LAVROV, N.N.; SHVETSOV, I.M.

Hemodynamic changes in the internal mammary artery during electrical stimulation of the parasternal nerve. Grud. Khir. 3 no.2:50-53 '61. (MIRA 14:4)

(CHEST--BLOOD SUPPLY) (CHEST--INNERVATION)

LAVROV, N.N., prof., red.

[Materials of the conference of young scientists of the Kirghiz State Medical Institute] Sbornik materialov konferentsii molodykh uchenykh KGMI. Frunze. No.2. 1963. 72 p. (MIRA 17:10)

1. Frunze. Kirgizskiy gosudarstvennyy meditsinskiy institut. Zaveduyushchiy kafedroy normal'noy anatomii Kirgizskogo gosudarstvennogo meditsinskogo instituta.

LAVROV, N.N.

Work organization for a young scientist. Trudy KirgNOAGE no.2:107-119 '65. (MIRA 18:11)

1. Iz kafedry normal'noy anatomii (zav. - prof. N.N.Lavrov) Kirgizskogo gosudarstvennogo meditsinskogo instituta.

LAVROV, Nikolay Nikolayevich; KRAVCHUK, Nadezhda Vasil'yevna; ZNAMENSKIY, M.S., prof., red.

[Central nervous system; methodological textbook for conducting practical work] TSentral'naia nervnaia sistema; metodicheskoe posobie k provedeniiu prakticheskikh zaniatii. Frunze, Kirgizskii gos. med. in-t, 1961. 66 p. (MIRA 18:8)

LAVROV, N.N. DECEASED 1962/4
1889 - 1960

SEE ILC

BOTONY

KONSHIN, M.D., prof. doktor tekhn.nauk; LOBANOV, A.N., prof. doktor tekhn. nauk; LAVROV, N.P., dotsent, kand.tekhn.nauk

Ninth International Photogrammetric Congress and the development of photogrammetry abroad. Izv. vys. ucheb. zav.; geod. i aerof. i no.6:53-68 '60. (MIRA 14:5)
(Aerial photogrammetry—Congresses)

KONSHIN, M.D., doktor tekhn.nauk; LOBANOV, A.N., doktor tekhn.nauk; LAVROV, N.P., kand.tekhn.nauk

Ninth International Photogrammetric Congress. Geod. i kart. no. 12:3-10 D '60. (MIRA 14:1)
(Photogrammetry—Congresses)

LAVROV, N.P.

Thirteenth general assembley of the International Geodesic and Geophysical Association and the principal scientific problems in modern geodesy. Geod. i kart. no.12:3-11 D '63. (MIRA 17:1)

LAVROV, N. P., Moscow

"The perspective of the automation of the techniques of compilation and preparation reproduction of the geographic and topographic maps."

report scheduled to be presented at the 20th Intl Geographical Cong, 6 Jul-11 Aug 64, London.

LAVROV, N. P.

"Problem of the Calculation and Forecasting of Runoff From Small Basins," Meteorol. i Gidrologiya, No 3, 1954, pp 32-36

Assuming a uniform fall of precipitation and uniform snow thaw within the water shed and proceeding from the fact that the soaking of the water into the soil depends upon slope, the author proposes the following formula $y = x/\delta \int f(s)\,ds - \int_0^x sf(s)\,ds$, where y is runoff, x is precipitation layer, s is loss layer. He obtains expressions for the function f(s), the quantity y, and also the coefficient of water transmission eta = w_x/w (where w_x is the effective area of the basin, and w is the entire area of the basin) as functions of the maximum magnitude of the loss (s_0) and a number of parameters that characterize the relief. The author notes the difficulties in the application of his formulas to practice, particularly in connection with the establishment of the value of loss s_0. He points out positive results of the computation of rain floods for two mountain rivers according to data on yearly precipitation and runoff. In conclusion he speaks about the necessity, for the purpose of improving the method, of concentrating attention on the working out of methods for the determination of loss s_0. (RZhGeol, No 5, 1955)
SO: Sum.No. 713,9 Nov 55

LAVROV, N.P.

Data on the feeding habits of the Kamchatka sable. Trudy VNIO no.13: 40-52 '53. (MLRA 7:5)

(Kamchatka--Sables) (Sables--Kamchatka)

USSR/Biology

Card 1/1 Pub. 86 - 6/40

Authors : Lavrov, N. P. Dr. of Biol. Sc.

Title : Acclimatization of industrial animals in the USSR

Periodical : Priroda 43, 3, 55-63, Mar 1954

Abstract : Data are presented on the acclimatization of forest and prairie fur producing animals (muskrats, beavers, fox, etc.) in the USSR. Chart showing the abundance of muskrats and racoons in the USSR is included. Illustrations.

Institution : All Union Scientific Research Institute of Hunting Industry

Submitted : .....

LAVROV, N.P.

Dynamics of the distribution and of the commercial significance of the muskrat in the U.S.S.R. Zool.zhur. 34 no.2:441-453 Mr-Ap '55. (MLRA 8:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut okhotnich'yego promysla Ministerstva zagotovok SSSR.
(Muskrats)

LAVROV, Nikolay Petrovich, prof., doktor biol.nauk; FORMOZOV, A.N., prof., doktor biol.nauk, otvetstvennyy red.; KRESINA, I.Ya., red.; TROFIMOV, A.V., tekhn.red.

[Acclimatization of the muskrat in the U.S.S.R.] Akklimatizatsiia ondatry v SSSR. Moskva, Izd-vo TSentrosoiuza, 1957. 529 p.
(Muskrats) (MIRA 11:5)

LAVROV, N.P., prof., red.; BILENKO, L.S., red.; TROFIMOV, A., tekhn.red.

[Manual on resettling fur-bearing animals] Rukovodstvo po rasseleniiu pushnykh zverei. Moskva, Izd-vo Tsentrosoiuza, 1958. 141 p. (MIRA 11:12)

(Fur-bearing animals)

LAVROV, Nikolay Petrovich; NAUMOV, Sergey Pavlovich; KOLOSOV, A.M., prof., red.; BILENKO, L.S., red.izd-va; POMICHEV, P.M., tekhn.red.

[Biology of game animals and birds in the U.S.S.R.] Biologiia promyslovykh zverei i ptits SSSR. Pod obshchei red. A.M.Kolosova. Moskva, Izd-vo TSentrosoiuza, 1960. 236 p. (MIRA 14:2)
(Game and game birds)

DANILOV, Dmitriy Nikitich; LAVROV, N.P., prof., doktor biolog.nauk, red.; BILENKO, L.S., red.izd-va; FOMICHEV, P.M., tekhn.red.

[Hunting grounds of the U.S.S.R.; commercial evaluation and gameland management] Okhotnich'i ugod'ia SSSR; promyslovaia otsenka i ustroistvo ugodii. Moskva, Izd-vo TSentrosoiuza, 1960. 283 p. (MIRA 13:11)
(Game and game birds)

KOLOSOV, A.M.; LAVROV, N.P.; NAUMOV, S.P.; DUKAL'SKAYA, N.M., red.; ROZANOVA, G.K., red. izd-va; MURASHOVA, V.A., tekhn. red.

[Biology of commercial animals in the U.S.S.R.] Biologiia promyslovykh zverei SSSR. Moskva, Gos. izd-vo "Vysshaia shkola," 1961. 379 p. (MIRA 14:6)

(Game and game birds)

KOLOSOV, Aleksey Mikhaylovich, prof.; LAVROV, Nikolay Petrovich, prof.; NAUMOV, Sergey Pavlovich, prof.; PETROVSKAYA, L.P., red.

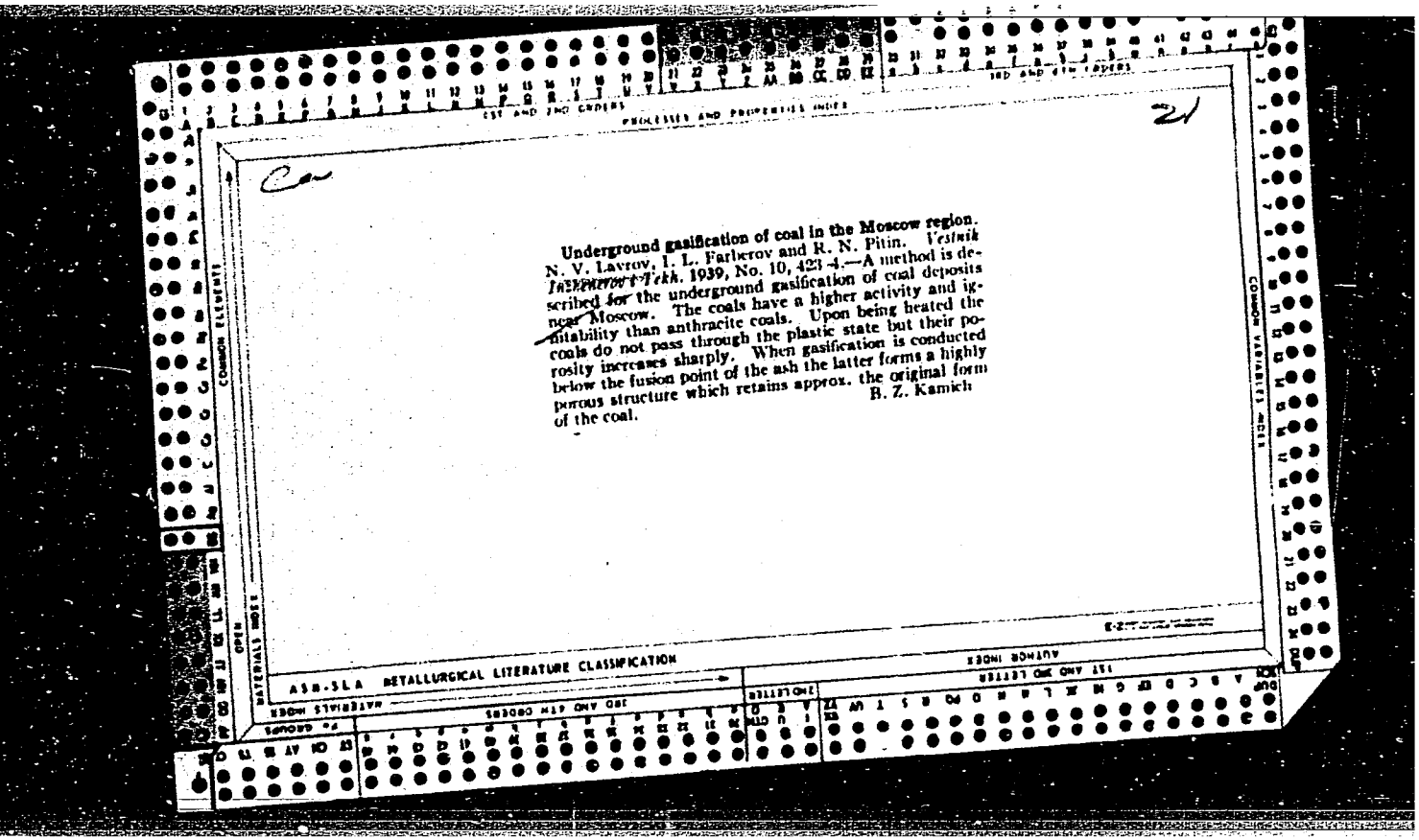
[Biology of commercial animals of the U.S.S.R.] Biologiia promyslovykh zverei SSSR. Perer. i znachitel'no dop. izd. Moskva, Vysshaia shkola, 1965. 508 p. (MIRA 18:6)

YEGOROV, O.V., khirurg; LAVROV, N.P., khirurg; KUDELYA, M.I.; KUVAYEVA, A.G.; LEVIN, S.V.; ORLOVSKIY, V.F.; KUCHERENKO, G.S.; RUDENKO, G.D., kand. med.nauk; SINADSKIY, N.Ye., kand.med.nauk; SHVARTSBERG, I.L., kand. med.nauk; MISNIK, I.L.; BAZILEVSKAYA, Z.V., prof.; ERNST, V.P.

Discussions. Vop. travm. i ortop. no.13:127-128 '63.

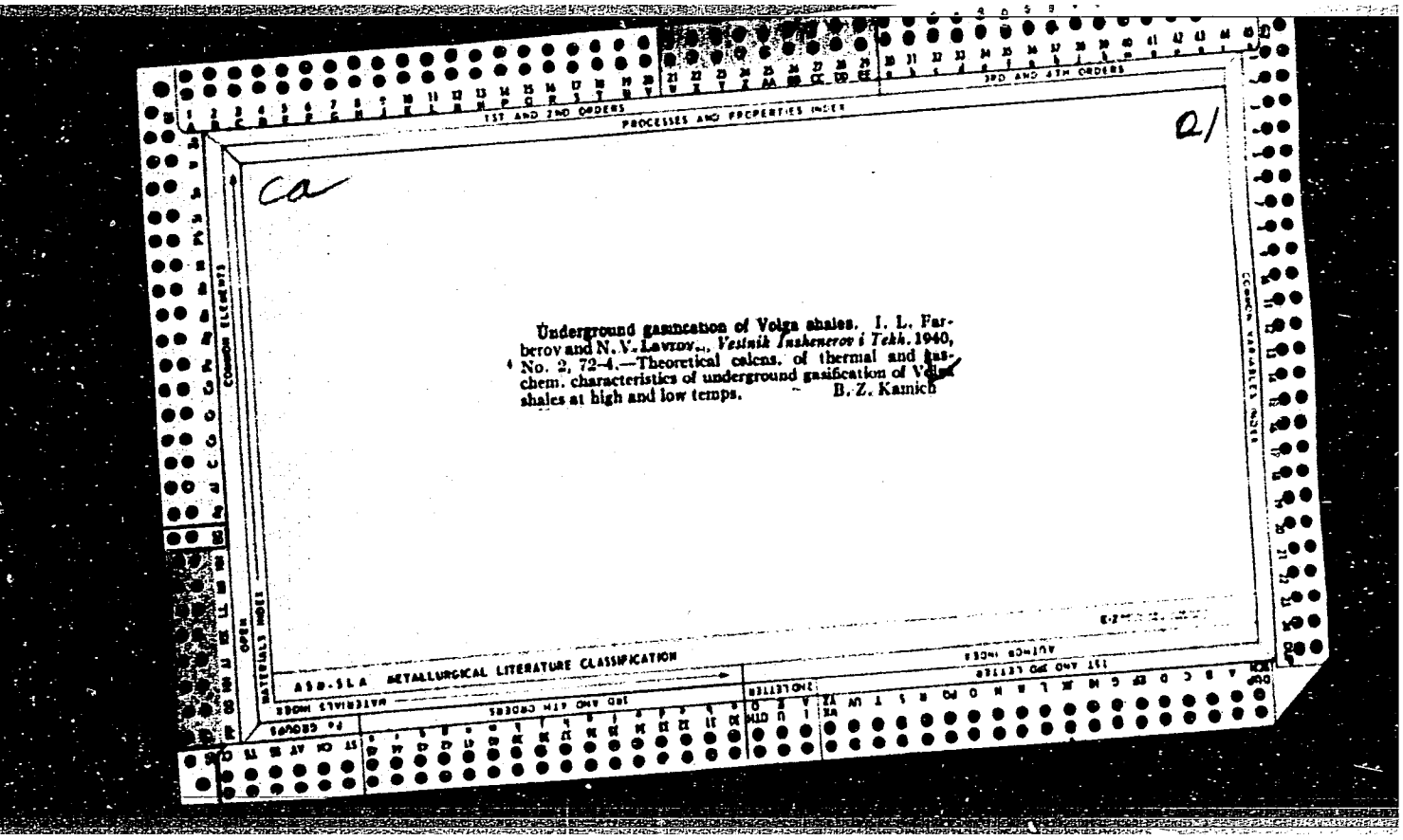
(MIRA 18:2)

1. Glavnyy travmatolog Primorskogo kraya (for Kudelya). 2. Zaveduyushchiy punktom zdravookhraneniya Makarovskogo bumazhnogo kombinata (for Kuvayeva). 3. Glavnyy vrach Korsakovskoy bol'nitsy (for Levin). 4. Zaveduyushchiy travmatologicheskim otdeleniyem bol'nitsy Vladivostoka (for Orlovskiy). 5. Zaveduyushchiy travmatologicheskim otdeleniyem bol'nitsy, Ussuriysk (for Kucherenko). 6. Leningradskiy nauchno-issledovatel'skiy institut travmatologii i ortopedii (for Rudenko). 7. Irkutskiy gosudarstvennyy nauchno-issledovatel'skiy institut travmatologii i ortopedii (for Sinadskiy, Shvartsberg, Bazilevskaya). 8. Glavnyy khirurg Sakhalinskoy oblasti (for Misnik). 9. Zaveduyushchiy Sakhalinskim otdelom zdravookhraneniya Ministerstva zdravookhraneniya RSFSR (for Ernst).

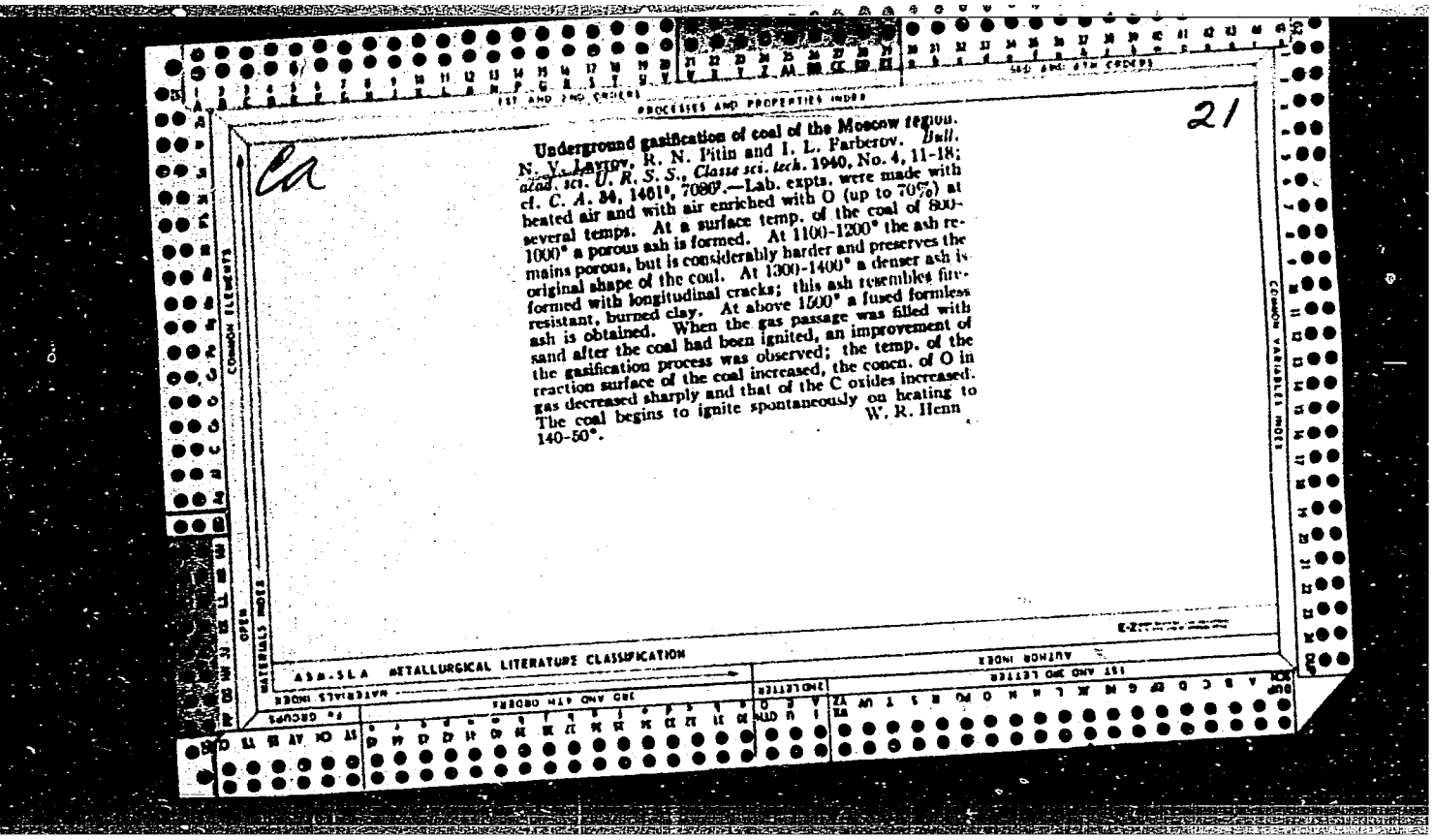


Underground gasification of coal in the Moscow region. N. V. Lavrov, I. L. Farberov and R. N. Pitin. *Vestnik Inzhenerov i Tekh.* 1939, No. 10, 423–4.—A method is described for the underground gasification of coal deposits near Moscow. The coals have a higher activity and ignitability than anthracite coals. Upon being heated the coals do not pass through the plastic state but their porosity increases sharply. When gasification is conducted below the fusion point of the ash the latter forms a highly porous structure which retains approx. the original form of the coal.

B. Z. Kamich



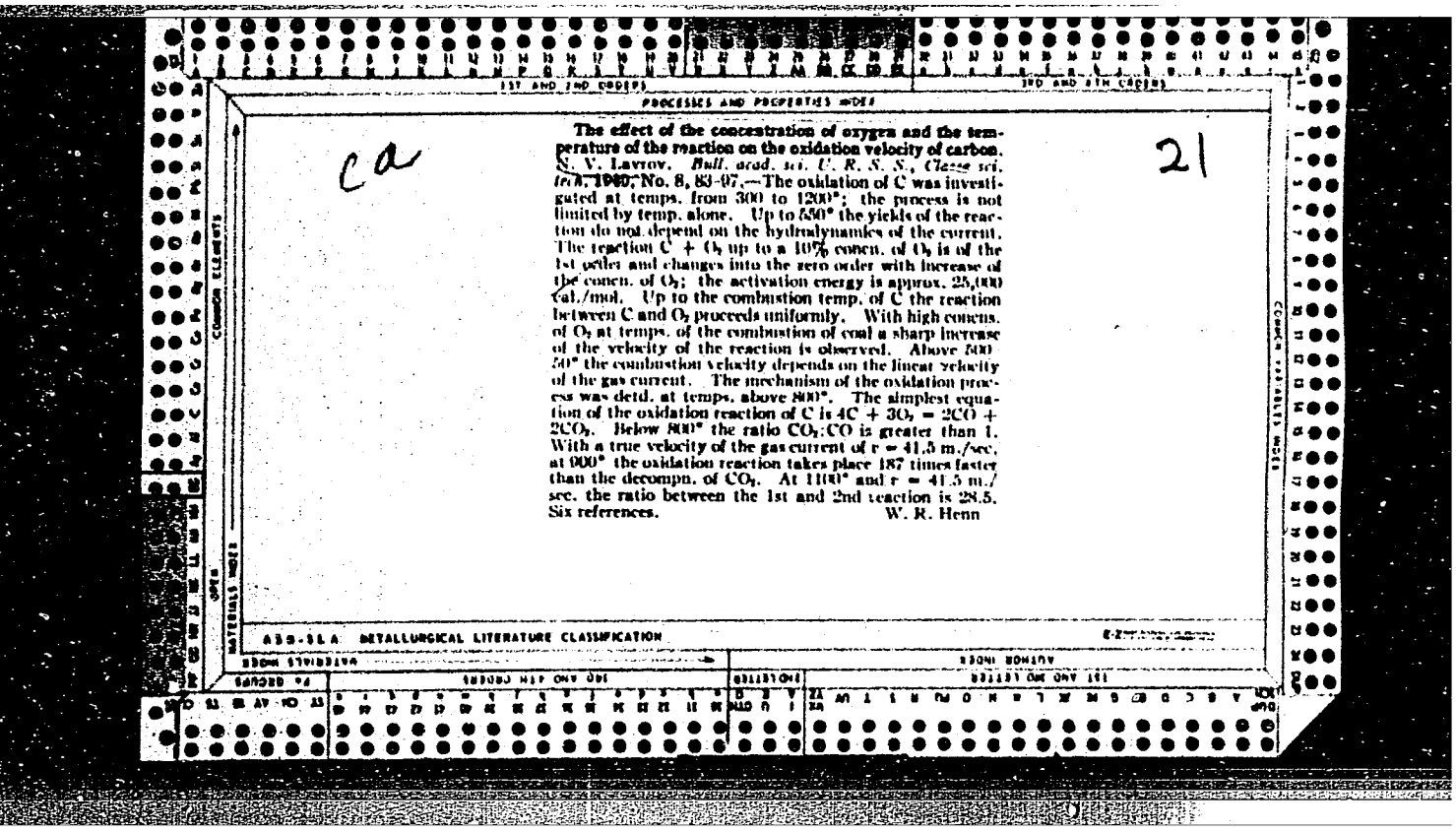
Underground gasification of Volga shales. I. L. Farberov and N. V. Lavrov., *Vestnik Inzhenerov i Tekh.* 1940, No. 2, 72-4.—Theoretical calcns. of thermal and gas-chem. characteristics of underground gasification of Volga shales at high and low temps. B. Z. Kamick



21

Underground gasification of coal of the Moscow region. N. V. Lavrov, R. N. Pitin and I. L. Farberov. *Bull. acad. sci. U. R. S. S., Classe sci. tech.* 1940, No. 4, 11-18; cf. *C. A.* **34**, 1401⁹, 7080⁹.—Lab. expts. were made with heated air and with air enriched with O (up to 70%) at several temps. At a surface temp. of the coal of 800-1000° a porous ash is formed. At 1100-1200° the ash remains porous, but is considerably harder and preserves the original shape of the coal. At 1300-1400° a denser ash is formed with longitudinal cracks; this ash resembles fire-resistant, burned clay. At above 1500° a fused formless ash is obtained. When the gas passage was filled with sand after the coal had been ignited, an improvement of the gasification process was observed; the temp. of the reaction surface of the coal increased, the concn. of O in gas decreased sharply and that of the C oxides increased. The coal begins to ignite spontaneously on heating to 140-50°.

W. R. Henn



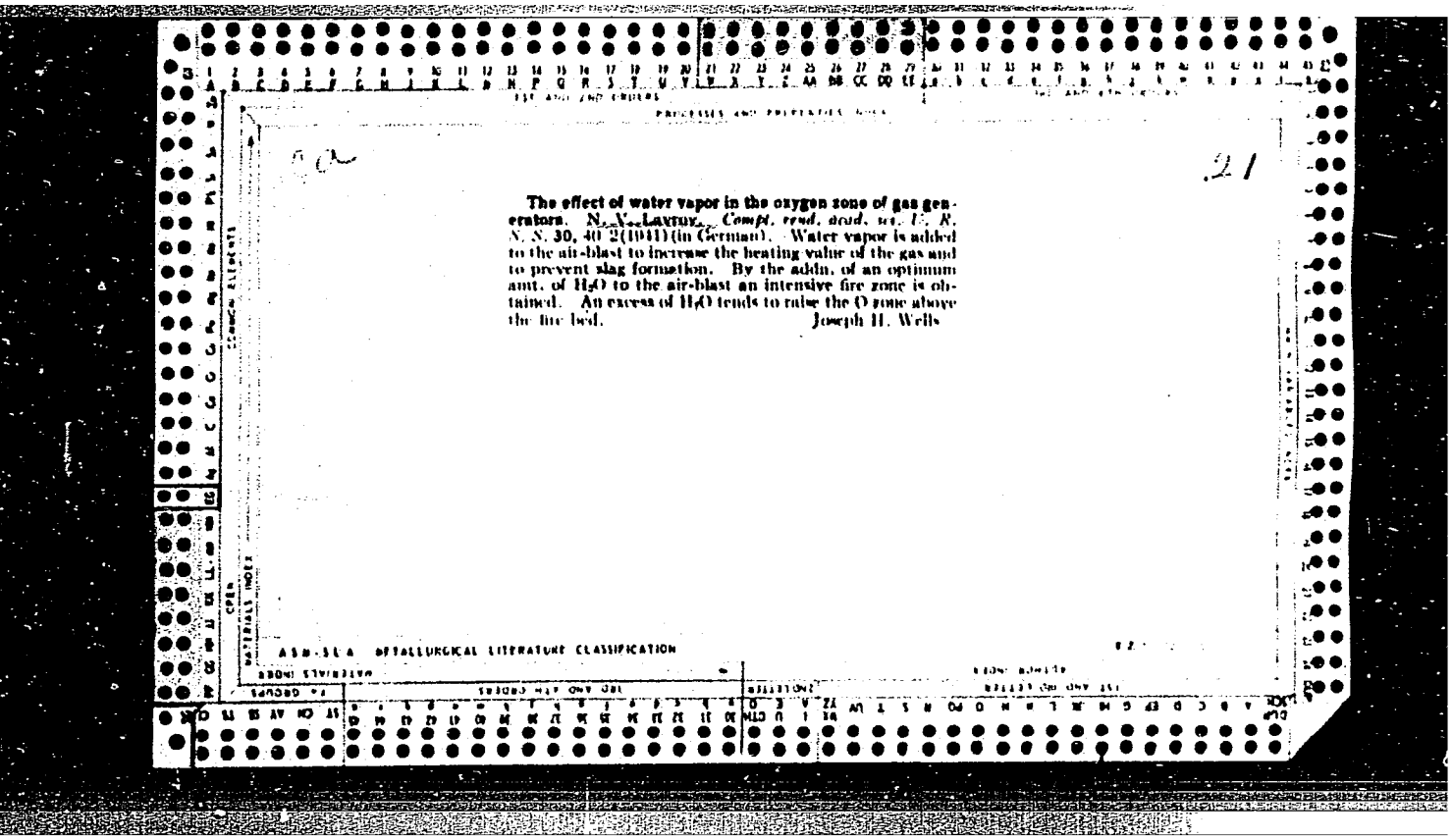
PROCESSES AND PROPERTIES INDEX

Ca

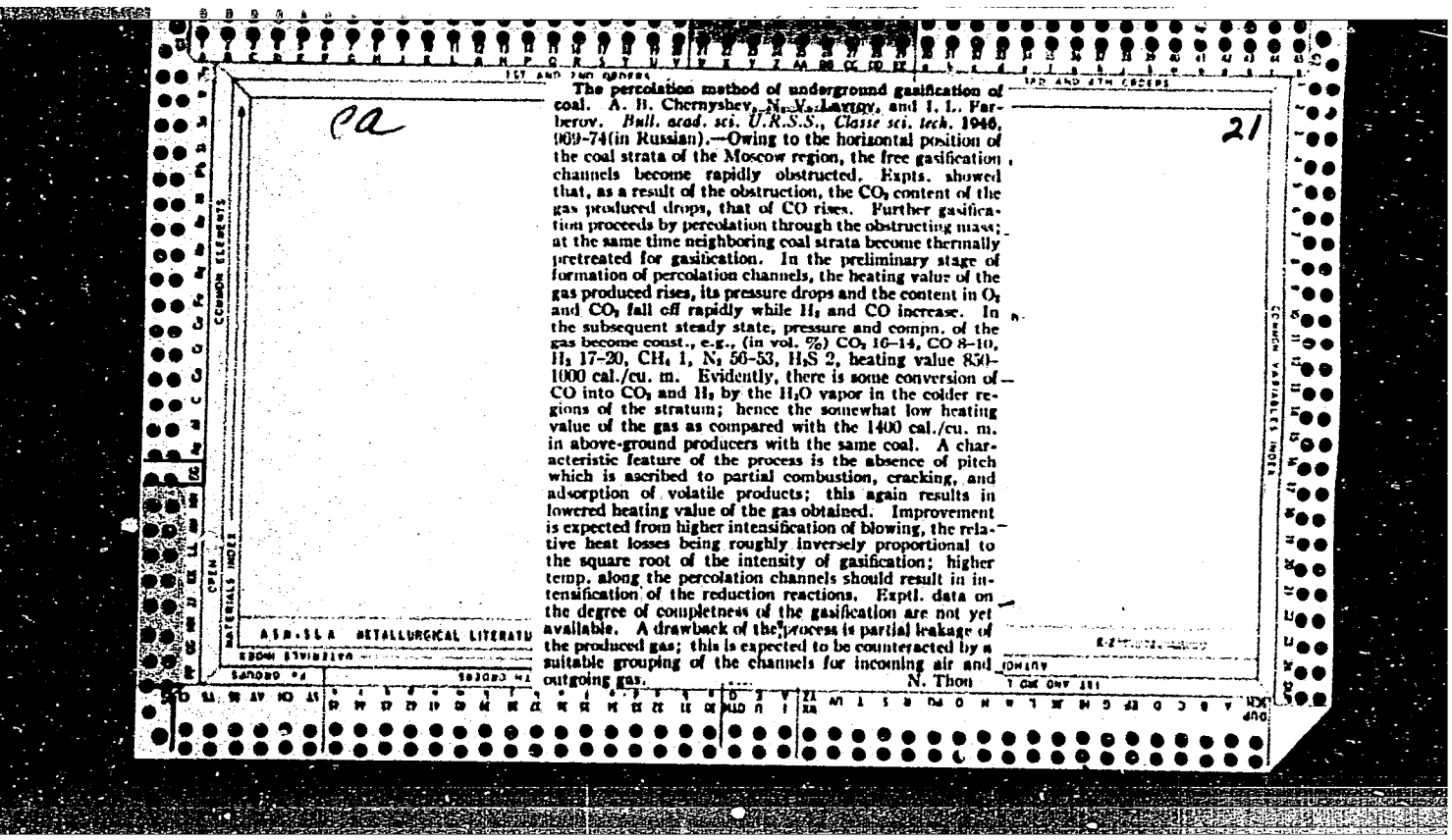
21

The effect of the concentration of oxygen and the temperature of the reaction on the oxidation velocity of carbon. S. V. Lavrov. *Bull. acad. sci. U. R. S. S., Classe sci. tech.*, 1950, No. 8, 83–97.—The oxidation of C was investigated at temps. from 300 to 1200°; the process is not limited by temp. alone. Up to 550° the yields of the reaction do not depend on the hydrodynamics of the current. The reaction $C + O_2$ up to a 10% concn. of O_2 is of the 1st order and changes into the zero order with increase of the concn. of O_2; the activation energy is approx. 25,000 cal./mol. Up to the combustion temp. of C the reaction between C and O_2 proceeds uniformly. With high concns. of O_2 at temps. of the combustion of coal a sharp increase of the velocity of the reaction is observed. Above 500–550° the combustion velocity depends on the linear velocity of the gas current. The mechanism of the oxidation process was detd. at temps. above 800°. The simplest equation of the oxidation reaction of C is $4C + 3O_2 = 2CO + 2CO_2$. Below 800° the ratio CO_2:CO is greater than 1. With a true velocity of the gas current of $r = 41.5$ m./sec. at 900° the oxidation reaction takes place 187 times faster than the decompn. of CO_2. At 1100° and $r = 41.5$ m./sec. the ratio between the 1st and 2nd reaction is 28.5. Six references. W. R. Henn

A59-81A METALLURGICAL LITERATURE CLASSIFICATION



The effect of water vapor in the oxygen zone of gas generators. N. V. Lavrov. *Compt. rend. acad. sci. U. R. S. S.* 30, 40-2(1941)(in German). Water vapor is added to the air-blast to increase the heating value of the gas and to prevent slag formation. By the addn. of an optimum amt. of H_2O to the air-blast an intensive fire zone is obtained. An excess of H_2O tends to raise the O zone above the fire bed. Joseph H. Wells



The percolation method of underground gasification of coal. A. B. Chernyshev, N. V. Lavrov, and I. L. Farberov. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1946, 909-74(in Russian).—Owing to the horizontal position of the coal strata of the Moscow region, the free gasification channels become rapidly obstructed. Expts. showed that, as a result of the obstruction, the CO_2 content of the gas produced drops, that of CO rises. Further gasification proceeds by percolation through the obstructing mass; at the same time neighboring coal strata become thermally pretreated for gasification. In the preliminary stage of formation of percolation channels, the heating value of the gas produced rises, its pressure drops and the content in O_2 and CO_2 fall off rapidly while H_2 and CO increase. In the subsequent steady state, pressure and compn. of the gas become const., e.g., (in vol. %) CO_2 16–14, CO 8–10, H_2 17–20, CH_4 1, N_2 56–53, H_2S 2, heating value 850–1000 cal./cu. m. Evidently, there is some conversion of CO into CO_2 and H_2 by the H_2O vapor in the colder regions of the stratum; hence the somewhat low heating value of the gas as compared with the 1400 cal./cu. m. in above-ground producers with the same coal. A characteristic feature of the process is the absence of pitch which is ascribed to partial combustion, cracking, and adsorption of volatile products; this again results in lowered heating value of the gas obtained. Improvement is expected from higher intensification of blowing, the relative heat losses being roughly inversely proportional to the square root of the intensity of gasification; higher temp. along the percolation channels should result in intensification of the reduction reactions. Exptl. data on the degree of completness of the gasification are not yet available. A drawback of the process is partial leakage of the produced gas; this is expected to be counteracted by a suitable grouping of the channels for incoming air and outgoing gas.

N. Thon

Jan 52

USSR/Fuel - Gases

"Concerning Classification of Combustible Gases,"
M. B. Ravich, N. V. Lavrov

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 1, pp 72-80

Disputes expediency of existing classification of gas-
eous fuels by their heat values and method of produc-
tion and suggests new classification of gases accord-
ing to their combustion temp, 5 groups, and by their
technological utilization. Latter classification is
based on amt of potential hydrogen in gas, i.e., per-
centage of hydrogen yielded by given gas in process-
ing. In this respect all gases are divided into 4

219T41

groups ranging from 500 to 50% potential H content
by mol vol referred to the original. Submitted by
Acad A. V. Vinter 6 Mar 51.

(CA 47 no.22:12791 '53)

219T41

LAVROV, N.V.

LAVROV, N.V.

USSR/Mining - Gasification of coal

Card 1/1 : Pub. 124 - 9/29

Authors : Lavrov, N. V., Dr. of Techn. Sc.

Title : About subterranean gasification of coal

Periodical : Vest. AN SSSR 6, 62-63, June 1954

Abstract : Claiming USSR priority in subterranean gasification of coal, the author lists the numerous difficulties involved in such process of coal gasification. The major problem of controlling underground combustion of coal is discussed. Various scientific geological-mining institutions, which take part in solving the problem of safe subterranean coal gasification, are mentioned.

Institution : ...

Submitted : ...

LAVROV, N.V.

ZIL'BERMINTS, Lev Mikhaylovich, kandidat tekhnicheskikh nauk; LAVROV, N.V., doktor tekhnicheskikh nauk, redaktor; ISLANKINA, T.F., redaktor; DMITRIYEVA, R.V., tekhnicheskiy redaktor

[Fuel gases and their use in the national economy] Goriuchie gazy i ikh ispol'zovanie v narodnom khoziaistve. Moskva, Izd-vo "Znanie," 1955. 38 p.(Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.4, no.32) (MLRA 8:10)
(Gas as fuel)

CHERNYSHEV, Andrey Borisovich; LAVROV, N.V., doktor tekhnicheskikh nauk, otvetstvennyy redaktor; FARBEROV, I.L., doktor tekhnicheskikh nauk, redaktor; SHISHAKOV, N.V., doktor tekhnicheskikh nauk, redaktor; AL'TSHULER, V.S., doktor tekhnicheskikh nauk, redaktor; IVANOV, V.M., kandidat tekhnicheskikh nauk, redaktor; PITIN, R.N., kandidat tekhnicheskikh nauk, redaktor; KLIMOV, V.A., redaktor izdatel'stva; SOMOROV, B.A., tekhnicheskiy redaktor

[Selected works] Izbrannye trudy. Moskva, Izd-vo Akademii nauk SSSR, 1956. 368 p. (MLRA 9:8)

1. Chlen-korrespondent AN SSSR (for Chernyshev)
(Coal gasification)

LAVROV, Nikolay Vladimirovich, doktor tekhnicheskikh nauk, professor; PIRIN, R.N., kandidat tekhnicheskikh nauk, redaktor; LANOVSKAYA, M.R., redaktor izdatel'stva; MIKHAYLOVA, V.V., tekhnicheskiy redaktor.

[Physical and chemical principles of the combustion and gasification of fuel] Fiziko-khimicheskie osnovy goreniia i gazifikatsii topliva. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1957. 288 p. (MIRA 10:11)
(Thermochemistry) (Combustion)

LAVROV, N.V.

SOV/112-58-1-155

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1958, Nr 1, p 18 (USSR)

AUTHOR: Lavrov, N. V.

TITLE: Commercial Classification of Gas Fuels
(Promyzhlennaya klassifikatsiya gazoobraznogo topliva)

PERIODICAL: V sb.: Gazifik. tverdogo topliva, Moscow, Gostoptekhizdat., 1957, pp 227-229

ABSTRACT: Bibliographic entry.

AVAILABLE: Library of Congress

1. Gases 2. Fuels--Classification

Card 1/1

LAVROV, N.V., doktor tekhnicheskikh nauk, professor.

Certain parameters having an effect on the capacity of gas-producer plants. Podzem.gaz.ugl. no.1:29-31 '57. (MIRA 10:7)

1. Institut goryuchikh iskopayemykh Akademii nauk SSSR.
(Coal gasification, Underground) (Industrial capacity)

LAVROV, N.V., doktor tekhnicheskikh nauk, professor.

Prospects for utilizing the physical heat of gases produced during underground coal gasification. Podzem.gaz.ugl. no.2:88-90 '57. (MLRA 10:7)

1. Institut goryuchikh iskopayemykh Akademii nauk SSSR.
(Coal gasification, Underground) (Waste heat)

LAVROV, N.V., doktor tekhnicheskikh nauk, professor.

"Underground gasification gas combustion in burners with preliminary mixing" by V.A. Speisher, V.I. Andreev. Reviewed by N.V. Lavrov. Podzem.gaz.ugl. no.2:115-116 '57. (MLRA 10:7)
(Coal gasification, Underground) (Burners)
(Speisher, V.A.) (Andreev, V.I.)

LAVROV, N.V.; TRIFONOVA, K.V.

Using models to investigate the effect of various factors on the outline and rate of displacement of the combustion center. Trudy IGI 7:3-32 '57. (MLRA 10:6)
(Coal gasification, Underground) (Geological modeling)

LUKNITSKIY, V.V. [deceased], doktor tekhn. nauk, prepodavatel'; SOKOLOV, Ye.Ya., doktor tekhn. nauk, prepodavatel'; LEBEDEV, P.D., doktor tekhn. nauk, prepodavatel'; GIMMEL'FARB, M.L., kand. tekhn. nauk, prepodavatel'; LAVROV, N.V., doktor tekhn. nauk, prepodavatel'; IVANTSOV, G.P., kand. tekhn. nauk, prepodavatel'; GOLUBKOV, B.N., kand. tekhn. nauk, prepodavatel'; SHERSTYUK, A.N., kand. tekhn. nauk, prepodavatel'; NIKITIN, S.P., kand. tekhn. nauk, prepodavatel'; CHISTYAKOV, S.F., kand. tekhn. nauk., prepodavatel'; DUDNIKOV, Ye.G., doktor tekhn. nauk, prepodavatel'; RAKLASTOV, A.M., kand. tekhn. nauk, prepodavatel'; VEKUA, M.I., kand. tekhn. nauk, prepodavatel'; GERASIMOV, S.G., prof., red.; KAGAN, Ya.A., dots., red.; AYZENSHTAT, I.I., red.; VORONIN, K.P., tekhn. red.; LARIONOV, G.Ye., tekhn. red.

[Heat engineering handbook] Teplotekhnicheskii spravochnik. Moskva, Gos. energ. izd-vo. Vol.2. 1958. 672 p. (MIRA 11:10)
(Heat engineering)

LAVROV, N.V., doktor tekhn.nauk

Mechanism of reactions occurring in an underground gas producer; working hypothesis. Podzem.gaz.ugl. no.1:10-12 '58. (MIRA 11:4)

1. Institut goryuchikh iskopayemykh im. G.M. Krzhizhanovskogo AN SSSR.
(Coal gasification, Underground)

LAVROV, N.V., doktor tekhn.nauk; TRIFONOVA, K.B., kand.tekhn.nauk

Use of approximate chemical models to study the drifitng of combustion centers. Podzem.gaz.ugl. no.1:18-23 '58.
(MIRA 11:4)

1. Institut goryuchikh iskopayemykh im. G.M. Krzhizhanovskogo AN SSSR.
(Engineering models) (Combustion, Theory of)

LAVROV, N.V.

LAVROV, N.V.; GREBENSHCHIKOVA, G.V.

Effect of the conversion of carbon monoxide on the gasification of coal with steam. Gaz. prom. no.1:20-25 Ja '58. (MIRA 11:2)
(Coal gasification) (Carbon monoxide)

LAVROV, N.V., doktor tekhn. nauk; TRIFONOVA, K.B., kand. tekhn. nauk

Methods of controlling the conversion reaction of carbon oxide by steam in producing industrial gas in an underground gas producer. Podzem. gaz. ugl. no. 2:35-38 '58. (MIRA 11:7)

1. Institut goryuchikh iskopayemykh im. G.M. Krzhizhanovskogo AN SSSR.

(Coal gasification, Underground)
(Chemical reactions)

LAVROV, N.V., doktor tekhn. nauk, prof.; MARTYNOVA, V.M.

Determining the chemical efficiency of underground gas producers. Podzem. gaz. ugl. no.4:5-7 '58. (MIRA 11:12)

1.Institut goryuchikh iskopayemykh im. G.M. Krzhizhanovskogo AN SSSR.
(Coal gasification, Underground)
(Heat capacity)

SOV/30-58-6-7/45

AUTHORS: Lavrov, N. V., Doctor of Technical Sciences,
Kirichenko, I. P., Candidate of Technical Sciences

TITLE: State and Prospects of the Subterranean Gasification of Coal (Sostoyaniye i perspektivy podzemnoy gazifikatsii ugley)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 6, pp. 56 - 61 (USSR)

ABSTRACT: The first tests carried out with the subterranean gasification of coal were carried out in 1933. They showed the possibility of a subterranean gasification without previous crushing of the coal. Two stations were put into operation at the end of 1940: Podmoskovnaya (Tula-Region) for brown coal and Lisichanskaya (Donbas) for mineral coal. The heating power of the gas in the Podmoskovnaya station fluctuates between 800 to 900 kcal/cm^3, which corresponds to a chemical efficiency of 60 to 65 %. The daily output attains up to from 1,0 to 1,2 million m^3. The main task of this station consists in a further increase of the technical and economical characteristic factors. The design of the greater station Shatskaya in the Moscow Basin, the construction of which is

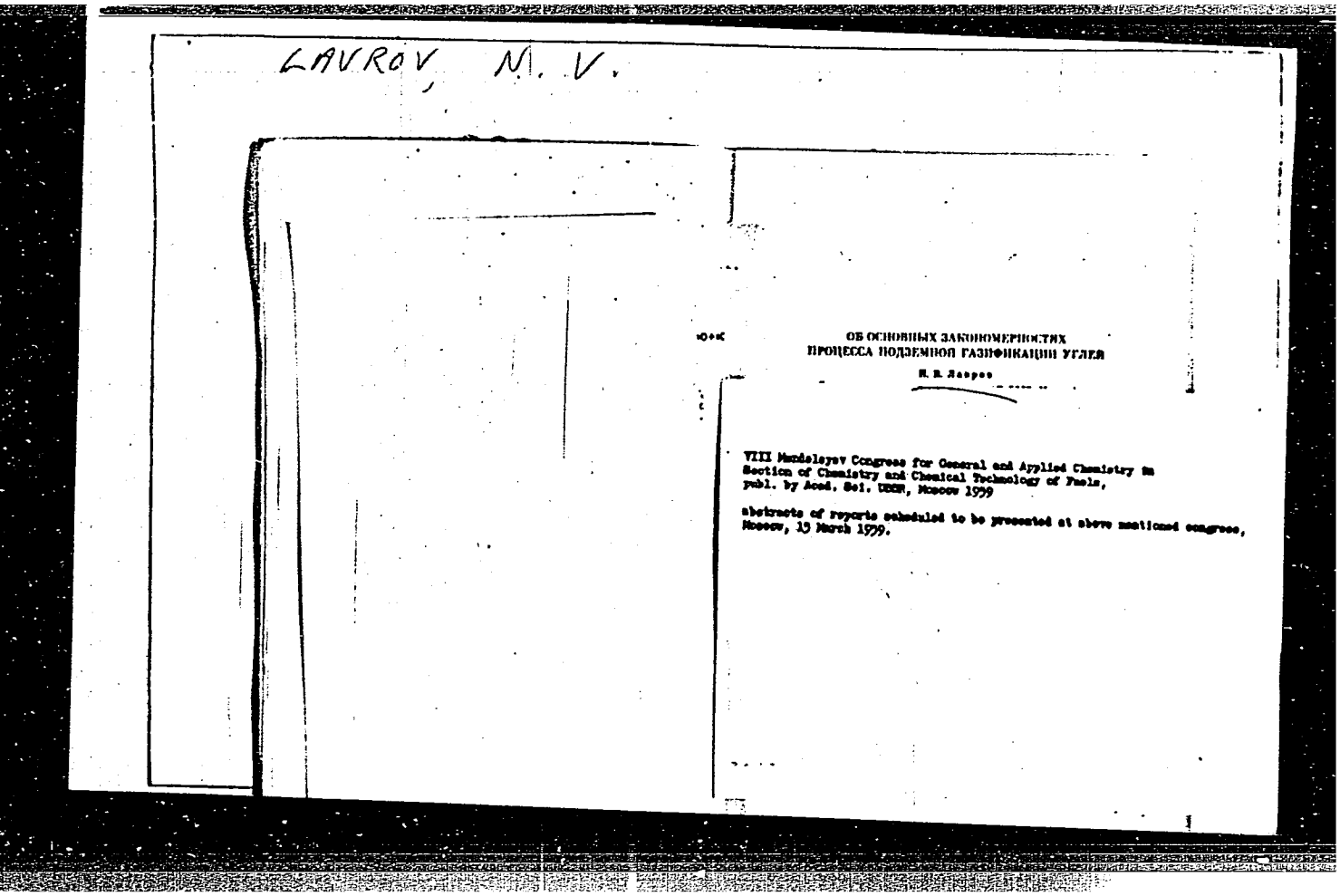
Card 1/4

already completed, provides the supply of two gas turbines of 12 000 kW output each, with the gas of the subterranean gasification of coal which permits a special economical utilization of the gases of low thermal power. An industrial station of subterranean gasification of coal is built in Angrena (Uzbekistan SSR) which will supply gas to the TETs at a distance of 4 kilometers. A brown coal layer of 9,2 m thickness in an average depth bedding of 156 m was selected for the gasification. The station ought to supply 2,5 billion m^3 of combustible gas per annum, which corresponds to 700 000 tons of Angrena coal. The development of the gasification of mineral coal takes place much more slowly. The station Lisichansk where the geological mining conditions have proved to be very difficult (thin coal layers and high ground water level) was built after the Gorlovka Test Station in the Donets Basin. The supply of power gas provided in the design has not yet been obtained. A blast which is partly enriched with oxygen, but which cannot be considered as economic, is used in the gas production. The main task of the Lisichansk-Station consists at present in further developing the gasification process, viz. to obtain power gas by means

of an air compressor and to obtain technological gas by using oxygen and steam. The Podzemgaz Industrial Test Station has been working for approximately 2 years in the Kuznetsk-Basin. The coal is embedded in 21 layers of 7 m thickness and has a gas heating power of 1270 kcal/m^3 on the average and a chemical efficiency of more than 70 %. A subterranean gasification of coal with previous treatment of the coal layer by the heat of the exhaust gases was successfully carried out by Vniipodzemgaz at the Podmoskovnaya Station. The chemical efficiency and the heating power of both the surface- and subterranean gasification of coal is given in Table 1. The investigation carried out by A. F. Ioffe, Member, Academy of Sciences, USSR, and by his collaborators in the field of the use of semi-conductors for a direct transformation of the heating energy into electrical energy without the use of machines, which involves brilliant prospects for the future, are of great interest. The author regrets that the Mining Institute has suspended its investigations in this field which are neither carried out systematic-

ally by any other institute. The possibility of a regulation of the moisture content of the coal layers was shown by the Laboratory of Hydro-Geological Problems imeni F. P. Savarenskiy AS USSR. The development of the control methods for the parameters of the subterranean gasification of coal is designated to be in particular antiquated. The Geophysical Institute has ceased work in this field. The Institute of Combustible Natural Resources in cooperation with the Vniipodzemgaz (= high-pressure subterranean gas) worked out initial determinations for the theory for obtaining technological gas by using a steam-oxygen blast, but this work is carried out much too slowly. The economic investigations in this field are also of great interest. The scientific work carried out by the AS USSR in this field must be intensified, in which case the Mining Institute should be charged with the supervision. The best experts in this field also should be concentrated there. There is 1 table.

1. Coal--Processing 2. Gases--Production 3. Gases--Applications
4. Gases--Economic aspects



LAVROV, N. V.

ОБ ОСНОВНЫХ ЗАКОНОМЕРНОСТЯХ
ПРОЦЕССА ПОДЗЕМНОЙ ГАЗИФИКАЦИИ УГЛЕЙ

Н. В. Лавров

VIII Mendeleyev Congress for General and Applied Chemistry Sm
Section of Chemistry and Chemical Technology of Fuels,
publ. by Acad. Sci. USSR, Moscow 1959

abstracts of reports scheduled to be presented at above mentioned congress,
Moscow, 19 March 1959.

LAVROV, N.V.
p. 2, 3, 4, 6

PHASE I BOOK EXPLOITATION SOV/3731

Akademiya nauk SSSR. Institut goryuchikh iskopayemykh

Gazifikatsiya i goreniye topliva (Fuel Gasification and Combustion) Moscow, Izd-vo AN SSSR, 1959. 227 p. (Series: Its: Trudy, Vol 11) Errata slip inserted. 1,800 copies printed.

Ed.: N. V. Lavrov; Ed. of Publishing House: V. N. Pokrovskiy; Tech. Ed.: I. N. Dorokhina.

PURPOSE: This collection of articles is intended for scientific research workers and engineers studying combustion processes and solid fuel gasification.

COVERAGE: This collection concerns the theoretical and experimental study of the mechanism of chemical reactions occurring in combustion and gasification. Results of the isotopic method of studying the gas generating process and its reactions, and the reaction of carbon monoxide and heated coal are analyzed and the pilot plants used in this study are described. Reactions of coal combustion, coal oxidation, methane dissociation and conversion are discussed and their

Card 1/6

equilibrium constants given in tables. The processes of methane oxidation by oxygen and synthesis-gas production by oxidizing natural gas with the subsequent reduction of oxidation products by carbon are analyzed as is the effect of an excessive amount of air on the burning process of powdered solid fuel. The utilization of heavy petroleum residue and tar for combustion and gasification purposes is also discussed along with the principles of fluidization. Analysis, routine control and intensification of physical and chemical processes by means of ultrasonic vibrations are also covered. No personalities are mentioned. References accompany all but the first article.

TABLE OF CONTENTS:

Fuel Gasification and Combustion SOV/3731

AVAILABLE: Library of Congress

Card 6/6

JA/edw/fal
7-18-60

LAVROV, N.V., doktor tekhn. nauk, prof.; MEDNIKOV, Ye.P., kand. tekhn. nauk; NIKOLAYEV, A.I., kand. tekhn. nauk

Sound purification of gases from dust and prospects for its use in underground coal gasification. Podzem. gaz. ugl. no.1:18-22 '59. (MIRA 12:6)

1.Institut goryuchikh iskopayemykh AN SSSR.
(Sound waves--Industrial applications)
(Gas purification)
(Coal gasification, Underground)

21(1),11(2)

AUTHORS: Lavrov, N. V., Doctor of Technical Sciences, Makarov, I. A., Candidate of Technical Sciences, Miroshnichenko, V. S., Engineer, Perepelitsa, A. L., Candidate of Technical Sciences, Pinsker, A. Ye., Engineer, Chernenkov, I. I., Engineer

SOV/67-59-2-1/18

TITLE: Use of Air Enriched With Oxygen in Partial Carbonization of Coal (Primeneniye obogashchennogo kislorodom vozdukha pri polukoksovanii uglya)

PERIODICAL: Kislorod, 1959, Nr 2, pp 1-9 (USSR)

ABSTRACT: An air-blowing engine has hitherto been applied in multizone shaft furnaces, of which general use is made in partial carbonization of coal. In addition to semicoke, semicoke gas was produced which contained a large quantity of nitrogen. Thus this gas is very unfavorable for further use for heating and technical purposes. Consequently, the authors made an experiment with industrial furnaces in which they tried to use air enriched with oxygen. As a result, the semicoke gas was considerably improved and the coking process was intensified. A diagram of a multizone furnace for partial carbonization of coal is shown in figure 1, and its mechanism is

Card 1/3

Use of Air Enriched With Oxygen in Partial Carbonization of Coal

described. For the purpose of investigating the dependence of the gas yield on temperature during the coking process the authors made laboratory experiments with Cheremkhovo coal. Data on the composition and yield of the gas are listed in table 1. The investigations were conducted by Engineer L. F. Ovsyannikov, with the assistance of Engineer V. N. Shiktorov, Engineer A. I. Gorokhova, and Engineer K. A. Bogens. In addition, the influence exercised by various oxygen contents on the composition and calorific value of the gas obtained was investigated. The following data were obtained: In addition to semicoke and tar, gas with a calorific value of 2,200 kcal/nm^3 is obtained during the partial carbonization of coal in multizone shaft furnaces, using an air-oxygen blowing engine with an oxygen content of up to 30 and 35 %. A gas is produced by oxygen enrichment of 40 % which after further treatment can be used for synthesizing ammonia. With an enrichment of 50 % and more a gas results which has a calorific value of 4,000 kcal/nm^3. Prime cost per calorie of the gas obtained does not differ greatly from that of

Card 2/3

natural gas (for conditions prevailing in East Siberia) (Table 4). The oxygen consumption does not exceed 40-50 % with respect to the amount required by direct gasification of coal by means of oxygen (producer gas) (Table 3). Table 2 and figures 3-7 (Diagrams) contain the technical characteristics of oxygen- and air consumption, composition and calorific value of the gas, furnace output, etc with various additions of oxygen. There are 7 figures, 4 tables, and 14 Soviet references.

LAVROV, N.V., doktor tekhn.nauk prof.; TRIFONOVA, K.B., kand.tekhn. nauk

Kinetics of the reaction of methane conversion in presence of contact coal. Podzem.gaz.ugl. no.3:10-14 '59. (MIRA 12:12)

(Coal gasification, Underground) (Methane)

SOV/180-59-3-40/43

AUTHORS: Lavrov, N.V. and Lapides, N.A. (Moscow)

TITLE: Technological Classification of Combustible Gases

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 3, pp 187-189(USSR)

ABSTRACT: The authors suggest that with the use of combustible gases for syntheses as well as for fuel, their classification by calorific value or flame temperature has become inadequate. N.V.Lavrov and M.B.Ravich (Ref 2) have proposed a classification based on the potential-hydrogen content (sum of contents of H_2 and CO and $(2n + m/2)$ times C_nH_m content). The authors have found that the potential-hydrogen content also serves to indicate suitability for polymer syntheses. They give a table of the composition and calorific values of 19 gases together with their potential-hydrogen and polymer-synthesis values, the latter being the content of hydrocarbons from which unsaturated hydrocarbon can be obtained. The gases are divided into four groups; first group over 500%, second 300 to 500%, third 80 to 300% and fourth under 80% potential hydrogen.

Card 1/2

SOV/180-59-3-40/43

Technological Classification of Combustible Gases

There is 1 table and 2 Soviet references.

SUBMITTED: January 26, 1959

Card 2/2

BOGDANOV, I.F.; LAVROV, N.V.; MAKAROV, I.A.; PINSKER, A.Ye.; CHERNENKOV, I.I.

Possibility of obtaining synthesis gas in semicoke-producing ovens using an air blast enriched with oxygen.
Gaz. prom. 4 no.11:18-22 '59. (MIRA 13:2)
(Gas manufacture and works)

LAVROV, N.V., doktor tekhn. nauk; MAKAROV, I.A., kand. tekhn. nauk; MIROSHNICHENKO, V.S., inzh.; PEREPELITSA, A.L., kand. tekhn. nauk; PINSKER, A.Ye., inzh.; CHERNENKOV, I.I., inzh.

Using oxygen-enriched air in the semicoking of coal. Kislorod 12 no.2:1-9 '59. (MIRA 12:8)
(Coal--Carbonization) (Oxygen--Industrial applications)

LAVROV, Nikolay Vladimirovich; KOROBOV, Valeriy Vladimirovich; FILIPPOVA, Vera Ivanovna; LEBEDEV, V.V., otv.red.; IVANOVA, D.A., red.izd-va; BHUZGUL', V.V., tekhn.red.

[Thermodynamics of gasification reactions and of synthesis from gases] Termodinamika reaktsii gazifikatsii i sinteza iz gazov. Moskva, Izd-vo Akad.nauk SSSR, 1960. 97 p. (MIRA 13:7)

(Gases) (Thermodynamics)

PROBST, A.Ye., prof., doktor ekonom.nauk, otv.red.toma; BARDIN, I.P., akademik, glavnyy red. [deceased]; GAL'PERIN, V.M., kand.ekonom. nauk, red.toma; LAVROV, N.V., doktor tekhn.nauk, red.toma; MART'YANOVA, T.V., red.toma; KUDASHEV, A.I., red.izd-va; POLENOVA, T.P., tekhn.red.

[Development of the industrial resources of Eastern Siberia; fuel and fuel industry] Razvitie proizvoditel'nykh sil Vostochnoi Sibiri: Toplivo i toplivnaia promyshlennost'. Moskva, Izd-vo Akad. nauk SSSR, 1960. 318 p. (MIRA 13:3)

1. Konferentsiya po razvitiyu proizvoditel'nykh sil Vostochnoy Sibiri, Irkutsk. 1958. 2. Sovet po izucheniyu proizvoditel'nykh sil AN SSSR (for Probst).
(Siberia, Eastern--Fuel)

LAVROV, N.V.; akademik; MOSIN, A.M.; BOGDANOV, I.F.

Kinetics of hydrocarbon synthesis from carbon monoxide and water vapor on a cobalt catalyst. Uzb. khim. zhur. no.4:62-66 '60.
(MIRA 13:9)

1. Institut energetiki i avtomatiki AN UzSSR.
2. Akademiya nauk UzSSR (for Lavrov).
(Hydrocarbons) (Carbon monoxide) (Water vapor) (Cobalt)

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AUTHORS: Lavrov, N. V., Academician of the Academy of Sciences UzSSR, Korobov, V. V., and Chernenkov, I. I.

TITLE: Method of thermodynamic computation of the pyrolysis of light hydrocarbons

PERIODICAL: Akademiya nauk UzSSR. Izvestiya. Seriya tekhnicheskikh nauk, no. 6 1960, 67-76

TEXT: The authors review the necessity of increasing the resources of unsaturated hydrocarbons (ethylene and propylene) by the method of oxidation pyrolysis of saturated hydrocarbons. The oxidation pyrolysis was investigated by Soviet and foreign scientists [Ref. 5: K. K. Dubravay and A. B. Sheyman, Okislitel'nyy kreknig, (Oxidation Cracking) M.-L., ONTI, 1936; Ref. 6: M. Ya. Kogan, and L. D. Balashova, Okislitel'noye degidrirovaniye etana, Otchet MITKhT im. Lomonossova, M., (Oxidation Dehydration of Ethane), 1947; Ref. 7: P. P. Karzhev and G. A. Baluyeva, Khimicheskaya pererabotka neftyanykh uglevodorodov (Chemical Processing of Petroleum Hydrocarbons) M., AN SSSR, 1956; Ref. 8: Problemy okisleniya uglevodorodov (The Problem of Oxidation of Hydrocarbons) Institut nefti

Card 1/8

Method of thermodynamic computation of ...

AN SSSR, M., AN SSSR, 1954 and Ref. 9: Deansly, Wotkins, Chem. Eng. Progr., 47, No.3, 134, 1951]. The first investigations on this problem were performed by K. K. Dubravay (Ref. 5). Oxidation pyrolysis experiments were performed at the ONTI, MITKhT im. Lomonosov and by the Academy of Sciences USSR (References 5-8), whereas experiments of oxidation pyrolysis of ethane and propane performed at the IGI AS USSR were not satisfactory. As the pyrolysis is accompanied by a volume increase, the reduction in pressure should increase the amount of unsaturated hydrocarbons in the equivalent mixture. The reduction in pressure by addition of inert solvents (nitrogen, hydrogen, carbon dioxide, methane) is considered inexpedient and the introduction of water vapor into the reaction zone is recommended despite of contradictory data on its effect on the yield of unsaturated hydrocarbons and on coking. The purpose of this investigation is to establish the gas equilibrium of the pyrolysis C_2H_6, C_3H_8, C_4H_{10} at 700 - 1,500°K depending on variations over a range of oxygen and water vapor concentrations in the raw material. In view of the complexity of this problem all possible transformation of the raw material, e.g., oxygen and aromatic compounds, were investigated to determine the most advantageous reaction process. It was assumed that the equilibrium mixture of the pyrolysis C_2H_6, C_3H_8, C_4H_{10} contains C_2H_4, C_3H_6, C_2H_2,

Method of thermodynamic computation of ....

C_2H_6, C_3H_8, CH_4, C_4H_{10}, C_4H_8, C_4H_6, H_2, O_2, CO, CO_2, H_2O, CH_3, COOH, CH_3CHO, C_6H_6. The required 17 unknown equilibric partial pressures are determined by 17 independent equations, 14 of which, representing the equilibrium constant of independent reactions according to Gibbs law, are:

1. $CO + H_2O \rightleftharpoons CO_2 + H_2$ $\quad K_{p_1} = \frac{P_{H_2} \cdot P_{CO_2}}{P_{CO} \cdot P_{H_2O}}$

2. $C_3H_8 \rightleftharpoons C_3H_6 + H_2$ $\quad K_{p_2} = \frac{P_{H_2} \cdot P_{C_3H_6}}{P_{C_3H_8}}$

3. $C_2H_6 \rightleftharpoons C_2H_4 + H_2$ $\quad K_{p_3} = \frac{P_{H_2} \cdot P_{C_2H_4}}{P_{C_2H_6}}$

4. $C_2H_4 \rightleftharpoons C_2H_2 + H_2$ $\quad K_{p_4} = \frac{P_{H_2} \cdot P_{C_2H_2}}{P_{C_2H_4}}$

Card 3/8

Method of thermodynamic computation of ....

5. $CH_3COOH \rightleftharpoons CH_4 + CO_2$ $\quad K_{p_5} = \dfrac{P_{CO_2} \cdot P_{CH_4}}{P_{CH_3COOH}}$

6. $CH_3CHO \rightleftharpoons CH_4 + CO$ $\quad K_{p_6} = \dfrac{P_{CO} \cdot P_{CH_4}}{P_{CH_3CHO}}$

7. $C_3H_8 \rightleftharpoons C_2H_4 + CH_4$ $\quad K_{p_7} = \dfrac{P_{CH_4} \cdot P_{C_2H_4}}{P_{C_3H_8}}$

8. $C_3H_8 + C_2 \rightleftharpoons C_2H_6 + H_6 + CO_2$ $\quad K_{p_8} = \dfrac{P_{C_2H_6} \cdot P_{H_2} \cdot P_{CO_2}}{P_{C_2H_8} \cdot P_{O_2}}$

9. $2CO + O_2 \rightleftharpoons 2CO_2$ $\quad K_{p_9} = \dfrac{P^2_{CO_2}}{P^2_{CO} \cdot P_{O_2}}$

Card 4/8

Method of thermodynamic computation of ....

10. $C_2H_4 + O_2 \rightleftharpoons CO_2 + CH_4$ $\quad K_{p_{10}} = \dfrac{P_{CH_4} \cdot P_{CO_2}}{P_{C_2H_4} \cdot P_{O_2}}$

11. $C_4H_{10} \rightleftharpoons C_4H_8 + H_2$ $\quad K_{p_{11}} = \dfrac{P_{H_2} \cdot P_{C_4H_8}}{P_{C_4H_{10}}}$

12. $C_4H_8 \rightleftharpoons C_4H_6 + H_2$ $\quad K_{p_{12}} = \dfrac{P_{H_2} \cdot P_{C_4H_6}}{P_{C_4H_8}}$

13. $C_4H_8 \rightleftharpoons 2C_2H_4$ $\quad K_{p_{13}} = \dfrac{P^2_{C_2H_4}}{P_{C_4H_8}}$

14. $C_4H_6 + C_2H_2 \rightleftharpoons C_6H_6 + H_2$ $\quad K_{p_{14}} = \dfrac{P_{H_2} \cdot P_{C_6H_6}}{P_{C_4H_6} \cdot P_{C_2H_2}}$

Equations 15 and 16 represent the constancy of ratio - $\dfrac{C}{H_2}$ (15) and ratio $\dfrac{H_2}{0.50_2}$ (16)

Card 5/8

Method of thermodynamic computation of ....

in the raw material and in derived equilibrium gas. Values of both ratios are given for ethane, propane and butane. The equality equation of the sum of partial component pressures to the total pressure in system is $\sum P_i = P_{tot}$ (17)

where $m = \frac{H_2O}{C_nH_{2n+2}}$ = water vapor concentration in the initial mixture,

$n = \frac{O_2}{C_nH_{2n+2}}$ = hydrogen concentration in the initial mixture and P_{tot} = pressure in the system equaling 1 atm. [Abstracter's note: subscript tot. (total) is a translation from the Russian об (obshcheye).] In view of the difficulty of solving equations (1) - (17) by conventional methods the use of a БСЭМ (BSEM) electronic computer is recommended. Most favourable thermodynamic values of substances participating in the reaction were achieved by extrapolation of available data on acetaldehyde and interpolation of acetic acid data at 1,000 - 1,500°C. All calculations were carried out according to equation

$$R \ln K_p = - \frac{\Delta H_0^0}{T} + \Delta \Phi^x.$$

Values of Φ^x potentials and ΔH_0^0 of substances participating in reactions 1 - 14

Card 6/8

Method of thermodynamic computation of ....

were obtained from N. N. Lavrov, V. V. Korobov and V. J. Filipova [Ref. 21: Termodinamika reaktsiy gazifikatsii i sinteza is gazov (Thermodynamics of Gasification Reaction and of Gas Synthesis) M., AN SSSR, 1960. Calculations of the Φ^x acetaldehyde potential at 800 - 1,500°K was based on the initial constant of molecule described by K. S. Pitzner and W. J. Weltner [Ref. 23: Am. Chem. Soc. 71, 18, 2842, 1949] Acetaldehyde molecules have no symmetric elements, therefore their symmetric number is $\sigma = 1$ and all frequencies have nondegenerate characteristics. Fourteen equations were determined during the investigation of vibration spectra 525, 918, 1.114, 1.350, 1.370, 1.414, 1.740, 2.710, 2.915, 3.005, 764, 883, 1.440 and 2.976. The 15th equation corresponds to the delayed internal rotation of the CH_3 group around C-C. The height of the barrier decelerating the rotation of this group was determined as $C_2H_5OH = CH_3CH_0 + H_2$ according to data on the equilibrium of the dehydration reaction of ethyl alcohol and the thermal capacity of acetaldehyde steam [Ref. 27: C. F. Coleman and J.J. de Vries, Am Chem. Soc. 71, 18, 2839, 1949]. The assumed height of the barrier equals 1,000 cal/mol. The addition of two equations, obtained by the calculation of progressive and rotation components, provides $\Phi^x_{r+p} = 5.7263 + 18.30224\ \lg T$. The free internal rotation component is $\Phi^x_{f.i.p.} = 2.2878\ \lg T - 3.4183$. [Abstracter's note: sub-

Card 7/8

Method of thermodynamic computation of ....

scripts r (rotation), p (progressive) and f.i.r. (free internal rotation) are translations from the Russian вр (vrashcheniye), ПОСТ (postupatel'naya) and СВ.ВНЛВР. (svobodnoye vnutrennoye vrashcheniye).] To determine the decelerated internal rotation component it is necessary to calculate the value:

$$Q_{f.i.r.} = \frac{2.815}{3} (I_{red} \cdot 10^{38} T)^{1/2} = 1.8053 \left(\frac{T}{100}\right)^{1/2} \cdot 10^{38},$$

where T = 800, 1,000, 1,100, 1,200, 1,300, 1,400, 1,500 and $Q_{f.i.r.}$ = 5.106, 5.709, 5.987, 6.254, 6.509, 6.755, 5.992. Equations and thermodynamic values quoted in this article permit the application of latest computation methods and an extensive analysis of components over extensive temperature, pressure and concentration ranges. There are 3 tables and 28 references: 18 Soviet-bloc and 10 non-Soviet-bloc. The references to the most recent English language publications read as follows: Deansly, Wotkins, Chem. Eng. Progr. 47, N 3, 134, 1951; Carpenter R. A., Fowler, F. C. Petr. Ref. 31, N 4, 148, 1952; Sherwood, P. W. Petr. Ref. 30, N 11, 157, 1951; Weltner, W. J. Am. Chem. Soc. 77, 3941, 1955.

ASSOCIATION: Institut Goryuchikh iskopayemykh AN SSSR (Institut of Combustible Minerals, Akademy of Sciences, USSR)

SUBMITTED: March 18, 1960

Card 8/8

LAVROV, N.V.; KOROBOV, V.V.; FILIPPOVA, V.I.; CHERNENKOV, I.I.

Thermodynamics of gasification processes. Trudy IGI 11:23-29 Mr '60. (MIRA 13:6)
(Coal--Gasification)

DERMAN, B.M.; LAVROV, N.V.; NIKOLAYEVA, V.A.; FARBEROV, I.L.

Gasification of semicoke from Moscow coal in a channel with the use of an air-steam blast enriched with oxygen. Trudy IGI 13:39-43 '60. (MIRA 14:5)

(Coal gasification, Underground)

AL'TSHULER, V.S.; LAVROV, N.V.; PITIN, R.N.; FARBEROV, I.L.; SHAFIR, G.S.

Underground gasification of coals under high pressure. Trudy IGI 13:75-82 '60. (MIRA 14:5)
(Coal gasification, Underground)

GOLGER, S.P.; DERMAN, B.M.; LAVROV, N.V.; FARBEROV, I.L.; FEDOROV, N.A.

Production of industrial gas in the underground gasification of Lisichansk coals. Trudy IGI 13:83-86 '60. (MIRA 14:5)
(Lisichansk--Coal gasification, Underground)

VASIL'YEV, S. F., LAVROV, N. V.

Oxidation pyrolysis of ethane and propane for the production of ethylene. Gas.prom. 5 no.4:33-37 Ap '60. (MIRA 13:8)
(Ethylene) (Ethane) (Propane)

LAVROV, Nikolay Vladimirovich, prof., akademik; AGIBALOV, Aleksandr Ivanovich [deceased]; POPOV, V.M., kand.tekhn.nauk, nauchnyy red.; KOMAROVA, T.F., red.; ATROSHCHENKO, L.Ye., tekhn.red.

[Fuel resources of the U.S.S.R. in the seven-year plan] Toplivnaia baza SSSR v semiletke. Moskva, Izd-vo "Znanie," 1961. 31 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.3, Ekonomika, no.3)

1. AN UzSSR (for Lavrov).
(Fuel)

PREDVODITELEV, A.S.; LAVROV, N.V., doktor tekhn. nauk, prof.; AL'T-SHULER, V.S., doktor tekhn. nauk; POPOV, V.M., kand. tekhn. nauk; TSEYTLIN, B.S., red. izd-va; PRUSAKOVA, T.A., tekhn. red.; RYLINA, Yu.V., tekhn. red.

[Fuel gases in the national economy; work of the All-Union Conference] Ispol'zovanie goriuchikh gazov v narodnom khoziaistve; trudy Vsesoiuznogo soveshchaniia. Moskva, 1961. 266 p. (MIRZ 14:5)

1. Akademiya nauk SSSR. Institut goriuchikh iskopayemykh. 2. Chlen-korrespondent AN SSSR (for Predvoditelev) 3. Institut goryuchikh iskopayemykh AN SSSR (for Lavrov, Popov)
(Gas as fuel--Congresses)

LAVROV, N.V., akademik; GREBENSHCHIKOVA, G.V.

Investigating the reconversion of CO_2 for the purpose of enriching gases with carbon monoxide. Izv.AN Uz.SSR. Ser.tekh.nauk no.2:70-78 '61. (MIRA 14:3)

1. Institut energetiki i avtomatiki AN UzSSR. 2. AN UzSSR (for Lavrov).

(Carbon dioxide) (Carbon monoxide)

LAVROV, N.V., akademik; ZYBALOV, G.P.

Reactivity of Angren and Moscow coals. Izv.AN Uz.SSR. Ser.tekh.nauk no.6:58-63 '61. (MIRA 14:12)

1. Institut goryuchikh iskopayemykh AN SSSR i Institut energetiki i avtomatiki AN Uzbekskoy SSR. 2. AN Uzbekskoy SSR (for Lavrov). (Moscow Basin--Coal--Analysis) (Angren Basin--Coal--Analysis)

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S/081/62/000/002/089/107
B157/B110

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AUTHORS: Vasil'yev, S. F., Lavrov, N. V.

TITLE: Oxidation pyrolysis of gaseous and liquid hydrocarbons for obtaining unsaturated and aromatic monomers for chemical synthesis

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 494, abstract 2M283 (Sb. "Ispol'zovaniye goryuchikh gazov v nar. kh-ve". M., AN SSSR, 1961, 141 - 149)

TEXT: The results are given of an investigation into the oxidation pyrolysis of C_2H_6 and C_3H_8 in C_2H_4 and C_3H_6 in large laboratory once-through plant at near-atmospheric pressure. In the oxidation pyrolysis of C_2H_6 and C_3H_8, 70% by weight C_2H_4 is obtained, and 43.2% C_2H_4 and 14.5% C_3H_6 by weight, respectively. It was shown that the oxidation pyrolysis of gaseous and liquid hydrocarbons has certain technical and economic advantages over the thermal pyrolysis of these hydrocarbons. A sketch is given of the plant. [Abstracter's note: Complete translation.]

Card 1/1

LAVROV, N.V.; MEDNIKOV, Ye.P.

On the scientific classification of dust and spray traps. Trudy IGI 16:315-328 '61. (MIRA 16:7)
(Gases--Purification) (Dust collectors)

KORSH, M.P.; BOGDANOV, I.F.; LAVROV, N.V.

Present-day trend of the research work on the purification of combustible gases by the removal of hydrogen sulfide and carbon dioxide. Trudy IGI 16:367-387 '61. (MIRA 16:7)
(Gases--Purification)

VASIL'YEV, S.F.; LAVROV, N.V.; LAPIDES, N.A.

Oxidative pyrolysis of butane. Trudy IGI 16:59-65 '61. (MIRA 16:7)

(Butane) (Oxidation) (Pyrolysis)

LAVROV, N.V.; POPOV, V.M.; AGIBALOV, A.I. [deceased]

Prospects for the development of the gas industry in the U.S.S.R. (MIRA 16:7)
Trudy IGI 16:3-6 '61.
(Gas, Natural)

LAVROV, N.V.; ROZENFEL'D, S.V.

Republic conference on the development of the gas industry and coordination of the research work on combustible gases. Trudy IGI 16:483-487 '61. (MIRA 16:7)
(Uzbekistan--Gas industry)

LAVROV, Nikolay Vladimirovich; SHURYGIN, Aleksey Petrovich; POPOV, V.M., kand. tekhn. nauk, otv. red.; SAVINA, Z.A., red. izd-va; SIMKINA, G.S., tekhn. red.

[Introduction to the theory of combustion and fuel gasification]Vvedenie v teoriiu goreniia i gazifikatsii topliva. Moskva, Izd-vo Akad. nauk SSSR, 1962. 214 p. (MIRA 15:9)
(Combustion)

LAVROV, N.V., akademik, doktor tekhn. nauk. Prinimali uchastiye: KARBIVNICHIY-KUZNETSOV, V.B.; SKORIK, L.D.; PRIDATKIN, A.A.; SHIKIROV, K.Sh., retsenzent; BAKLITSKAYA, A.V., red.

[Fundamentals of the combustion of gaseous fuel] Osnovy goreniia gazoobraznogo topliva. Tashkent, Izd-vo AN UzSSR, 1962. 417 p. (MIRA 18:6)

1. Sekretar' Otdeleniya tekhnicheskikh nauk AN UzbekSSR (for Lavrov).

LAVROV, N.V.; KUCHUK, S.D.; GOL'DFIL'D, M.L.; SHUBIN, V.V.

Using gas as fuel in the transport industry in the Central Asian Economic Region. Gaz. prom. 7 no.12:15-19 '62
(MIRA 17:7)

LAVROV, N.V., akademik, otv. red.; BAKLITSKAYA, A.V., red.;

[Use of gas in industry] Ispol'zovanie gaza v promyshlennosti. Tashkent, Izd-vo AN UzSSR, 1963. 204 p. (MIRA 17:4)

1. Konferentsiya po gazifikatsii Uzbekistana. Tashkent, 1961.
2. Institut ispol'zovaniya topliva AN UzSSR i Sredneaziatskogo sovnarkhoza (for Lavrov).

LAVROV, N.V., akademik, otv. red.; BAKLITSKAYA, A.V., red.; EYDEL'MAN, A.S., red.; SHAFEYEVA, K.A., red.; KARABAYEVA, Kh.U., tekhn. red.

[Materials of the Republic Conference on the Development of the Gas Industry of Uzbekistan] Materialy Respublikanskoy konferentsii po gazifikatsii Uzbekistana, Tashkent, Izd-vo AN UzSSR, 1963. 291 p. (MIRA 16:8)

1. Respublikanskaya konferentsiya po gazifikatsii Uzbekistana, Tashkent, 1961. 2. Akademiya nauk UzSSR (for Lavrov). (Uzbekistan--Gas, Natural)

LAVROV, N.V.; KARBIVNICHIY-KUZNETSOV, V.B.

Atomization of mazut by natural gas in gas-mazut heating of open-hearth furnaces. Izv. AN Uz. SSR. Ser. tekh. nauk 7 no.5:74-81 '63. (MIRA 17:2)

1. Institut ispol'zovaniya topliva AN UzSSR.

LAVROV, N.V., akademik (Tashkent); KUCHUK, S.D., inzh. (Tashkent); VIL'KEVICH, V.I., kand.tekhn.nauk (Tashkent); GOL'DFIL'D, M.L., inzh. (Tashkent)

Use of gas fuel for the operation of diesel locomotives. Zhel. dor.transp. 45 no.8:43-46 Ag '63. (MIRA 16:9)
(Diesel locomotives) (Gas as fuel)

LAVROV, N.V., akademik; ALEKSANDROV, A.V.

Reviews. Gaz. prom. 10 no.4:55-56 '65. (MIRA 18:5)

1. Akademiya nauk Uzbekskoy SSR (for Lavrov).

ACCESSION NR: AP4038531 S/0020/64/156/003/0662/0665

AUTHOR: Lavrov, N. V. (Academician)

TITLE: Features of the combustion mechanism of carbon

SOURCE: AN SSSR. Doklady*, v. 156, no. 3, 1964, 662-665

TOPIC TAGS: carbon, carbon combustion, carbon combustion mechanism, carbon oxygen complex, carbon combustion medium, carbon combustion reaction

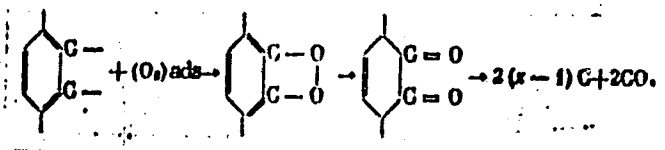
ABSTRACT: The carbon combustion schemes proposed by various authors are reviewed, and a carbon combustion mechanism suggested by the author in an earlier study is more accurately defined. The suggested mechanism includes the dissociation of molecular oxygen, carbon dioxide, and water vapors, and the formation by atomic oxygen of an intermediate carbon-oxygen complex of the keto-group type. The dissociation of oxygen takes place both in the process of chemisorption and as a result of homogeneous chain reactions.

Card 1/4

ACCESSION NR: AP4038531

In the absence of oxygen in the reduction zone the carbon-oxygen complexes undergo thermal destruction with the liberation of carbon monoxide. In this zone the most probable reactions are: 1) the reduction of CO_2 to CO, 2) the reaction of carbon with water vapor, and 3) the conversion of CO to CO_2 by water vapor under the effect of catalysts. In the oxygen zone the carbon combustion follows a different mechanism in dry and in moist media, i.e., 1) Mechanism for a dry medium:

$$\begin{aligned} &a)\ xC + O_2 \rightarrow xC + (O_2)_{ads},\\ &b)\ 2xC + (O_2)_{ads} \rightarrow 2C_{x-1}CO,\\ &c)\ 2C_{x-1}CO \rightarrow 2(x-1)C + 2CO \end{aligned} \qquad (1)$$



$$\rightarrow 2(x-1)C + 2CO. \qquad (2)$$

Card 2/4

ACCESSION NR: AP4038531

2) Mechanism for a moist medium:

$$2xC + O_2 \rightarrow 2C_{x-1}CO \rightarrow 2(x-1)C + 2CO_2$$
$$C_{x-1}CO \qquad 2C_{x-1}CO + O = 2(x-1) + CO + CO_2 \qquad (3)$$

$$H + O_2 \rightarrow OH + xC \rightarrow H + O_2 \rightarrow OH + xC \rightarrow H + O_2 \rightarrow OH + xC \rightarrow H,$$
$$O + xC \rightarrow C_{x-1}CO \qquad C_{x-1}CO \qquad C_{x-1}CO$$
$$2xC + O_2 \rightarrow 2C_{x-1}CO + O \rightarrow 2(x-1)C + CO + CO_2. \qquad (4)$$

The reaction of hydroxyl radicals with carbon leads to a complex nonbranched chain reaction (Formula 4) ensuring a continuous combustion process. Introduction of such inhibitors as chlorine can remove active centers from the combustion process and not only prevent

Card 3/4

ACCESSION NR: AP4038531

CO combustion, but also stop the reaction (Formula 4). In this case the combustion will proceed according to Formula 3, i.e., follow the combustion scheme in a dry medium. Orig. art. has: 18 formulas.

ASSOCIATION: Institut ispolzovaniya topliva, Tashkent (Institute for Fuel Utilization)

SUBMITTED: 04Feb64 DATE ACQ: 09Jun64 ENCL: 00

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Card 4/4