The author refers in the text to data on waves II, III, and IV in Table 2, while Table 2 in fact contains data on waves III, IV, and V.) Similar preliminary results about $2CO + O_2$ explosions, with starting ΔE of the order of 100 kcal/mol, showed a combustion time of $2.5 \cdot 10^{-3}$ sec. The author also measured

A Method of Investigation of the State of Explosion Products by Measuring Shock Wave Parameters

77320
SOV/57-30-2-17/18

Table 2. (x (mm) is distance from the end of the chamber where ignition occurs; t (sec) is time.)

x, mm	$t \cdot 10^{-4}$ sec	d_1, m/sec	u_1, m/sec	u_2, m/sec	ρ_1, kg/cm³	ρ_2, kg/cm³	ρ_1', kg/cm³	ρ_2', kg/cm³	T_1, °K	T_2, °K	ΔE, kcal/kg
					WAVE III						
56	26.1	1073	43	390	2.8	5.5	0.583	0.972	1500	1770	+14
146	25.3	1142	112	365	3.2	6.3	0.557	0.955	1600	2050	−14
256	24.2	1220	200	330	3.8	7.4	0.545	0.98	2160	2320	+41
346	23.25	1295	260	290	4.3	8.35	0.585	1.05	2260	2440	−40
456	22.05	1140	310	220	4.85	9.25	0.712	1.33	2100	2150	−84

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TABLE 2. (x (mm) is distance from the end of the chamber where ignition occurs; t (sec) is time.) (continued)

WAVE IV											
56	27.3	1120	300	70	5.1	8.65	0.838	1.24	1900	2120	+- 5
146	28.4	1140	280	110	4.8	8.05	0.725	1.1	2035	2260	+- 1
256	29.8	1140	210	155	4.2	7.25	0.71	1.015	1870	2140	+-24
346	30.7	1115	155	210	3.8	6.5	0.65	0.937	1825	2140	+-54
456	31.8	1075	85	265	3.3	5.7	0.624	0.924	1670	1935	+-28
546	32.7	1044	24	280	2.95	5.1	0.664	0.935	1390	1705	+-27
WAVE V											
56	39.4	1040	40	230	3.3	4.8	0.524	0.705	1960	2110	+- 2
146	38.2	1085	85	205	3.5	5.25	0.545	0.743	2000	2195	+-17
256	37.2	1050	120	162	3.7	5.7	0.66	0.9	1750	1965	+-74
346	36.2	1025	165	135	3.9	6.0	0.67	0.95	1820	1965	-- 5
456	34.9	965	215	90	4.15	6.6	0.817	1.19	1600	1730	— 8
546	33.6	895	235	38	4.7	7.4	1.085	1.56	1350	1485	— 0

Card 7/8

the quantity RT/μ and the heat loss α of the products of reaction. Results are on Fig. 2 where the numbers on the abscissa represent the times of reflection of the respective waves from the end of the chamber. After determining α, the author verified the assumption about the quasi-stationary character of the shock wave. She notes also that the investigations described in the present paper should be supplemented by temperature measurements using optical methods. There are 2 figures; and 2 tables.

SUBMITTED: March 20, 1959

Card 8/8

S/170/62/005/005/003/015
B104/B102

11.8.200

AUTHORS: Pyatnitskiy, L. N., Tsukhanova, O. A.

TITLE: Calculation of the state of explosion products by means of shock-wave parameter measurements

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 5, 1962, 21-29

TEXT: The states of $CH_4 + 4O_2$ combustion products were investigated in a closed tube (3 cm in diameter, 155 cm in length) consisting of interchangeable sections, one of which had two glass windows (160.3 mm); the visual section of the tube was mounted in various positions relative to the ends of the chambers. The progress of the combustion processes were photographed with an VAB-451 (IAB-451) instrument. Time was counted from the moment of reflexion of the detonation wave from the end of the tube, when two waves are generated at the tube end, one on reflexion of the detonation complex, the other a redetonation wave. Gas velocity and pressure ahead of and behind the shock wave, and the relative velocity of the shock wave were determined from the photographs.

Card 1/2

Calculation of the state of ...

By means of these data and the three equations of conservation of mass, momentum and energy the parameters of the combustion products, the heat transfer coefficient of a non-steady gas flow and the Nusselt number were calculated. The reaction takes place within 10^{-3} sec and the system reaches thermodynamic equilibrium. Behind the wave the mean values of the parameters may be considered as being in thermodynamic equilibrium for about 10^{-4} sec. It was found that heat exchange of the combustion products in non-steady gas flow, although more intense than in steady flow, followed a law not greatly different from $Nu = 0.023\ Re^{0.8} Pr^{0.4}$ (steady flow). L. N. Khitrin, Corresponding Member AS USSR, is thanked for discussions. There are 1 table and 3 figures.

ASSOCIATION: Energeticheskiy institut imeni G. M. Krzhizhanovskogo, Moscow (Institute of Power Engineering imeni G. M. Krzhizhanovskiy, Moscow)

SUBMITTED: February 24, 1962

ALAD'YEV, I.T.; ALEKSANDROV, B.K.; BAUM, V.A.; GOLOVINA, Ye.S.; GOL'DENBERG, S.A.; ZHIMERIN, D.G.; ZAKHARIN, A.G.; IYEVLEV, V.N.; KNORRE, V.G.; KOZLOV, G.I.; LEONT'YEVA, Z.I.; MARKOVICH, I.M.; MEYEROVICH, E.A.; MIKHNEVICH, G.V.; POPKOV, Z.I.; POPOV, V.A.; PREDVODITELEV, A.S.; PYATNITSKIY, L.N.; STYRIKOVICH, M.A.; TOLSTOV, Yu.G.; TSUKHANOVA, O.A.; CHUKHANOV, Z.F.; SHEYNDLIN, A.Ye.

Lev Nikolaevich Khitrin, 1907-1965; obituary. Izv. AN SSSR. Energ. i transp. no.2:159-160 Mr-Ap '65. (MIRA 18:6)

PYATNITSKIY, L.N.; TSUKHANOVA, O.A.

Calculation of the state of explosion products by measuring the parameters of shock waves. Inzh.-fiz.zhur. no.5:21-29 My '62. (MIRA 15:7)

1. Energeticheskiy institut imeni G.M. Krzhizhanovskogo, Moskva.

(Combustion gases) (Shock waves) (Thermodynamics)

TSUKHANOVA, O.A.

Method for analyzing the products of an explosion by measuring the parameters of the shock waves formed. Zhur.tekh.fiz. 30 no.2:242-247 F '60. (MIRA 14:8)
(Explosions) (Shock waves)

GERTS, Ye.V.; LEVITSKIY, N.I.; TSUKHANOVA, Ye.A.

Theory of pneumatic and hydraulic mechanisms of automatic machines. Teor. mash. i mekh. no.107/108:40-59 '65.

(MIRA 18:7)

LEVITSKIY, M.I.; TSUKHANOVA, Ye.A.

Selecting the braking principle for hydraulic drives.
Trudy Inst. mash. Sem. po teor. mash. 20 no. 79:5-11 '60.
(MIRA 13:12)
(Oil hydraulic machinery--Brakes)

ACC NR: AP6034619 SOURCE CODE: UR/0380/66/000/006/0025/0035

AUTHOR: Tsukhanova, Ye. A. (Moscow)

ORG: none

TITLE: Motion equations for hydraulic drives, considering the compressibility of the actuating medium

SOURCE: Mashinovedeniye, no. 6, 1966, 25-35

TOPIC TAGS: fluid dynamics, hydraulic fluid, hydraulic engineering, hydraulic equipment, motion equation, fluid flow

ABSTRACT: A general system of equations characterizing the dynamics of hydraulic drives in automatic machines is developed. Basic allowances in the compilation of these equations are analyzed with respect to their influence on the type of system, and particularly on the property of the fluid, the flow peculiarities, and the boundary conditions. The analyzed portion of the hydraulic drive, which includes hydraulic cylinders, an uncontrolled pump with pressure regulating devices, and control devices, is considered as a consecutive combination of channels with constant cross sections and a configuration so complex that it greatly deforms the flow. Equations are given for the motion of incompressible, compressible, and concentrated compressible fluids. The analysis covers motion equations of moving cylinder parts and the external forces acting on them, relations between pressure and flow rates, displace-

Card 1/2 UDC: 621-82

ACC NR: AP6034619

ments of moving parts in control devices, and boundary and initial flow conditions. Attention has been paid to the fact that it is not possible to completely eliminate air bubbles in containers with a free oil surface in contact with air. This promotes an increase in vibration. Taking into account the compressibility of the air bubbles in concentrated flow sections, in addition to existing non-linear functions with approximated numbers, another non-linearity arises. Orig. art. has: 1 figure, 2 tables, and 18 formulas. [WA-98]

SUB CODE: 13,20/SUBM DATE: 15Feb66/ ORIG REF: 016/ OTH REF: 002

Card 2/2

ACC NR: AP6034619 SOURCE CODE: UR/0380/66/000/006/0025/0035

AUTHOR: Tsukhanova, Ye. A. (Moscow)

ORG: none

TITLE: Motion equations for hydraulic drives, considering the compressibility of the actuating medium

SOURCE: Mashinovedeniye, no. 6, 1966, 25-35

TOPIC TAGS: fluid dynamics, hydraulic fluid, hydraulic engineering, hydraulic equipment, motion equation, fluid flow

ABSTRACT: A general system of equations characterizing the dynamics of hydraulic drives in automatic machines is developed. Basic allowances in the compilation of these equations are analyzed with respect to their influence on the type of system, and particularly on the property of the fluid, the flow peculiarities, and the boundary conditions. The analyzed portion of the hydraulic drive, which includes hydraulic cylinders, an uncontrolled pump with pressure regulating devices, and control devices, is considered as a consecutive combination of channels with constant cross sections and a configuration so complex that it greatly deforms the flow. Equations are given for the motion of incompressible, compressible, and concentrated compressible fluids. The analysis covers motion equations of moving cylinder parts and the external forces acting on them, relations between pressure and flow rates, displace-

Card 1/2 UDC: 621-82

ACC NR: AP6034619

ments of moving parts in control devices, and boundary and initial flow conditions. Attention has been paid to the fact that it is not possible to completely eliminate air bubbles in containers with a free oil surface in contact with air. This promotes an increase in vibration. Taking into account the compressibility of the air bubbles in concentrated flow sections, in addition to existing non-linear functions with approximated numbers, another non-linearity arises. Orig. art. has: 1 figure, 2 tables, and 18 formulas. [WA-98]

SUB CODE: 13,20/SUBM DATE: 15Feb66/ ORIG REF: 016/ OTH REF: 002

Card 2/2

GERTS, Ye. V. ;LEVITSKY, N.I. ;TSUKHANOVA, Ye.A. (Moscow)

"Theory of pneumatic and hydraulic systems of automatic machines".

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

TSUKHANOVA, Ye.A.

Solving the motion equation of the piston in a hydraulic device in case of a sliding valve. Trudy Inst. mash. Sem. po teor. mash. 19 no.76:17-25 '59. (MIRA 13:3)
(Mechanical movements)

TSUKHANOVA, Ye.A.

Analyzing the movement of the pistons in hydraulic mechanisms.
Trudy Inst.mash.Sem.po teor.mash. 16 no.63:17-40 '56. (MLRA 10:1)
(Pistons) (Machine tools--Hydraulic driving)

TSUKHANOVA, YE. A.

"Study of the Standard Hydraulic Machine. (Analysis of the Motion of the Piston in the Cylinder)." Acad Sci USSR, Inst of Machine Science, Moscow, 1955. (Dissertation for the Degree of Candidate of Technical Sciences)

SO: M-972, 20 Feb 56

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Expansion of the theory of hydraulic mechanisms. Izv. AN SSSR. Otd. tekh. nauk. no.2141 F '55. (MLRA 8:8)
(Hydraulic machinery)

TSUKHANOVA, Ye.A.

Experimental investigation of hydraulic braking devices equipped with a cone valve. Trudy Inst.mash. Sem. po teor.mash. 21 no.81/82: 55-66 '60. (MIRA 13:11)

(Hydraulic brakes)

L 15222-66 EWT(d)/EWP(1) IJP(c) BB/GG
ACC NR: AP6000040 SOURCE CODE: UR/0315/65/000/007/0031/0033

43
B

AUTHOR: Levinskiy, L.S.; Tsukhay, A.N.

ORG: none

166,44

TITLE: Methods of designing memories with single-action recording of iterative information

SOURCE: Nauchno-tekhnicheskaya informatsiya, no. 7, 1965, 31-33

TOPIC TAGS: computer memory, computer technology, information storage and retrieval

ABSTRACT: A great deal of attention is currently being paid to the design of memories capable of storing information in the binary-code form and producing the sought word not by means of an address, but by the content of the sought word, i.e., "associative memory." This article examines memories in which the convenience of handling variable length information series and the elimination of the excess of the stored information is provided by the use of special recording and reading programs. A variation of an associative memory is described in which the storing device (designed in the form of a pyramid binary coder) automatically provides single-action recording of iterative information. Orig. art. has: 5 figures.

SUB CODE: 09/ SUBM DATE: 13Mar65 / ORIG REF: 001 / OTH REF: 003

Card 1/1 UDC: 681.142.07

TSUKHAY, A.N.

Anodic treatment of aluminum and its alloys

TSUKHLO, V.M.

What causes the splitting of particle boards in case of their veneering in hot presses. Der.prom. 11 no.2:17 F '62. (MIRA 15:1)

1. Moskovskiy lesotekhnicheskiy institut.
(Hardboard) (Veneers and veneering)

MISHCHENKO, Georgiy Leonidovich; NEYMAN, Aleksandr Frantsevich; KHAS'YAN, T.I., red.; TSUKHLO, I.L., red.

[Technology of the transparent finishing of panel elements of furniture] Tekhnologiia prozrachnoi otdelki shchitovykh elementov mebeli. Moskva, Izd-vo "Lesnaia promyshlennost'," 1964. 242 p. (MIRA 18:1)

TSUKHLO, V. M.

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(Furniture industry)

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FAVORSKIY, Vladimir Yevgen'yevich; ROMANOVSKIY, V.P., kandidat tekhnicheskikh nauk, dotsent, redaktor; TSUKKER, G.Ye., inzhener, redaktor; KAPLANSKIY, Ye.F., redaktor; SOKOLOVA, T.V., tekhnicheskiy redaktor.

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