The Influence of Various Factors Upon the Size of the Specific Surface and on the Porosity of Chromium Catalysts

during pressing and drying. These forms are not different crystal modifications, for both are radiographically amorphous. The production of the hydroxide in one or the other form depends exclusively on the rate of formation of the precipitate obtained. If the concentrated mixtures are mixed rapidly, a greyish-blue hydroxide precipitate forms immediately, but if the precipitating agent is added very slowly (in drops) to the diluted chromium-salt solution, the precipitate may dissolve, thus forming soluble basic chromium salts, which, after a further addition of the precipitate, furnish a dark green chromium hydroxide with different properties. The investigation carried out showed the following: The different coloring and the different properties of the hydroxide are caused by the fact that the catalyst formed after dehydrogenization of the black hydroxide have many fine pores, whereas by hydrogenization by means of blue hydroxide no pores are formed. As an example, the isothermal lines of various preparations are given. By variation of the rate

The Influence of Various Factors Upon the Size of the Specific Surface and on the Porosity of Chromium Catalysts

of precipitation, preparations of various coloring (from greyish-blue to dark green) may be obtained, and this may easily be explained by the different degrees of porosity. A prolongation of thermal treatment (at 450°) from 2 to 8 hours reduced the specific surface from 70 to 25 m^2/g, and caused the pores to disappear nearly entirely. The aging processes of the hydroxide and the increase of precipitation temperature conducive to these processes reduced the specific surface and the weight of 1 cubic meter of the dry granular substance of these preparations. There are 1 figure, 2 tables, and 5 references, 3 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR
(Institute for General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

5(3) SOV/20-127-2-25/70

AUTHORS: Agronomov, A. Ye., Balandin, A. A., Academician, Mardashev, Yu.S.

TITLE: Comparison of the Kinetic Relative Adsorption Coefficients With Those Determined According to the BET Equation

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 2, pp 325-328 (USSR)

ABSTRACT: The BET equation of the polymolecular adsorption which takes into account the interactions between adsorbent and adsorbed substance in the first layer and is related to the entire surface was derived in reference 1 (1938) (1). Its graphic solution makes the determination of the adsorption coefficient (AC) o possible. The second author in 1942 (Ref 2) derived an equation of the kinetics of the monomolecular reaction in a discharge system. A calculation method of the relative adsorption coefficient from kinetic data is given as well. This method made the determination of the value of these coefficients on the catalytically active centres of the surface possible. The equation (2) (identical with the equation (52) in reference 5) may be used for the determination of the relative adsorption coefficients from kinetic data. It was

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interesting to carry out the comparison given in the title. The absolute AC differ according to reference 7 by two orders of magnitude. The authors used the dehydrogenation reaction of cyclohexane on Ni-catalysts (the latter on carriers). The BET-AC were graphically determined from the equation (1). The straight lines for the catalysts Nr 1 and 2 (Table 1) are given in figure 1 as an example (5 catalysts were used and their method of production is described here). AC according to BET (c_{BET}) for benzene and cyclohexane were computed from the tangent of the angle of gradient of this straight line; their relation could be called the relative AC-BET (z_{BET})(Table 1, columns 1-3). The kinetic relative AC were determined from the equation (2). The reaction mentioned was carried out according to the method of reference 10. The catalyst was used in a certain quantity (volume V) so that the transformation did not exceed 30%. The equation (2) was transformed into (3) in the experiments with pure cyclohexane. Furthermore, the experiment was carried out with a mixture (with benzene) at the same

temperature, then again with pure cyclohexane. This experiment confirmed the observation of reference 11 that the activation energy is not changed up to a mixture containing 10% benzene (for the catalyst Nr 3). The two series of the values (AC according to adsorption-, kinetic data respectively) are very adjacent in the columns 3 and 4 of table 1. Thus, the BET equation may be used in the case of the cyclohexane dehydrogenation (Fig 1). The general equation of the kinetics of the monomolecular reactions (Ref 4) holds as well in the investigated region of the mixture composition, as it follows from the constancy of z (Table 2). The relative AC of the catalytic active centers turn out to be practically equal to the relative AC of the entire surface. The fact that z_k and

Comparison of the Kinetic Relative Adsorption Coefficients With Those Determined According to the BET Equation

z_{BET} are equal is assumed to confirm the second author's statement (Ref 12) that the places with a mean adsorption intensity are catalytically active. There are 1 figure, 2 tables, and 12 references, 11 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)
Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: April 29, 1959

78058
SOV/62-60-1-4/37

5.1190

AUTHORS: Freydlin, L. Kh., Balandin, A. A., Borunova, N. V., Agronomov, A. Ye.

TITLE: Concerning Connections Between the Microstructure of Aluminum Oxide and Activity of Nickel-Alumina Catalysts of Various Nickel Content

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, Nr 1, pp 21-25 (USSR)

ABSTRACT: This paper presents the results of investigations of the connection between the microstructure of aluminum oxide and activity of nickel-alumina catalysts of various Ni content. The catalysts were prepared by impregnation of alumina with $Ni(NO_3)_2$ and reduction with H_2 at 350°. The alumina for the catalysts 1 and 2 (see Table) was prepared by ignition of commercial aluminum oxide at 500°. Alumina for catalyst 3 was prepared by treatment of $Al(NO_3)_3$ with ammonia. Activity of the catalysts was determined by the degree

As

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Concerning Connections Between the Microstructure of Aluminum Oxide and Activity of Nickel-Aluminum Catalysts of Various Nickel Content

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Table 1

a	b	c	d	e	f	g	h	i	j
1	—	1	5	25	190	20—100	65	5,1	—
2	—	—	10	25	175	20—100	56	4,6	59,4
3	—	2	5	25	175	20—100	52	4,3	89,0
4	—	—	10	25	240	25—110	45	4,8	—
5	—	—	30	10	—	—	—	—	44,0
6	—	—	50	15	—	—	—	—	80,0
7	—	3	5	20	150	25—100	45	3,3	89,2
8	—	—	10	20	150	25—100	45	3,3	87,2
9	—	—	30	20	370	15—30	18	2,0	62,4
10	—	—	50	20	385	14—30	18	2,0	—
11	—	—	30	20	370	14—30	18	2,0	48,4
					350	14—35	18	2,0	53,4
					270	10—27	18	2,0	—

(Key to Table on Card 4/4)

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Key to Table 1: (a) number; (b) experiment; (c) sample of aluminum oxide; (d) Ni content in % by weight; (e) duration of reduction with H_2 in hr; (f) specific surface in m^2/g; (g) range of pore size in A; (h) maximum distribution of volumes of pores along the radius in A; (i) total amount of benzene absorbed on saturation, in millimoles/g; (j) degree of cyclohexane dehydrogenation in % of theoretical.

AGRONOMOV, A.Ye.; MARDASHEV, Yu.S.

Selective determination of the nickel surface in nickel-aluminum oxide catalysts, and their specific catalytic activity. Vest.Mosk. un.Ser. 2: Khim. 15 no.1:25-34 '60. (MIRA 13:7)

1. Kafedra organicheskogo kataliza Moskovskogo universiteta.
(Catalysts, Nickel)

AGRONOMOV, A.Ye.; MISHCHENKO, A.P.

Dependence of the catalytic activity of the catalyst Co/SiO_2 upon the porosity of the catalyst. Report No.4. Vest.Mosk.un.Ser. 2: Khim. 15 no.1:35-39 '60. (MIRA 13:7)

1. Kafedra organicheskogo kataliza Moskovskogo universiteta.
(Cobalt) (Catalysts)

AGRONOMOV, A.Ye.

Synthesis of p-toluenesulfonic acid. Vest.Mosk.un.Ser. 2: Khim. 15 no.3:78-79 My-Je '60. (MIRA 13:8)

1. Kafedra organicheskogo kataliza Moskovskogo universiteta.
(Toluenesulfonic acid)

S.1190

8000

AUTHORS: Agronomov, A. Ye., Balandin, A. A., Academician, Mardashev, Yu. S.

S/020/60/131/05/038/069
B004/B014

TITLE: The Dependence of Activation Energy on the Relative Adsorption Coefficient

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1120-1122 (USSR)

TEXT: The authors of the article under review studied several nickel catalysts within a wide temperature range, using dehydrogenation of cyclohexane. The same amount of nickel was applied to different carrier substances (Al_2O_3, silica gel, kieselguhr) in equal proportions by weight. The data listed in table 1 indicate that the apparent activation energy, Q, calculated from the Arrhenius equation, and the relative adsorption coefficient, z_2, of the benzene being formed are greatly dependent on the nature of the carrier substance. These two quantities are interrelated by $Q = E - k\log z_2$ (E and k are constants). This relationship is graphically represented in figure 1. For all catalysts under consideration it was found that E was constant and 14 kcal/mole approximately. This value corresponds to the initial coordinate of the straight line depicted in figure 1, and thus represents the true activation energy. For nickel applied to silica gel (second sample) it was found that the value of z_2 increased in dependence of

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The Dependence of Activation Energy on the Relative Adsorption Coefficient

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the benzene content of the starting mixture of $C_6H_6 + C_6H_{12}$ (Table 2, Fig 2). Proceeding from results obtained by other research workers, the authors discuss this dependence and arrive at the following conclusion: As long as the dehydrogenation of C_6H_{12} by means of a nickel catalyst takes place at active points of mean activation energy, which are moderately covered with C_6H_6, z_2 does not depend on the yield, m. However, as soon as these points are covered with a larger amount of C_6H_6, the benzene has an inhibitory effect, and the relation $z_2 = f(m)$ occurs, as may be seen when using catalysts with great values of z_2. Taking this into account, one obtains a value of E for the second sample, which is in close agreement with the E-values of the other catalysts. Graphical solving of the relation $Q = E - k\log z_2$ is recommended as another variant. The authors refer to a publication by A. A. Balandin and Yu. K. Yur'yev (Ref 10). There are 2 figures, 2 tables, and 12 references, 10 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov) Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences of the USSR)

SUBMITTED: December 28, 1959

Card 2/2

S/020/60/132/06/24/068
B011/B126

5.1190

AUTHORS: Agronomov, A. Ye., Luzikov, V. N.

TITLE: An Investigation of the Catalytic Properties of Pyrophoric Manganese

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 6, pp. 1315 - 1318

TEXT: In order to obtain pyrophoric manganese black, the authors used the method described in Refs. 1, 2, 6, and 7. To do this, manganese amalgam was thermally decomposed in a vacuum. The amalgam is obtained by the electrolysis of an aqueous solution of manganese chloride on a mercury cathode. The manganese black produced is covered with absolute benzene in a vacuum, to preclude the introduction of air. The authors then tested the purity of the black obtained, while they used mercury with an Hg_{203} content as cathode in an additional experiment. Manganese obtained in the above manner is of high chemical activity. There is an exothermic reaction with ignition when a hydrogen-air mixture is drawn through a freshly produced

An Investigation of the Catalytic Properties of Pyrophoric Manganese

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B011/B126

sample. The authors have established from the roentgenograms of manganese black, that α-manganese is produced on the decomposition of the amalgam, which crystallizes into a complicated cubic lattice of the type A-12 (a-parameter = 8.923 ± 0.020 Å). The authors say that this lattice is less tightly packed than in metallic manganese. The roentgenogram showed no lines of manganese oxide or its other compounds. As pyrophoric manganese is oxidized by H_2O, CO_2, and even CO, as well as by oxygen, the authors have restricted themselves to the hydrogenation and dehydrogenation of hydrocarbons. A continuous system with an automatic filling device was used for the experiments. 23-23.5 ml of manganese black was brought into the tube without being touched by air. Benzene and air were removed from the system at low temperature for two hours by deoxidized hydrogen. Cyclohexene was dehydrogenated at 320-400°C. The gaseous products analyzed on the ВТИ-(VTI) device contained, apart from 98.5-99.5% hydrogen, 0.5-1.5% saturated hydrocarbons. The ultraviolet absorption spectra of the catalyst showed, apart from the cyclohexene used, the presence of benzene. Cyclohexadiene frequencies were not present. The activity of the catalyst was not stable during the first

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An Investigation of the Catalytic Properties of Pyrophoric Manganese

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four or five experiments. Only in later ones were reproduceable results obtained (Table 1). From this it follows that hydrogen does not form on manganese black only by dehydrogenation of the cyclohexene. The stabilized catalyst is far less active than a freshly produced one. The authors believe that no parallel, irreversible catalysis occurs here. The lattice of the catalyst was somewhat strengthened (according to roentgenogram) after eight experiments. There were no manganese oxide lines here, either. Thus newly produced manganese black not only catalyzes the dehydrogenation of cyclohexene, but also cracks it. Manganese carbide, and an additional quantity of hydrogen are formed. Cyclohexane is negligibly dehydrogenated at 440-500°C, forming cyclohexene. Ethyl-benzene is partially cracked between 300 and 450°C. Carbon and hydrogen are formed. Neither benzene nor cyclohexene are hydrogenated between 150 and 215°C. There are 1 table and 13 references: 5 Soviet, 1 German, 1 French, 1 British, and 1 US.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: February 11, 1960, by A. A. Balandin, Academician

KLABUNOVSKIY, Ye.I.; VOLKOVA, L.M.; AGRONOMOV, A.Ye.

New method for obtaining stereospecific silica gels. Izv.AN SSSR.Otd.khim.nauk no.11:2101 N '61. (MIRA 14:11)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Silica)

AGRONOMOV, A.Ye.; LIN LI-DAN [Ling Li-tang]

Activity of copper catalyst as influenced by the structure of silica gel used as a carrier. Report 6. Vest.Mosk.Un.Ser.2: khim. 16 no.6: 53-61 N-D '61. (MIRA 14:11)

1. Moskovskiy gosudarstvennyy universitet. Kafedra organicheskogo katalizа.

(Catalyst, Copper) (Silica)

AGRONOMOV, A.Ye.; MARDASHEV, Yu.S.

Structure and activity of supported nickel catalysts. Part 1: Structural changes of the catalyst support during the deposition of nickel. Zhur.fiz.khim. 35 no.8:1666-1671 Ag '61. (MIRA 14:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova i Institut organicheskoy khimi AN SSSR imeni N.D. Zelinskogo.
(Nickel) (Catalysts)

AGRONOMOV, A.Ye.; MARDASHEV, Yu.S.

Structure and activity of supported nickel catalysts. Zhur. fiz.khim. 35 no.9:2047-2051 '61. (MIRA 14:10)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova i Institut organicheskoy khimii AN SSSR imeni N.D. Zelinskogo.
(Nickel) (Catalysis)

BALANDIN, A.A., akademik, red.; KOBOZEV, N.I., prof., red.; LEBEDEV, V.P., dots., zam. red.; MAL'TSEV, A.N., zam. red.; AGRONOMOV, A.Ye., dots., zam. red.; TOPCHIYEVA, K.V., prof., red.; YUR'YEV, Yu.K., prof., red. PANCHENKOV, G.M., prof., red.; SOKOL'SKIY, D.V., akademik, red.; VOL'KENSHTEYN, F.F., prof., red.;LAZAREVA, L.V., tekhn. red.

[Catalysis in the institutions of higher learning; papers of the First Interuniversity Conference on Catalysis]Kataliz v vysshei shkole; trudy. Moskva, Izd-vo Mosk. univ. No.1. Pt.2. 1962. 325 p. (MIRA 15:10)

1. Mezhvuzovskoye soveshchaniye po katalizu. 1st, 1958. 2. Akademiya nauk Kazakhskoy SSR (for Sokol'skiy). 3. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (for Yur'yev). (Catalysis)

S/189/62/000/002/001/004
D228/D302

5.1190

AUTHORS: Agronomov, A.Ye., and Mardashev, Yu.S.

TITLE: Selective assessment of the surface areas of metallic catalysts on carriers

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II, khimiya, no. 2, 1962, 21 - 22

TEXT: The authors give more precise information about their previous study of the chemisorption of phenol. This shows that the difference in the size of the Ni part of the surface of the Ni/Al_2O_3 catalyst, calcd. by the method of direct detn. and by the method of comparing the chemisorption capacity of thiophenol on Ni-black, Al_2O_3, and Ni/Al_2O_3, amounts to only 15 %. Thus, it is concluded that the method of comparison can be used to estimate selectively the size of the Ni surface in Ni/Al_2O_3 catalysts. There are 1 table and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: P.H.

Card 1/2

Selective assessment of the surface ...

Emmett et al, J. Amer. Chem. Soc. 59, 310, 1937; F.N. Hill et al, Ibid. 71, 2522, 1949; L. D'Or et al, J. Chem. Phys., 51, 467, 1954; F.C. Tompkins, Disc. Faraday Soc. 54, 548, 1958.

ASSOCIATION: Kafedra organicheskogo kataliza (Department of Organic Catalysis)

SUBMITTED: May 8, 1961

Card 2/2

BALANDIN, A.A., akad., red.; KOBOZEV, N.I., prof., red.; LEBEDEV, V.P., dots., zam. red.; MAL'TSEV, A.N., dots., zam. red.; AGRONOMOV, A.Ye., dots., zam. red.; GROMOV, V.N., red.; LAZAREVA, L.V., tekhn. red.

[Transactions of the First Interuniversity Conference on Catalysis] Trudy Mezhvuzovskogo soveshchaniia po katalizu,1st. Moskva, Izd-vo Mosk. univ. No.1. Pt.1. 1962. 475 p. (MIRA 16:7)

1. Mezhvuzovskoye soveshchaniye po katalizu. 1st. 2. Khimicheskii fakul'tet Moskovskogo gosudarstvennogo universiteta (for Balandin, Kobozev, Lebedev).

(Catalysis—Congresses)

MARDASHEV, Yu.S.; AGRONOMOV, A.Ye.

Evaluation of the surface area of nickel in Ni/Al_2O_3 catalysts. Zhur.fiz.khim. 36 no.8:1785-1787 Ag '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Nickel catalysts)

KLABUNOVSKIY, Ye.I.; AGRONOMOV, A.Ye.; VOLKOVA, L.M.; BALANDIN, A.A.

Adsorption of racemic and (+) -isomers of 2-butanol on stereospecific silica gels. Izv.AN SSSR.Otd.khim.nauk no.2: 228-234 F '63. (MIRA 16:4)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR i Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Butanol) (Adsorption) (Silica)

MAL'TSEV, A. N.; KOBOZEV, N. I.; AGRONOMOV, A. Ye.; VORONOVA, L. V.

Effect of the size of granule carrier on the macroscopic distribution of platinum in adsorption catalysts. Zhur. fiz. khim. 37 no. 3:628-633 Mr '63. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

BALANDIN, Aleksey Aleksandrovich, akademik; AGRONOMOV, A.Ye., red.; YERMAKOV, M.S., tekhn. red.

[Multiplet theory of catalysis] Mul'tipletnaia teoriia kataliza. Moskva, Izd-vo Mosk. univ. Pt.1. 1963. 101 p. (MIRA 17:2)

AGRONOMOV, A. Ye.; NISHCHENKO, A.P.

Catalytic properties of cobalt obtained by the thermal decomposition of amalgams. Vest. Mosk. un. Ser. 2 Khim. 19 no.2:64-67 Mr-Ap'64 (MIRA 17:6)

1. Kafedra organicheskoy khimii Moskovskogo universiteta.

AGRONOMOV, A.Ye.; MISHCHENKO, A.P.

Mechanism of hydrogenolysis of a double carbon-carbon bond on cobalt. Vest.Mosk.un.Ser.2:Khim. 19 no.4:72-74 JL-Ag '64.
(MIRA 18:8)

1. Kafedra organicheskoy khimii Moskovskogo universiteta.

AGRONOMOV, A.Ye.; MISHCHENKO, A.P.

Catalytic properties of iron obtained by the thermal decomposition of amalgams. Vest. Mosk. un. Ser. 2: Khim. 20 no.2:20-24 Mr-Ap '65. (MIRA 18:7)

1. Kafedra organicheskoy khimii Moskovskogo universiteta.

GRONOMOV, A.Ye.; MISHCHENKO, A.P.

Poisoning effect of benzene on an iron catalyst obtained by thermal decomposition of amalgams. Vest. Mosk. un. Ser. 2: Khim. 20 no.4:34-38 Jl-Ag '65. (MIRA 18:10)

1. Kafedra organicheskoy khimii Moskovskogo gosudarstvennogo universiteta.

AGRONOMOV, L. E.

The structure of the hydrides of boron. I. E. Agronomov. *J. Gen. Chem.* (U. S. S. R.) 9, 23-52 (1939).
The known B hydrides can be considered as the products of the homologous series of the simple, primary hydrides of trivalent B (BH_3, B_2H_6, B_3H_9, B_4H_{12} and B_5H_{15}), viz., $B_2H_6 = BH_3 + BH_3$; $B_4H_{10} = B_2H_6 + 2BH_3$; $B_3H_{11} = B_2H_6 + 2BH_3$; $B_3H_9 = B_2H_6 + B_2H_6$, $B_4H_{10} = 2B_2H_6$ (or $B_2H_6 + B_2H_4$) and $B_5H_{14} = 2B_2H_9$. Stereochemically B hydrides (tetrahedral B atom) resemble the satd. org. compds. (aliphatic and alicyclic). Thus, BH_3 can be compared with CH_4, B_2H_6 with C_2H_6, B_3H_9 with C_3H_8, B_4H_8 with cyclobutane, B_4H_{10} with cyclohexane and B_5H_{11} with decalin (cf. Bauer, *C. A.* 32, 6169⁹). The distribution of electrons in the mols. of B hydrides corresponds to the rules developed for BH_3 by Stewart, Pauling (*C. A.* 25, 5832) and Mulliken (*C. A.* 29, 7857⁹). The characteristic chem. reactions of B hydrides can be traced to the presence of pulsating, singular bonds as a result of the insufficient no. of electrons to serve all the bonds in the mol. by the electron pair system. Individual reactions of B hydrides with various reagents are discussed and the mechanism of each reaction in relation to the structure of the hydride is suggested. 50 references.
Chas. Blanc

Moscow State U.

The structures of boron hydrides. II. [illegible] Antonomov. *J. Gen. Chem.* (U. S. S. R.) 9, 1889-93(1939); cf. *C. A.* 33, 6150[8]. —The new exptl. results obtained by Schlesinger and Burg (*C. A.* 32, 2859[2]) for $B_2H_6.2NH_3$ (in their investigation of the reaction with Na in liquid ammonia) can be explained if the compd. is taken to be of the form $BH_3.NH_3$. The more complex formula (proposed by Schlesinger and Burg) $NH_4.[BH_3.NH_2.BH_3]^-$ is not based on exptl. results. The article gives also a possible scheme of the reaction for the formation of the compd. B_2H_7N that agrees with the formula $BH_3.NH_3$ for the ammoniate prepd. from diborane.—Ten references. W. R. Henn

The structure of boron hydrides. III. The structure and properties of boron hydride ammoniates. L. E. Antonimov. *J. Gen. Chem.* (U. S. S. R.) 10, 1120-40 (1940); cf. *C. A.* 34, 1287⁸.—The properties of B hydride ammoniates are clearer if they are regarded as products of semipolar addn. of NH_3 to the H compds. of trivalent B (BH_3, B_2H_4 and B_4H_8) unsatd. with electrons and imperfect from the stereochem. point of view. $B_2H_6.2NH_3$ is regarded as 2 mols. of $BH_3.NH_3$, $B_4H_{10}.4NH_3$ as 2 mols. of $BH_3.NH_3$ + 1 mol. of $NH_3.BH_2BH_2.NH_3$, $B_4H_9.4NH_3$ as $NH_3.BH_2BH_2.NH_3$ + $NH_3.BH_2BHBH_2.NH_3$. In the transformations of these compds. there is an unequal affinity of H atoms attached to N and to B (a pos. polarization of H atoms attached to N and a neg. polarization of H atoms attached to B), which is strengthened by the semipolar bonds N → B. In connection with this there is a possibility for reactions which split off H_2 and which lead to substitution of H (attached to B) by NH_3 or to the formation of new semipolar bonds N → B, which can lead to ring closure. Owing to the tetrahedral nature of the B and H atoms this takes place in a 6- or a 5-membered chain. The study of the effect of various substituents for replacing electrons and for polarizing H atoms showed that the H atoms are most reactive. From this point of view the thermal and electrolytic dissocn. of $B_2H_6.2NH_3$ and $B_4H_{10}.4NH_3$, the reactions of $B_4H_{10}.4NH_3$ and $B_4H_9.4NH_3$ with HCl, the reaction of B_2H_{11} and $B_{12}H_{14}$ with NH_3 and the electrolysis of the $B_{16}H_{14}$ soln. in liquid NH_3 were investigated. 22 references. W. R. Henn.

AGRONOMOV, S.N., inzhener; BARABANOV, N.V., kandidat tekhnicheskikh nauk.

Thirty-fifth anniversary of using electric welding in Russian shipbuilding. Sudostroenie 22 no.3:47 Mr '56. (MLRA 9:8)
(Electric welding) (Shipbuilding)

AGRONOMOV, S.N., inzh.; [illegible], V.P.

The under-flux welding of [illegible] pressure [illegible].
Svar. proizv. no.8:31-35. (MIRA 12:8)

AGRONOMOV, S. N., inzh.-mekhanik, starshiy tekhnolog po svarke.; MARTYNENKO, L., tekhnolog po svarke.

Automatic building up of shafts using the spiral technique. Mor. flot 18 no.9:17-19 S '58. (MIRA 11:10)
(Electric welding) (Shafting)

AGRONOMOV S.N.

MATSKEVICH, V.D., kand.tekhn.nauk; SAGALOVICH, D.N., inzh.; AGRONOMOV, S.N., inzh.

Latest developments in welding. Sudostroenie 24 no.4:73-75 Ap '58.
(Welding--Congresses) (MIRA 11:4)

PALLADIN, A.V., akademik; FEDORCHENKO, I.M., akademik; GULYY, M.F., akademik; BAKULIN, D.I.; MEL'NIKOV, N.P., kand.tekhn.nauk; OKERBLOM, N.O., prof., doktor tekhn.nauk; LYUBAVSKIY, K.V., prof. doktor tekhn.nauk, laureat Stalinskikh premiy; PORTNOY, N.D., kand.tekhn.nauk; TSYBAN', N.G.; KULIKOV, M.S., dotsent; AGRONOMOV, S.N., inzh.; POLYAKOV, V.A., inzh.; SHERSTYUK, V.N., inzh.

Congratulations on the publication of the issue no.100 of the "Avtomaticheskaia Svarka" journal. Avtom.svar. 14 no.7: 3-8 Jl '61. (MIRA 14:7)

1. Prezident AN USSR (for Palladin). 2. AN USSR, glavnyy uchenyy sekretar' AN USSR (for Fedorchenko). 3. AN USSR, predsedatel' redaktsionno-izdatel'skogo soveta AN USSR (for Gulyy). 4. Uchenyy sekretar' AN USSR (for Bakulin). 5. Direktor instituta "Proyektstal'konstruktsiya" (for Mel'nikov). 6. Predsedatel sektsii svarochnogo proizvodstva Tekhniko-ekonomicheskogo soveta Leningradskogo sovnarkhoza (for Okerblom). 7. Glavnyy svarshchik Uralvagonzavoda (for Portnoy). 8. Glavnyy inzh. zavoda im. Nosenko (for TSyban'). 9. Dal'nevostochnyy politekhnicheskiy institut im. V.V.Kuybysheva (for Kulikov). 10. Dal'zavod (for Agronomov, Polyakov). 11. Dal'nevostochnyy nauchno-issledovatel'skiy institut po stroitel'stvu (for Sherstyuk).

(Electric welding--Periodicals)

AGRONOVICH, V. M.

"Radiation Damage."

report submitted for the Conference on Solid State Theory, held in Moscow December 2-12, 1963, sponsored by the Soviet Academy of Sciences.

AGRONSKIY, G.M.

Schedule planning in the building organizations. Transp. stroi. 11 no.5:31-34 My '61. (MIRA 14:6)

1. Nachal'nik planovogo otdela tresta Sevzaptransstroy. (Construction industry)

AGRONSKIY, I.M.

USSR/Chemical Technology - Chemical Products and Their Application. Carbohydrates and Refinement. I-11

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2777

Author : Ostapenko, V.N., Mel'nik, P.A., Agronskiy, I.M.

Inst : -

Title : Comparative Tests of the Maceration-Diffusion Procedure of Operation of the Diffusion Battery.

Orig Pub : Salharnaya prom-st', 1957, No 3, 41-43

Abstract : The performance indices are given for two identical 14-diffuser batteries, one of which was operated in the conventional manner anf the other according to the maceration-diffusion method (in the two initial diffusers, disconnected from the system, a preliminary steeping of fresh chips in juice, was carried out). It was found that on using partially dried and frozen beets: 1) output of the battery operated according to the maceration-diffusion method was, on the average, higher by 11.4%, and juice circulation

Card 1/2

Agrosimov V.V.

USSR/Electronics - Gas Discharge and Gas Discharge Instruments H-7

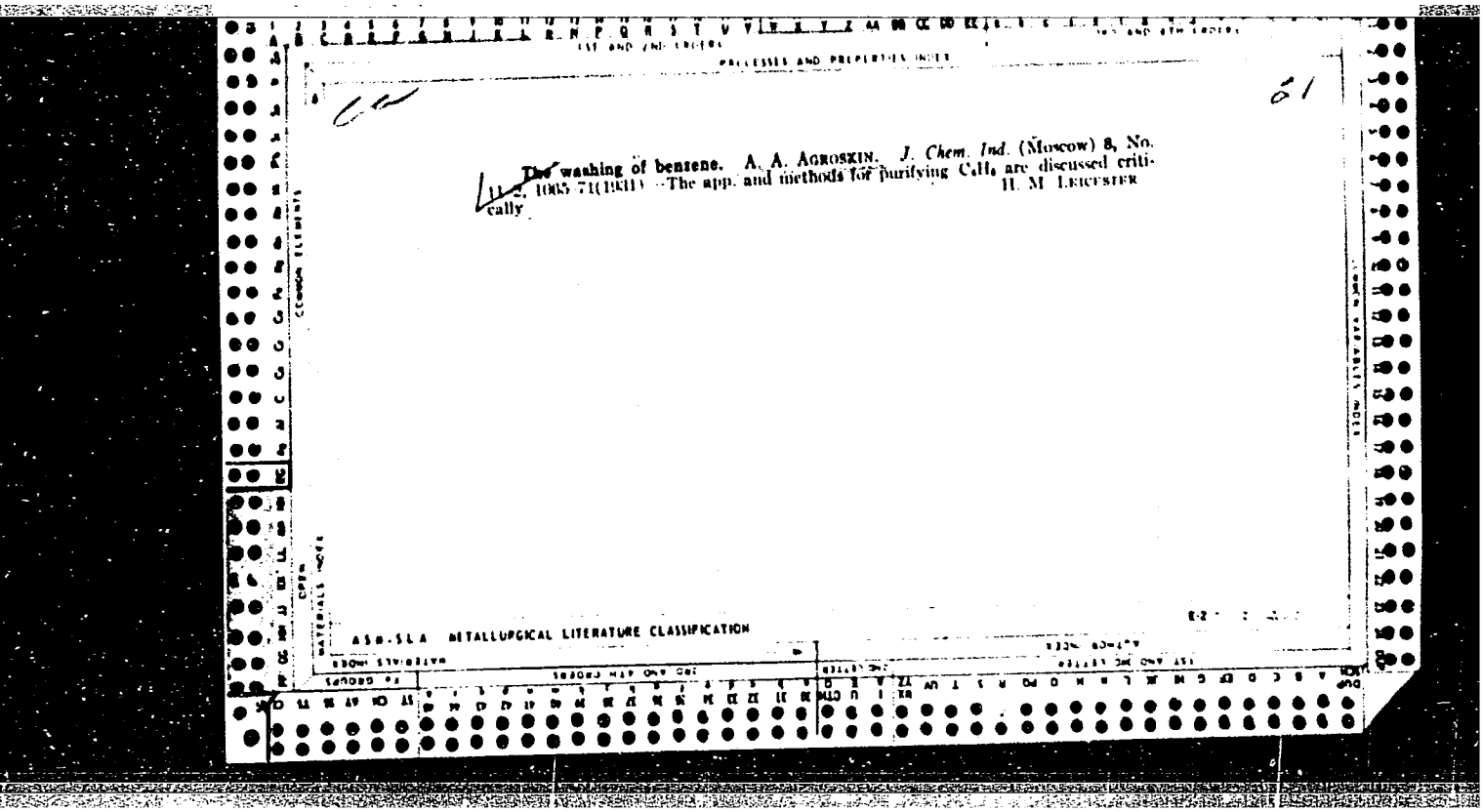
Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12344

Author : Fedorenho, N.V., Agrosimov, V.V.
Inst :
Title : Ionization of Gases by Ions of He^+, Ne^+, and Ar^+ with Formation of Multiple-Charged Ions Upon a Single Interaction.

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 9, 1941-1954

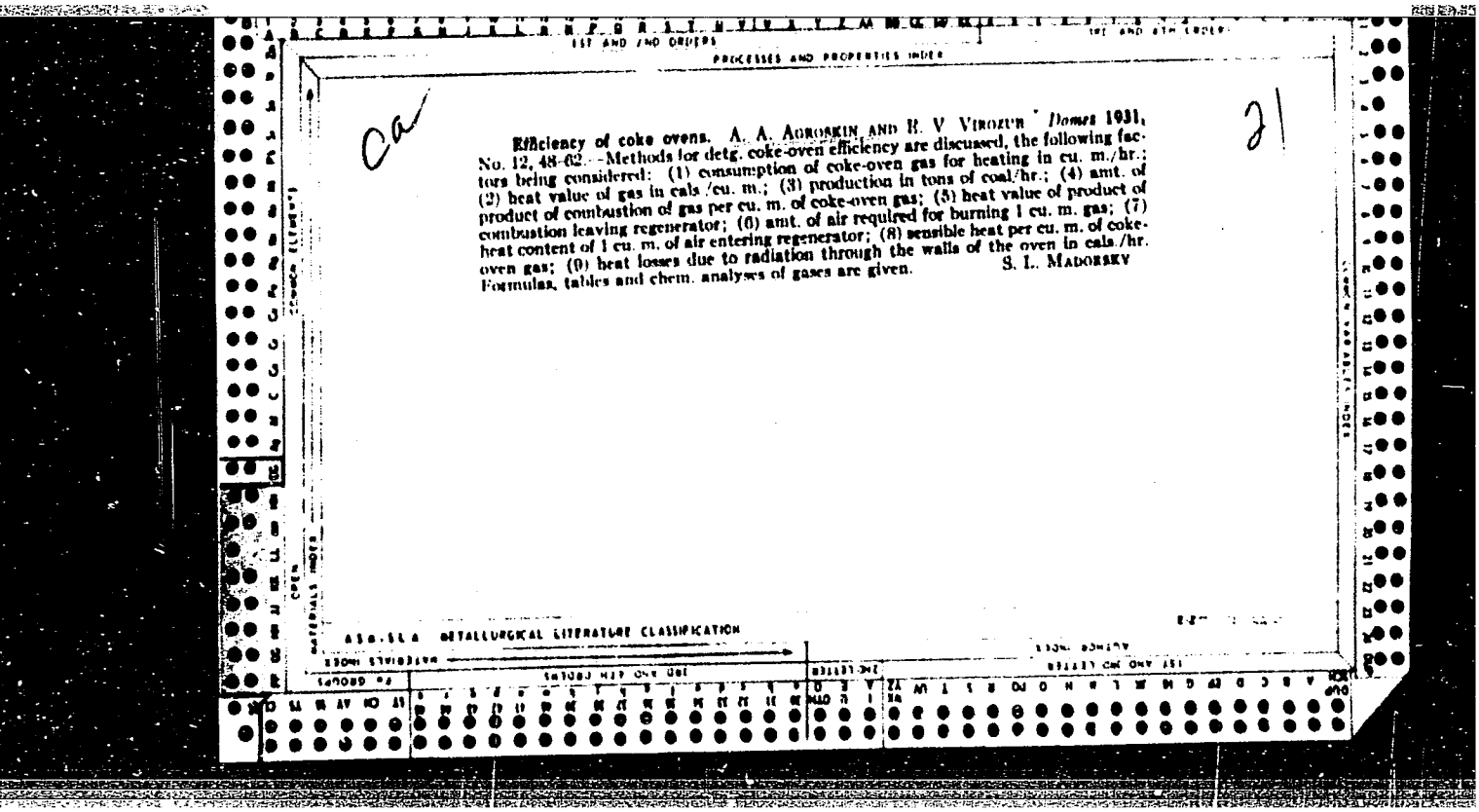
Abstract : In addition to the setup previously described (Abstract 12343), the work abstracted involves the use of a slow-ion analyzer. From the relative intensity of the lines of the spectrogram, the authors determine the cross sections for the formation of slow multiply-charged ions (σ_{0n}) by interaction of He^+, Ne^+, and Ar^+ with energies $T_0 = 3$ -- 180 kev, with atoms of helium, neon, argon, and crypton gas. The random errors in the measurements amounted to $\approx$ 12.5%. Plots are given for $\sigma_{0n}(T_0)$ for the following ions: [illegible]

Card 1/3



The washing of benzene. A. A. AGROSKIN. *J. Chem. Ind.* (Moscow) 8, No. 1, 1005-7 (1931).—The app. and methods for purifying CaH_2 are discussed critically. H. M. LEICESTER

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



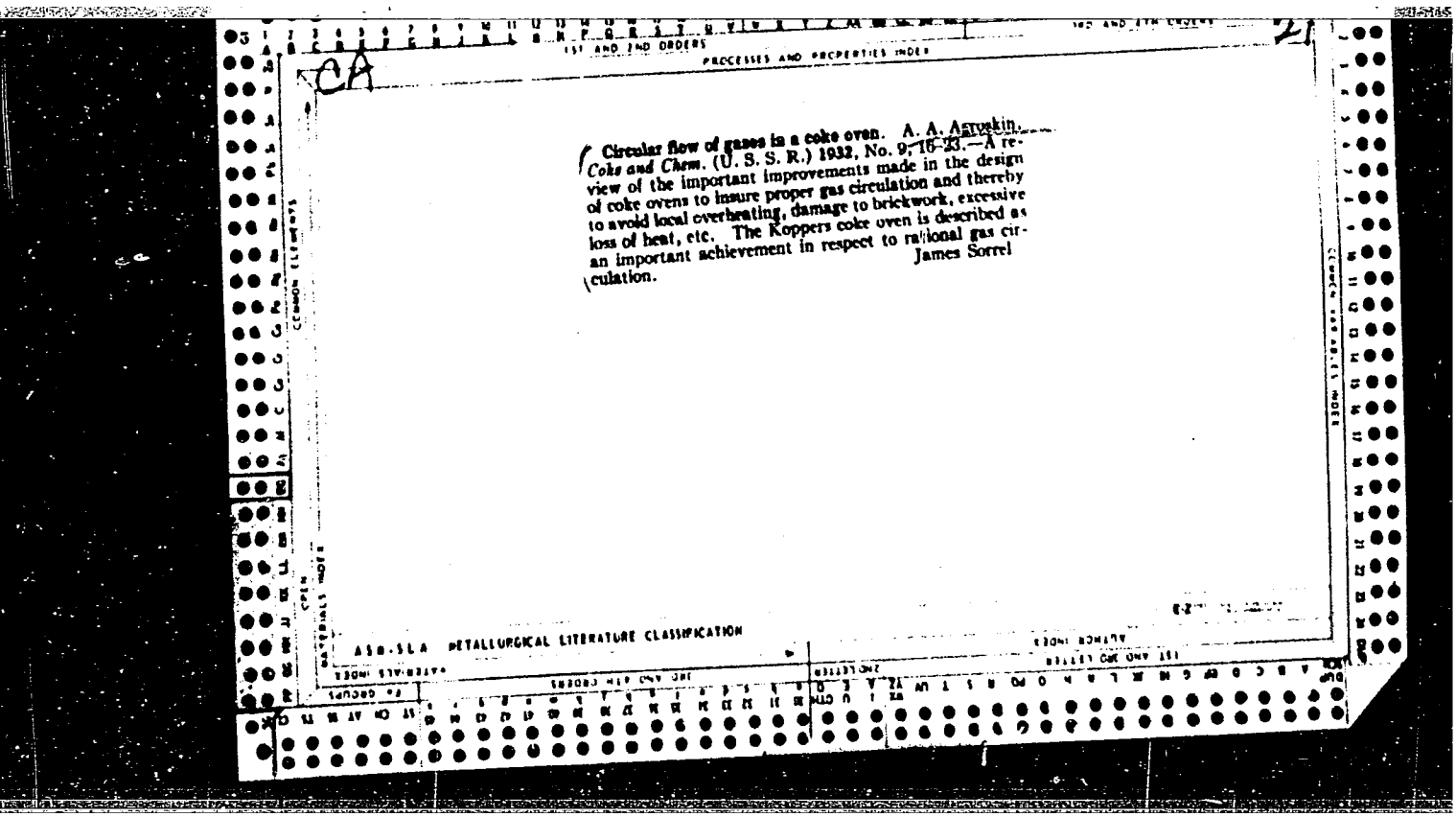
PROCESSES AND PROPERTIES INDEX

Ca

21

Efficiency of coke ovens. A. A. Agroskin and R. V. Virozub. *Domez* 1931, No. 12, 48–62.—Methods for detg. coke-oven efficiency are discussed, the following factors being considered: (1) consumption of coke-oven gas for heating in cu. m./hr.; (2) heat value of gas in cals./cu. m.; (3) production in tons of coal/hr.; (4) amt. of product of combustion of gas per cu. m. of coke-oven gas; (5) heat value of product of combustion leaving regenerator; (6) amt. of air required for burning 1 cu. m. gas; (7) heat content of 1 cu. m. of air entering regenerator; (8) sensible heat per cu. m. of coke-oven gas; (9) heat losses due to radiation through the walls of the oven in cals./hr. Formulas, tables and chem. analyses of gases are given. S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

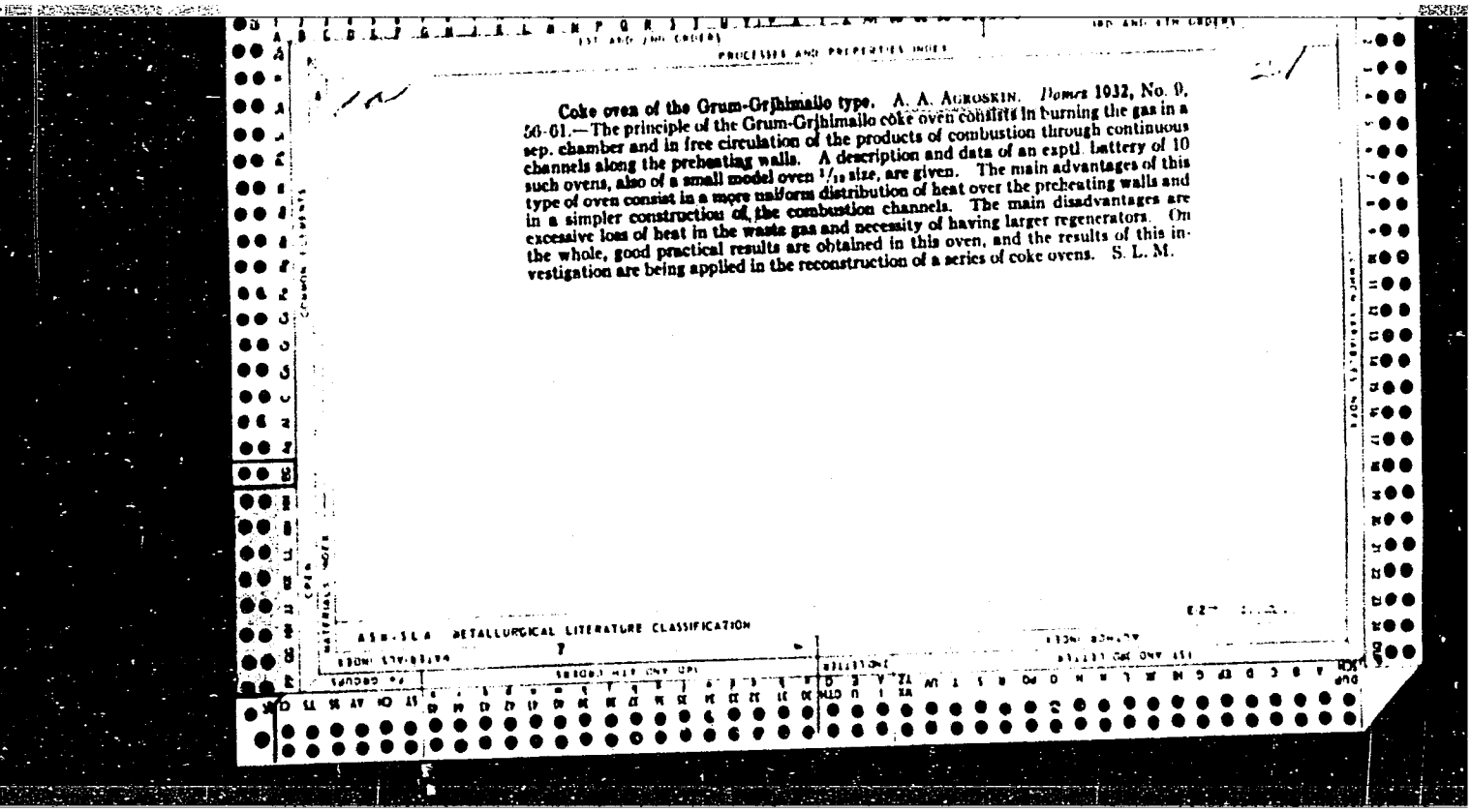
PROCESSES AND PROPERTIES INDEX

CA

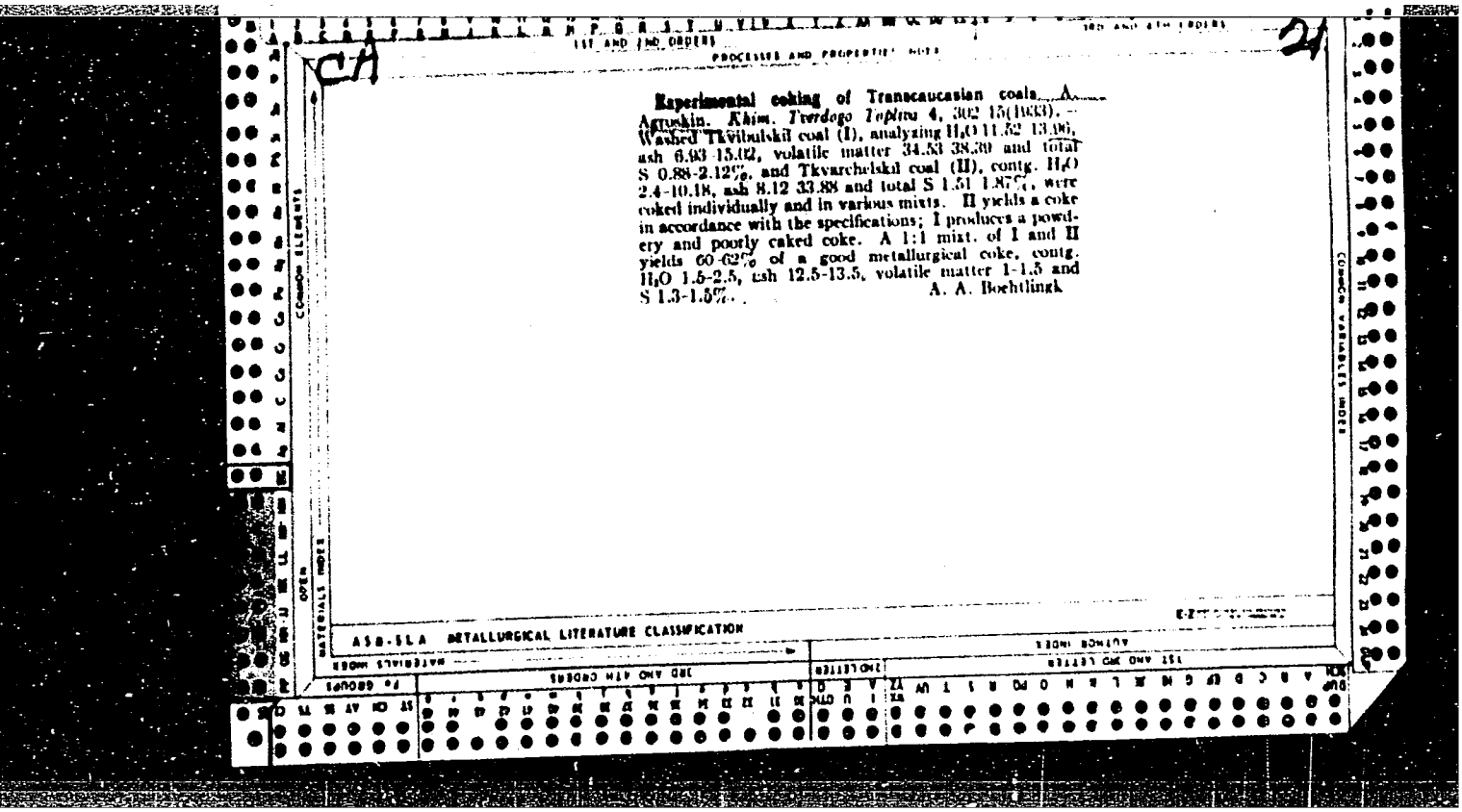
Circular flow of gases in a coke oven. A. A. Agroskin. *Coke and Chem.* (U. S. S. R.) 1932, No. 9, 16–23.—A review of the important improvements made in the design of coke ovens to insure proper gas circulation and thereby to avoid local overheating, damage to brickwork, excessive loss of heat, etc. The Koppers coke oven is described as an important achievement in respect to rational gas circulation.

James Sorrel

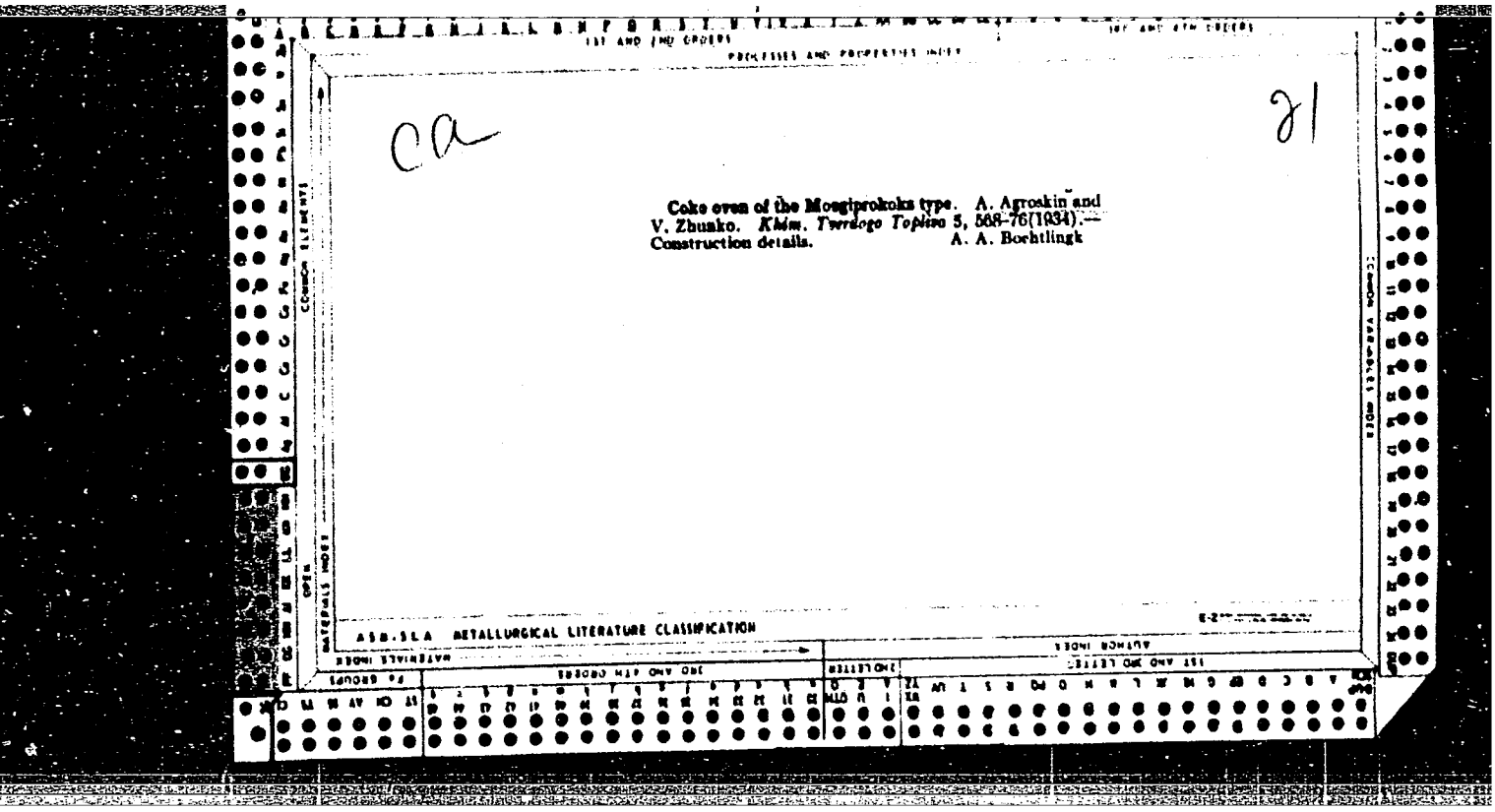
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



Coke oven of the Grum-Grjhimailo type. A. A. AGROSKIN. *Power* 1932, No. 9, 56-61.—The principle of the Grum-Grjhimailo coke oven consists in burning the gas in a sep. chamber and in free circulation of the products of combustion through continuous channels along the preheating walls. A description and data of an exptl. battery of 10 such ovens, also of a small model oven $^1/_{10}$ size, are given. The main advantages of this type of oven consist in a more uniform distribution of heat over the preheating walls and in a simpler construction of the combustion channels. The main disadvantages are excessive loss of heat in the waste gas and necessity of having larger regenerators. On the whole, good practical results are obtained in this oven, and the results of this investigation are being applied in the reconstruction of a series of coke ovens. S. L. M.



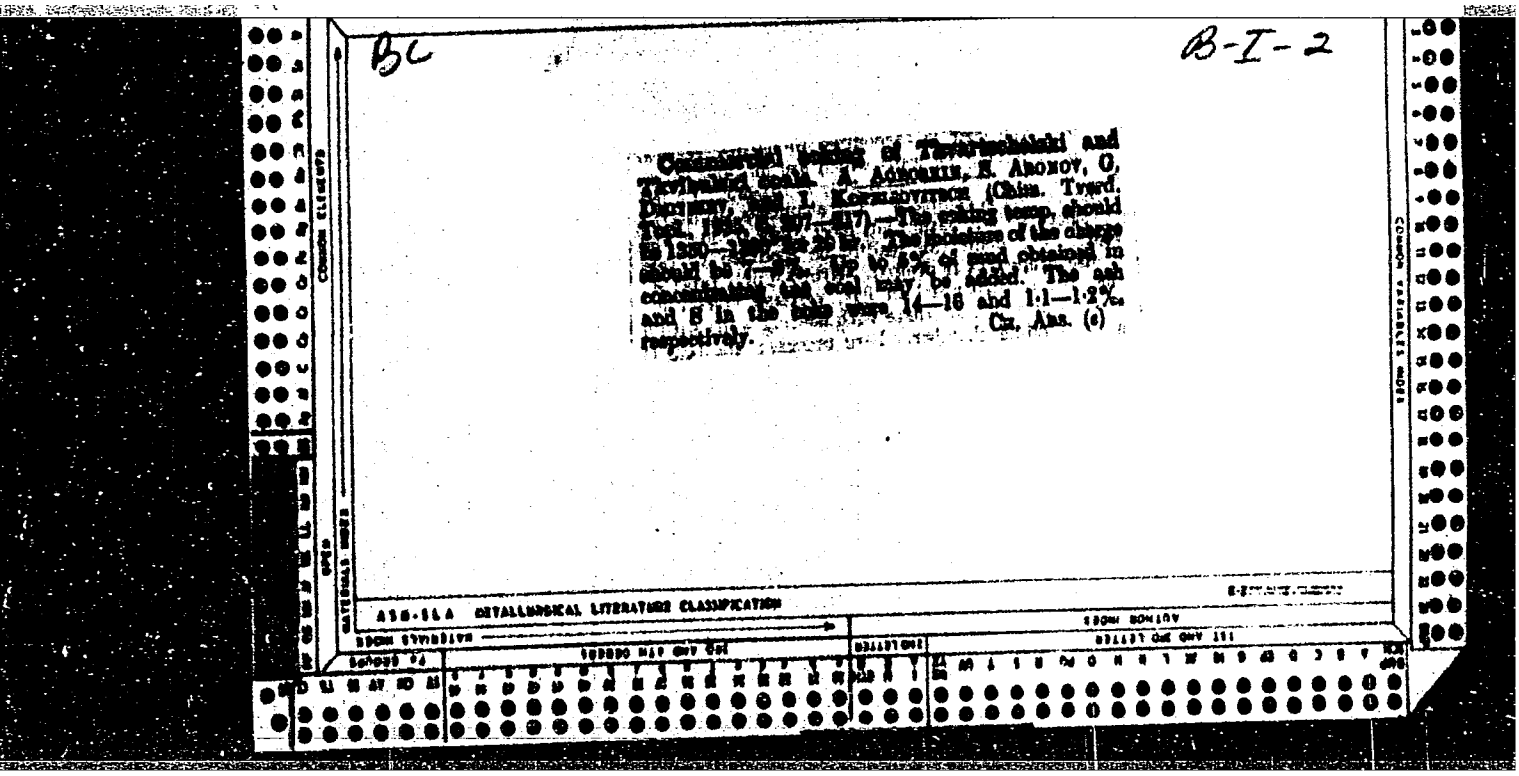
Experimental coking of Transcaucasian coals. A. Agruskin. *Khim. Tverdogo Topliva* 4, 302-15(1933). — Washed Tkvibulskil coal (I), analyzing H_2O 11.52-13.06, ash 6.93-15.02, volatile matter 34.53-38.39 and total S 0.88-2.12%, and Tkvarcheiskil coal (II), contg. H_2O 2.4-10.18, ash 8.12-33.88 and total S 1.51-1.87%, were coked individually and in various mixts. II yields a coke in accordance with the specifications; I produces a powdery and poorly caked coke. A 1:1 mixt. of I and II yields 60-62% of a good metallurgical coke, contg. H_2O 1.5-2.5, ash 12.5-13.5, volatile matter 1-1.5 and S 1.3-1.5%. A. A. Boehtlingk

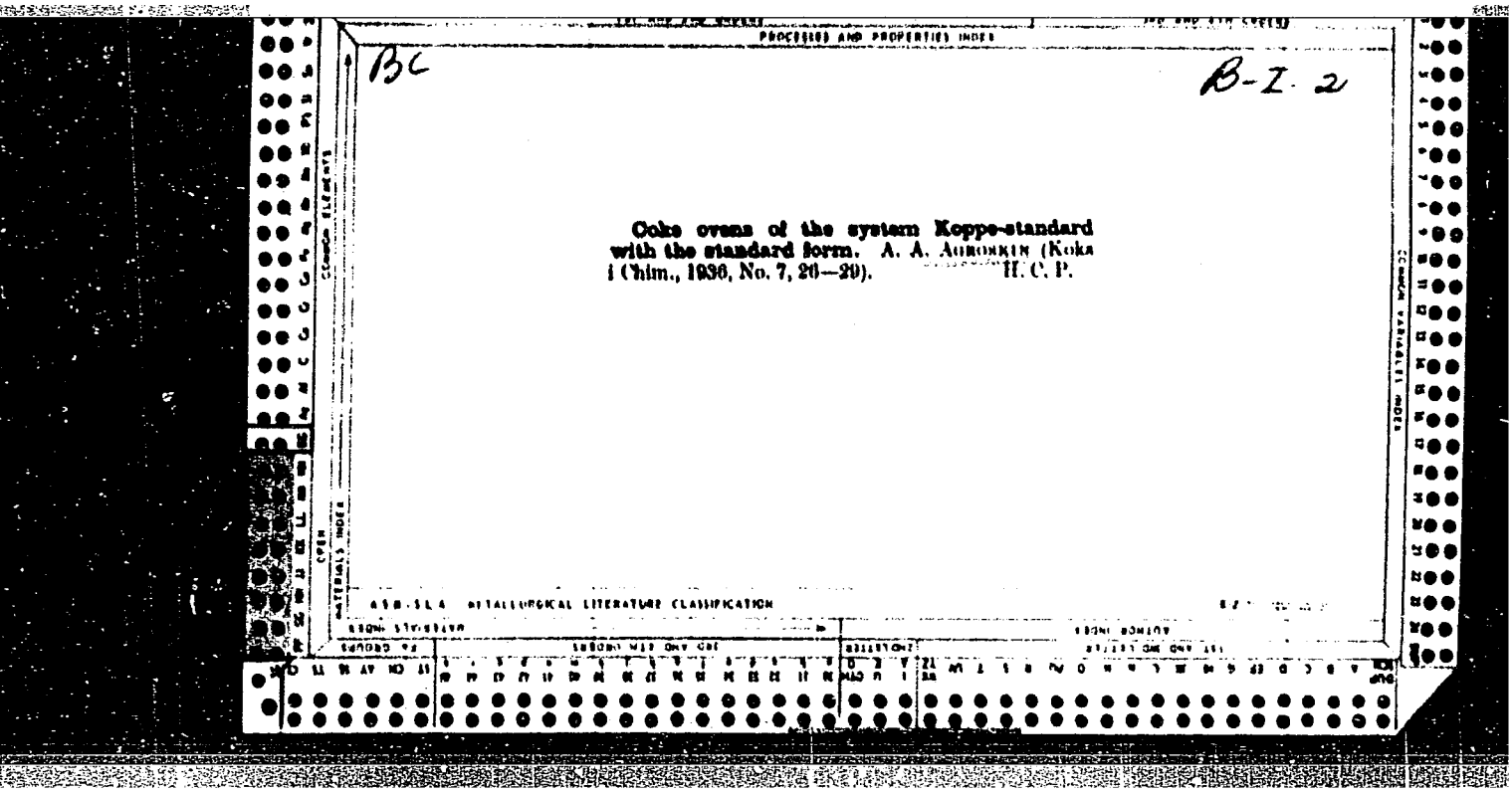


CA

81

Coke oven of the Moscprokoks type. A. Agroskin and V. Zhuako. *Khim. Tverdogo Topliva* 5, 568-76(1934).—Construction details. A. A. Boehtlingk





BC

B-I-2

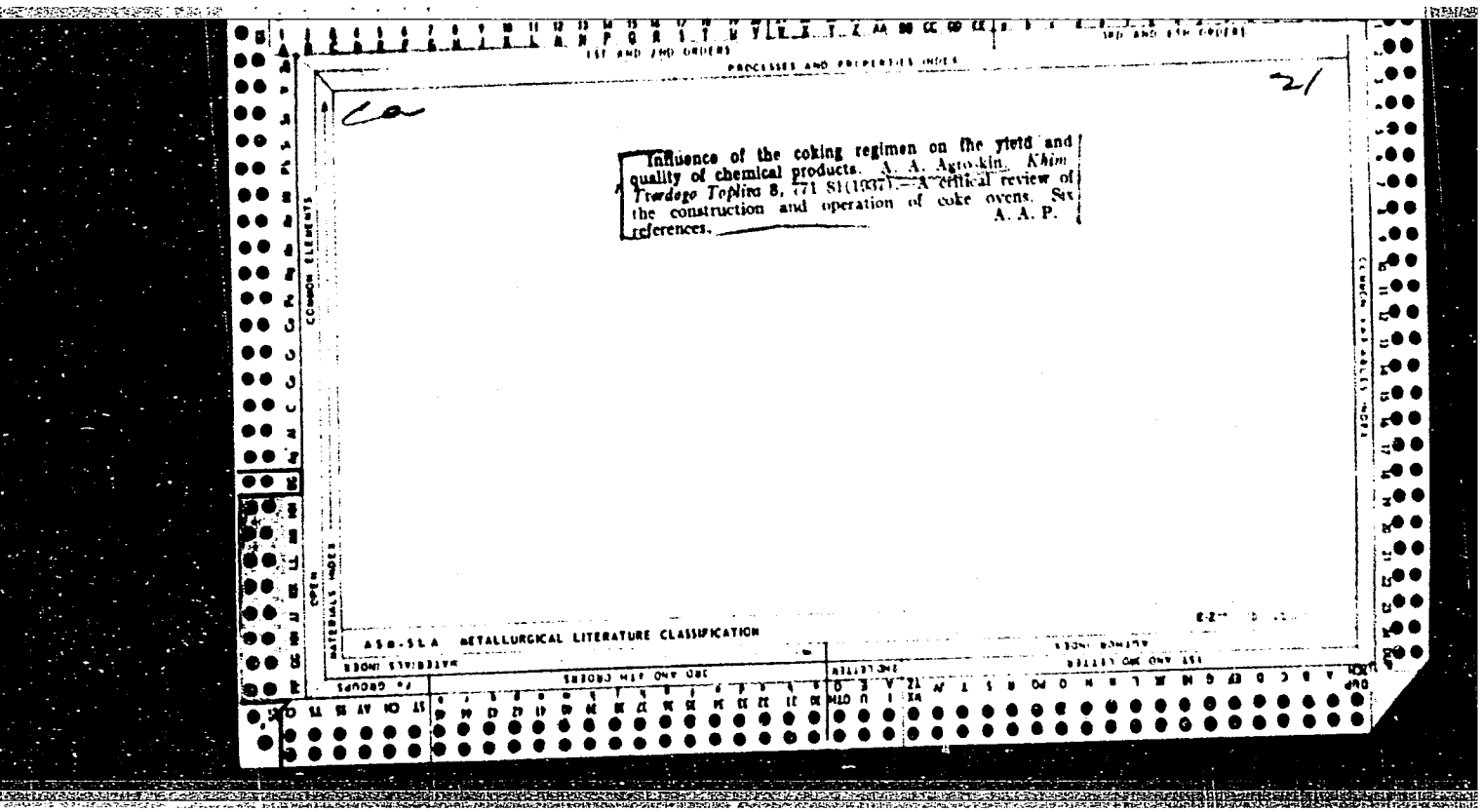
Coke ovens of the system Koppe-standard with the standard form. A. A. Agronkin (Koka i Chim., 1936, No. 7, 20—29). H. C. P.

AGROSKIN, A. A.

Coke-oven heating with gas from blast furnaces.. Khar'kov, Gos. nauch.-techn. izd-vo Ukrainy, 1937. 166p. (49-55873)

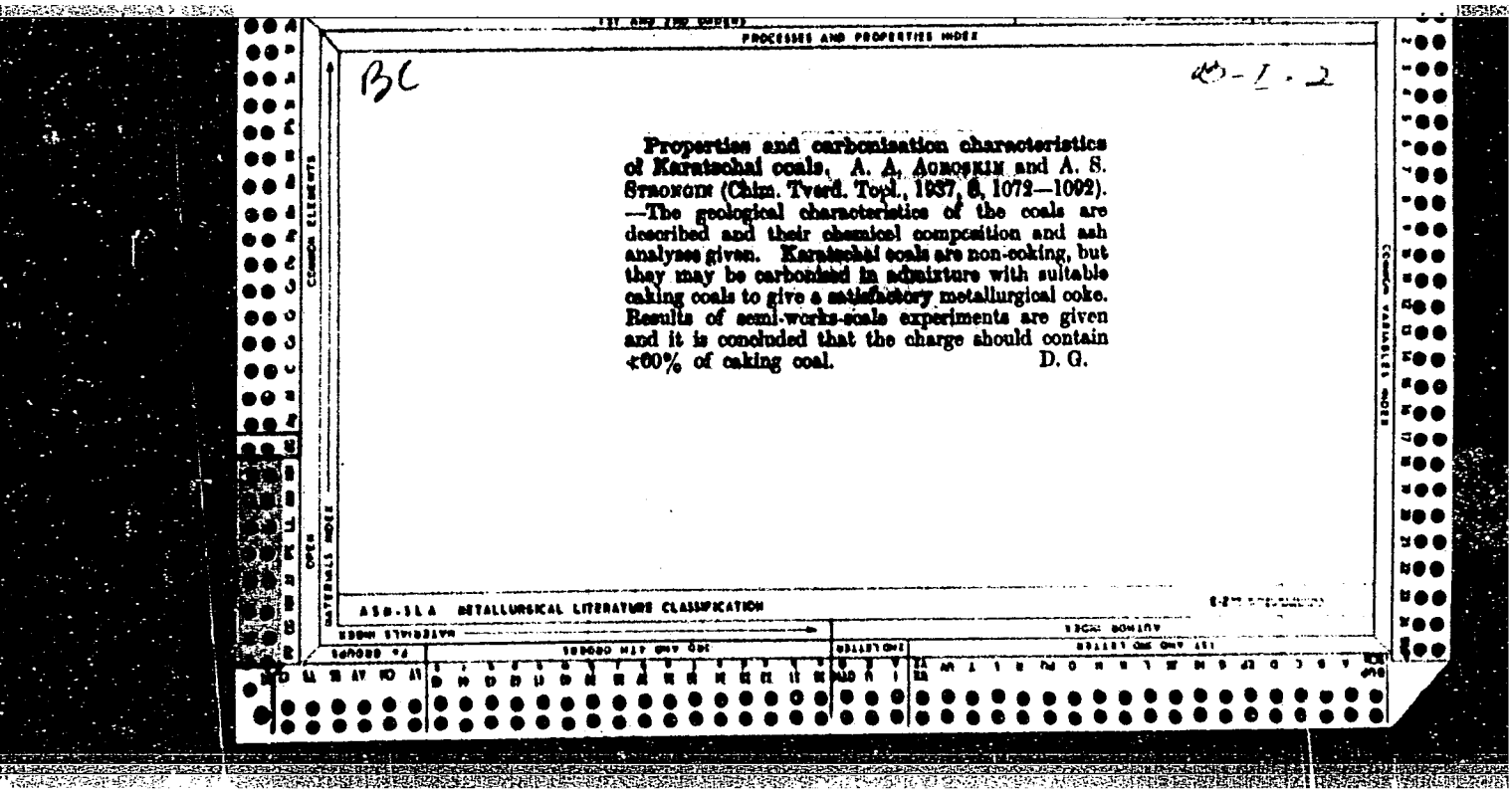
TP336.A56

1. Coke-ovens. I. Zhuravskii, V. N., jt. au.



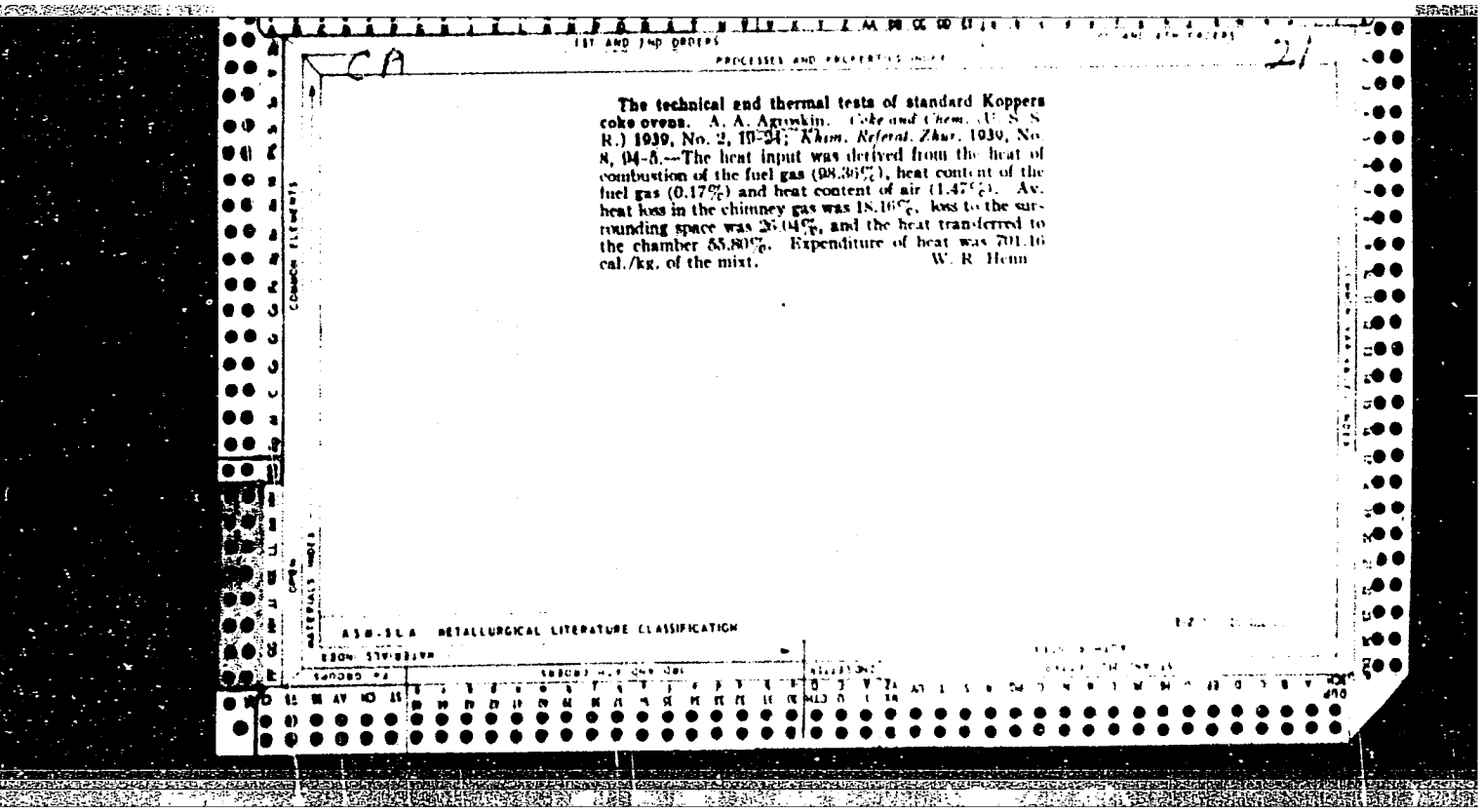
Influence of the coking regimen on the yield and quality of chemical products. A. A. Agrokin. *Khim. Tverdogo Topliva* 8, 171 81(1937).—A critical review of the construction and operation of coke ovens. Six references. A. A. P.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



BC

Properties and carbonisation characteristics of Karatschai coals. A. A. Agroskin and A. S. Stroganov (Chim. Tverd. Topl., 1937, 8, 1072—1092). —The geological characteristics of the coals are described and their chemical composition and ash analyses given. Karatschai coals are non-coking, but they may be carbonised in admixture with suitable caking coals to give a satisfactory metallurgical coke. Results of semi-works-scale experiments are given and it is concluded that the charge should contain <60% of caking coal. D. G.

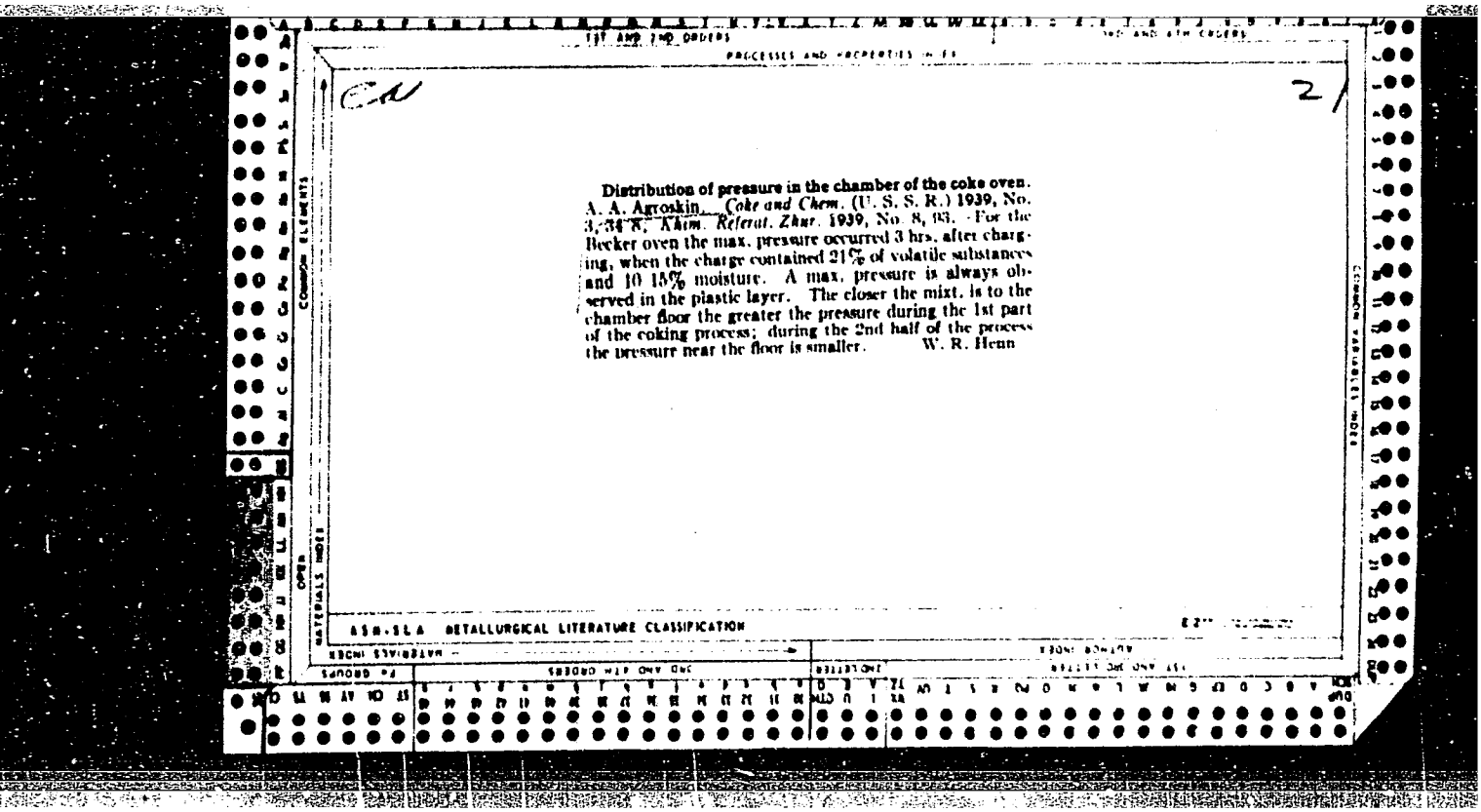


CA

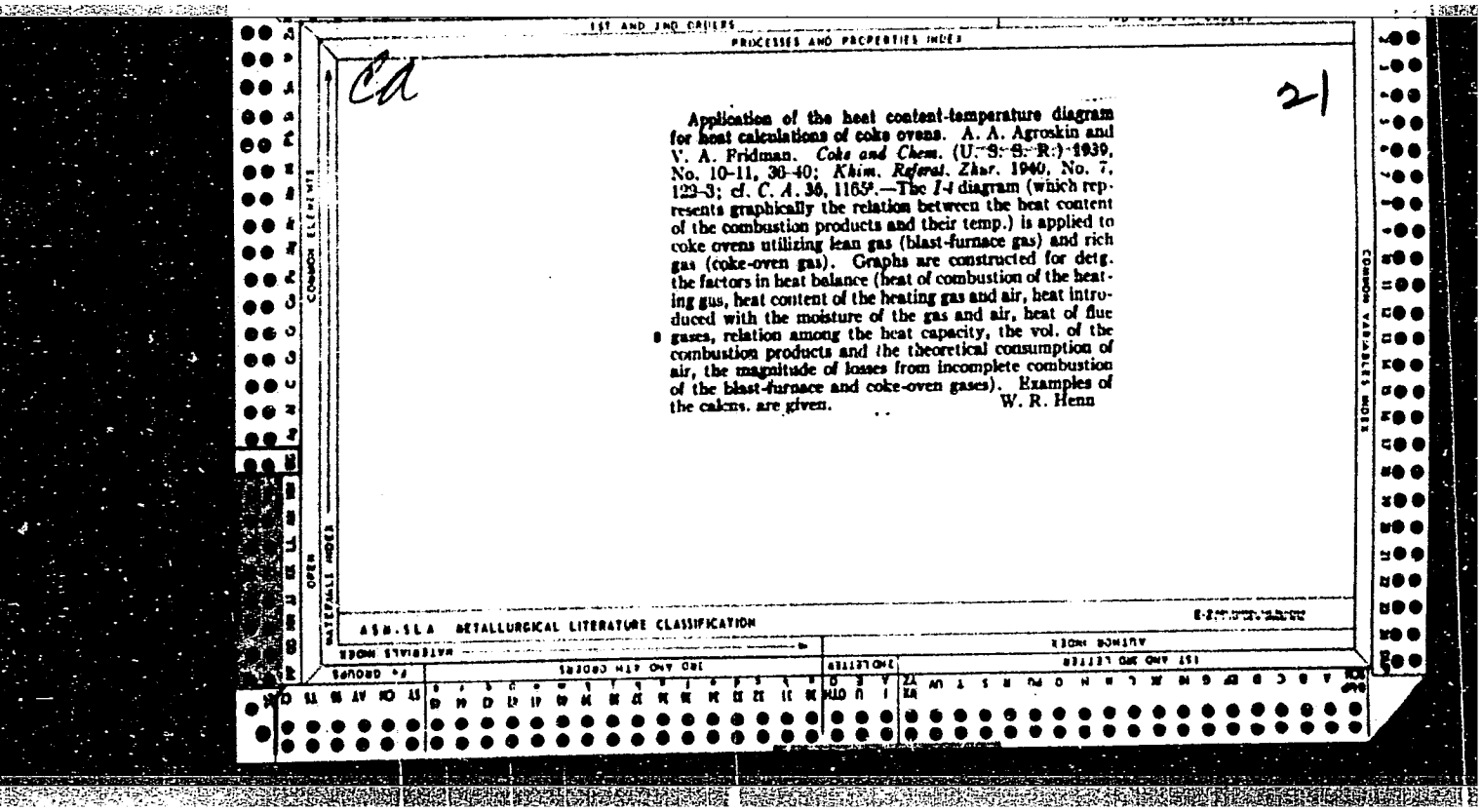
21

The technical and thermal tests of standard Koppers coke ovens. A. A. Agrnskin. *Coke and Chem.* (U. S. S. R.) **1939**, No. 2, 19–24; *Khim. Referat. Zhur.* 1939, No. 8, 94–5.—The heat input was derived from the heat of combustion of the fuel gas (98.36%), heat content of the fuel gas (0.17%) and heat content of air (1.47%). Av. heat loss in the chimney gas was 18.16%, loss to the surrounding space was 25.04%, and the heat transferred to the chamber 55.80%. Expenditure of heat was 701.16 cal./kg. of the mixt. W. R. Henn

A 5 8 - 5 L A METALLURGICAL LITERATURE CLASSIFICATION



Distribution of pressure in the chamber of the coke oven. A. A. Agroskin. *Coke and Chem.* (U. S. S. R.) 1939, No. 3, 34-8; *Khim. Referat. Zhur.* 1939, No. 8, 93. For the Becker oven the max. pressure occurred 3 hrs. after charging, when the charge contained 21% of volatile substances and 10-15% moisture. A max. pressure is always observed in the plastic layer. The closer the mixt. is to the chamber floor the greater the pressure during the 1st part of the coking process; during the 2nd half of the process the pressure near the floor is smaller. W. R. Henn



Ca

21

Application of the heat content-temperature diagram for heat calculations of coke ovens. A. A. Agroskin and V. A. Fridman. *Coke and Chem.* (U.S.S.R.) 1939, No. 10–11, 36–40; *Khim. Referat. Zhur.* 1940, No. 7, 123–3; cf. *C. A.* 36, 1165⁹.—The *I-t* diagram (which represents graphically the relation between the heat content of the combustion products and their temp.) is applied to coke ovens utilizing lean gas (blast-furnace gas) and rich gas (coke-oven gas). Graphs are constructed for detg. the factors in heat balance (heat of combustion of the heating gas, heat content of the heating gas and air, heat introduced with the moisture of the gas and air, heat of flue gases, relation among the heat capacity, the vol. of the combustion products and the theoretical consumption of air, the magnitude of losses from incomplete combustion of the blast-furnace and coke-oven gases). Examples of the calcns. are given.

W. R. Henn

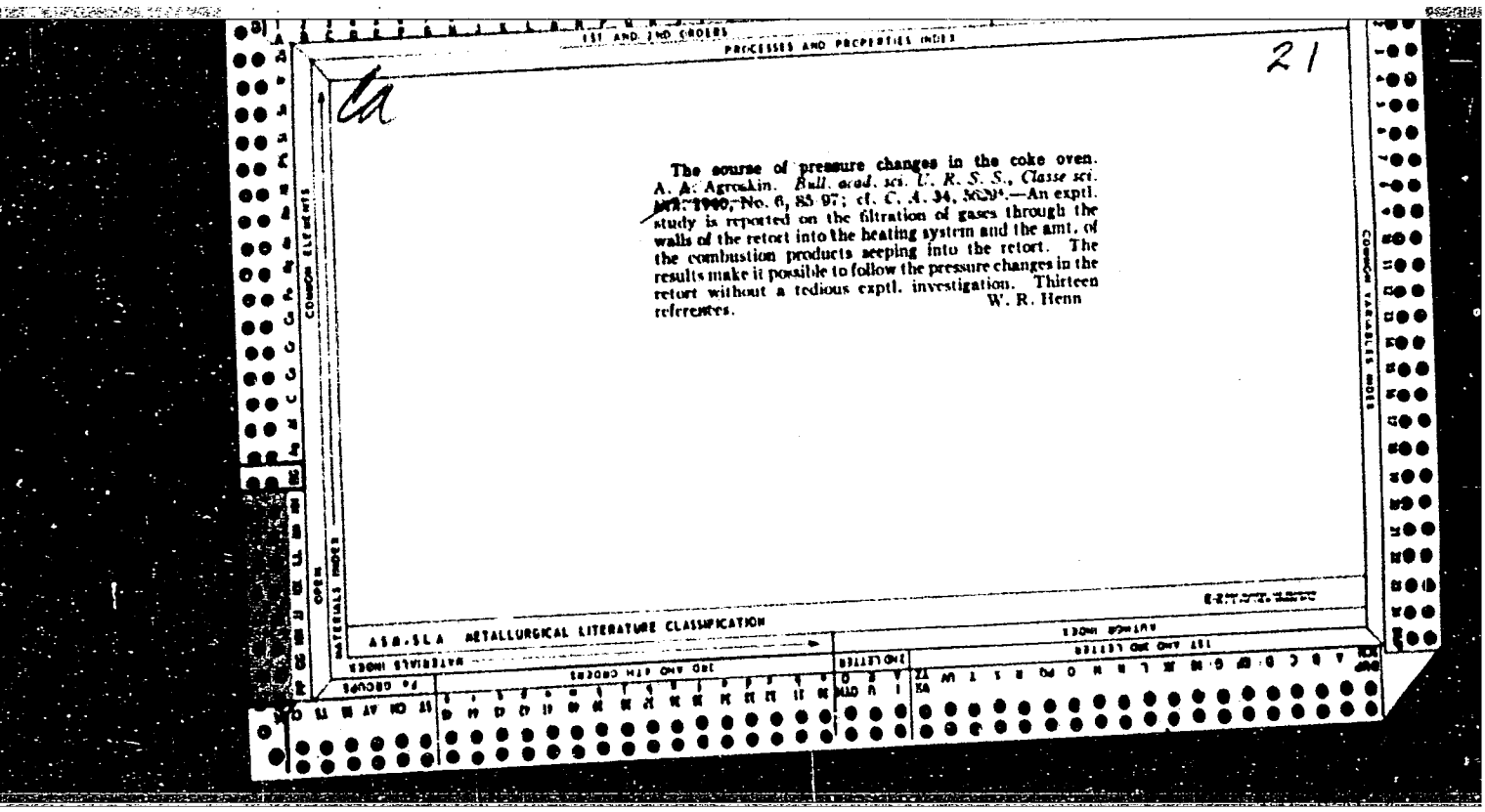
AGROSKIN4A8A8

1. AGROSKIN, A.A.

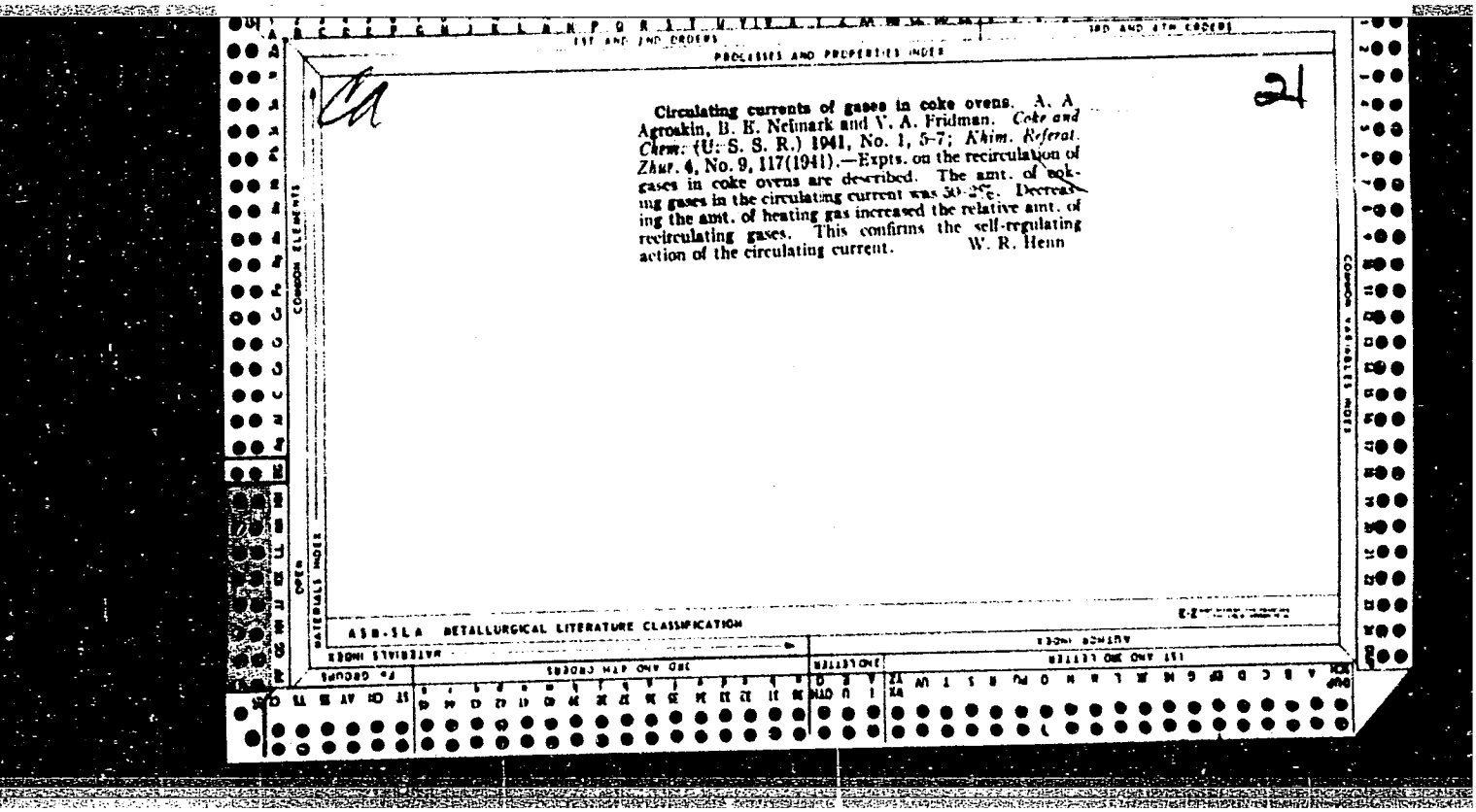
2. USSR (600)

"Hydrostatic Regime of Coking Chambers," Iz. Ak. Nauk SSSR, Otdel. Tekh. Nauk, No. 6, 1940. Power Engineering Institute, Academy of Sciences, USSR.

9. [redacted] Report U-1530, 25 Oct 1951



The course of pressure changes in the coke oven. A. A. Agroskin. *Bull. acad. sci. U. R. S. S., Classe sci. tech.* 1940, No. 6, 85-97; cf. *C. A.* 34, 3639⁴.—An exptl. study is reported on the filtration of gases through the walls of the retort into the heating system and the amt. of the combustion products seeping into the retort. The results make it possible to follow the pressure changes in the retort without a tedious exptl. investigation. Thirteen references. W. R. Henn



PROCESSES AND PROPERTIES INDEX

21

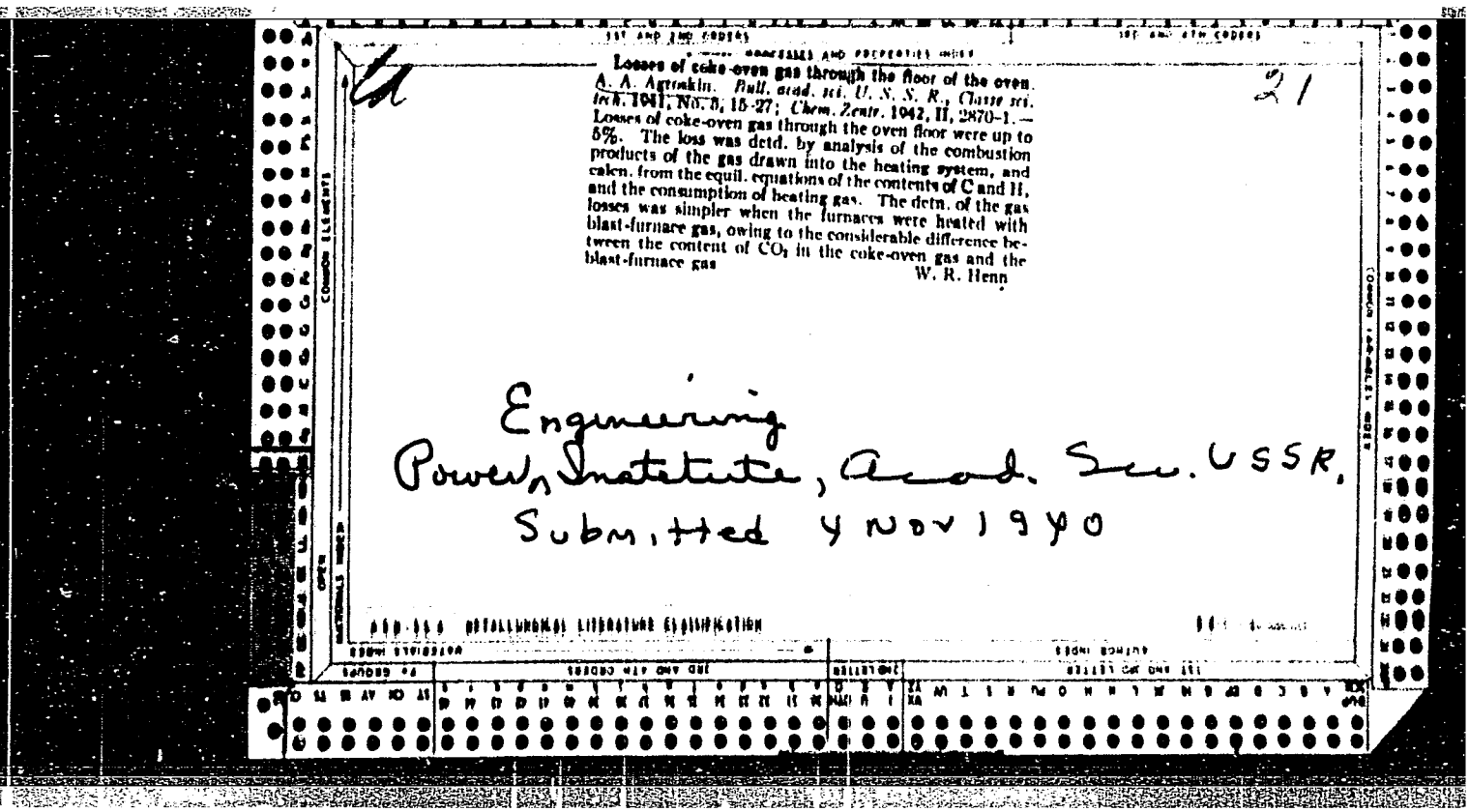
Circulating currents of gases in coke ovens. A. A. Agroskin, B. E. Nefmark and V. A. Fridman. *Coke and Chem.* (U. S. S. R.) 1941, No. 1, 5-7; *Khim. Referat. Zhur.* 4, No. 9, 117(1941).—Expts. on the recirculation of gases in coke ovens are described. The amt. of coking gases in the circulating current was 50-25%. Decreasing the amt. of heating gas increased the relative amt. of recirculating gases. This confirms the self-regulating action of the circulating current. W. R. Henn

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

Ar[illegible], A. A., Docent, Cand. Tech. Sci.

"Review of ... I. Kuskov, Ie. A. Fayerman, Ia. ... Ab, and L. I. Mirkin's Book Handbook for the Operation of Measuring and Regulating Instruments in Coke-Product Plants in the USA."

Avtomatika i Telemekhanika, Vol. 6, No. 4-5, 1941.



Losses of coke-oven gas through the floor of the oven. A. A. Agrinskii. *Bull. acad. sci. U. S. S. R., Classe sci. tech.* 1941, No. 8, 15-27; *Chem. Zentr.* 1942, II, 2870-1.—Losses of coke-oven gas through the oven floor were up to 5%. The loss was detd. by analysis of the combustion products of the gas drawn into the heating system, and calcn. from the equil. equations of the contents of C and H, and the consumption of heating gas. The detn. of the gas losses was simpler when the furnaces were heated with blast-furnace gas, owing to the considerable difference between the content of CO_2 in the coke-oven gas and the blast-furnace gas

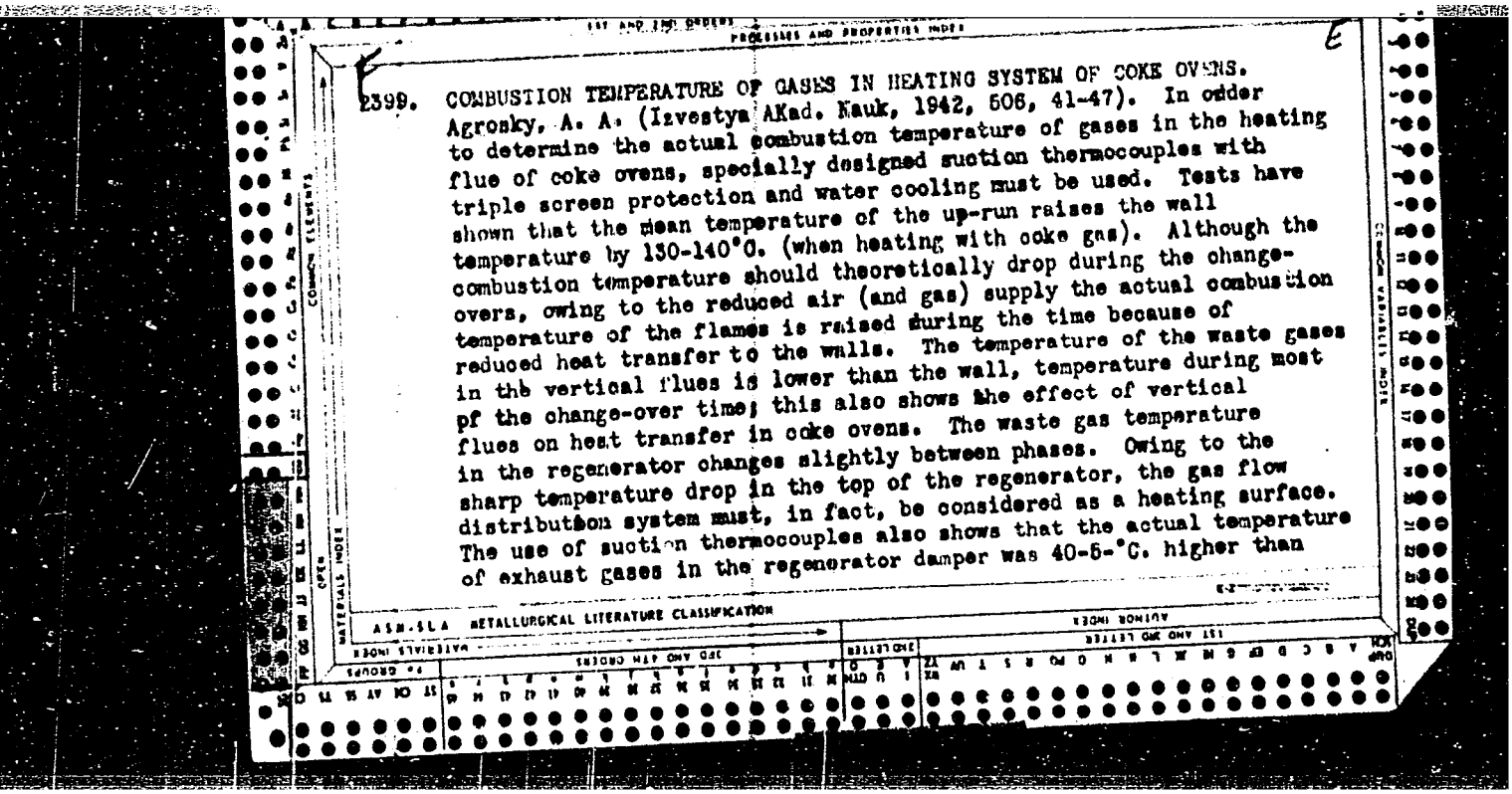
W. R. Henn

21

Engineering
Power Institute, Acad. Sci. USSR,
Submitted 4 Nov 1940

A.C.S

Measurement of the true temperature of hot gases by means of exhausting thermocouples. A. A. AGROSKIN. *Automat. und Telemech.* [U.S.S.R.], 6 [3] 117-28 (1941); abstracted in *Chem. Zentr.*, 1943, II [1] 46.—The true temperature of gases above 1300°C. can be measured only by exhausting thermocouples, with three protective screens for a temperature gradient of 150° between gas and wand, with two protective screens for a maximum gradient of 100° to 120°, and with one protective screen only for temperatures up to 1000° to 1200°C. A thermocouple design with three protective screens and its practical application are described. M.Ha.



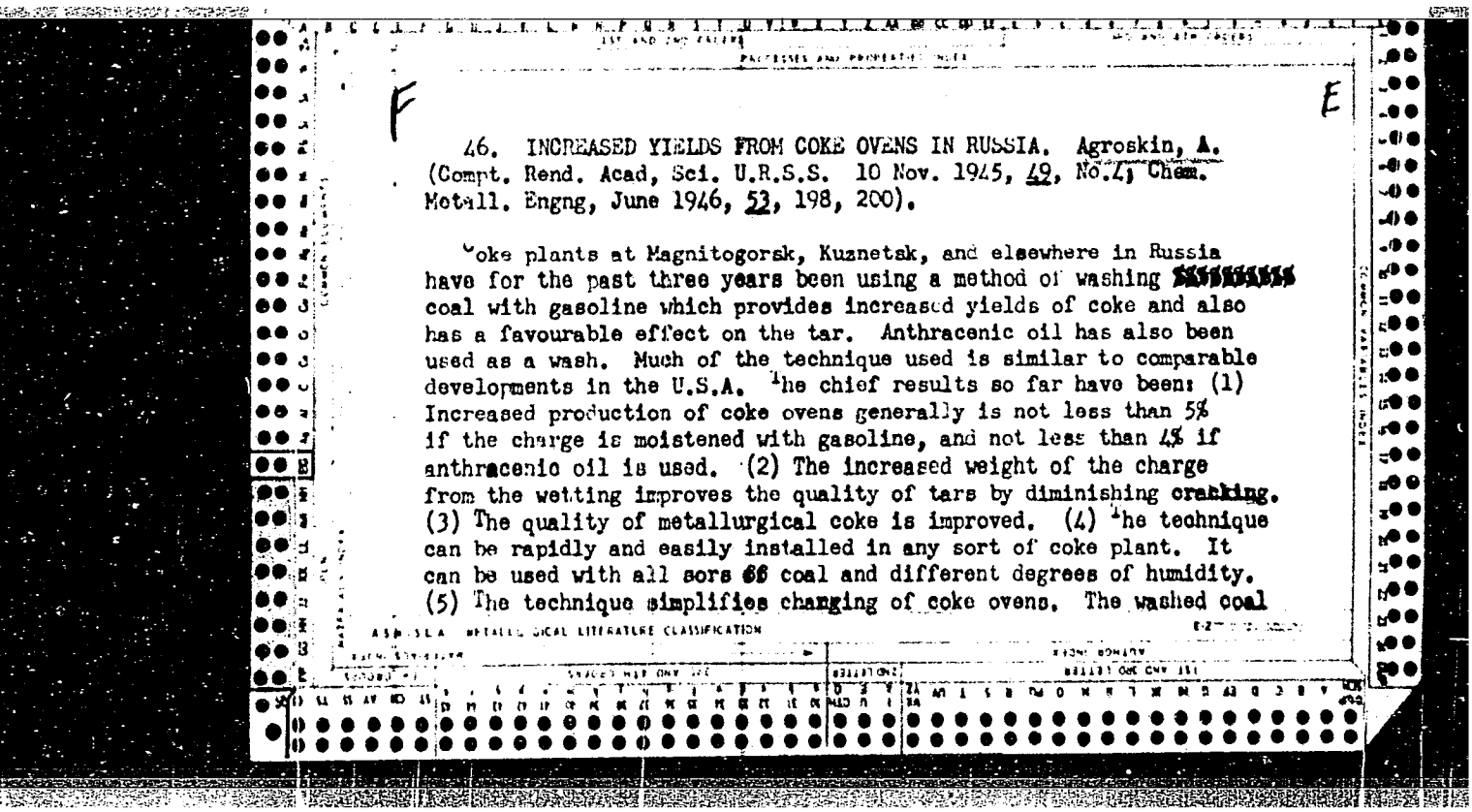
2399. COMBUSTION TEMPERATURE OF GASES IN HEATING SYSTEM OF COKE OVENS. Agrosky, A. A. (Izvestya AKad. Nauk, 1942, 506, 41-47). In order to determine the actual combustion temperature of gases in the heating flue of coke ovens, specially designed suction thermocouples with triple screen protection and water cooling must be used. Tests have shown that the mean temperature of the up-run raises the wall temperature by 130-140°C. (when heating with coke gas). Although the combustion temperature should theoretically drop during the change-overs, owing to the reduced air (and gas) supply the actual combustion temperature of the flames is raised during the time because of reduced heat transfer to the walls. The temperature of the waste gases in the vertical flues is lower than the wall, temperature during most of the change-over time; this also shows the effect of vertical flues on heat transfer in coke ovens. The waste gas temperature in the regenerator changes slightly between phases. Owing to the sharp temperature drop in the top of the regenerator, the gas flow distribution system must, in fact, be considered as a heating surface. The use of suction thermocouples also shows that the actual temperature of exhaust gases in the regenerator damper was 40-5-°C. higher than

that indicated by resistance thermometers and ordinary thermocouples. Substantial corrections should accordingly be allowed for in measuring thermal efficiency in coke oven operation. (N 6889)

AGROSKIN, A. A., PITIN, R. N.

Power Eng. Institute, im G. M. Krahizhanovskiy, Academy of Sciences, USSR.
"Application of a Method of Moistening a Coal Charge with Minute Additions of Oil--this Method Applicable in the Ural By-Product Coke Mills." Iz. Ak. Nauk SSSR, Otdel. Tekh. Nauk, No. 7-8, 1945. Submitted - Apr 1945.

U-1582, 6 Dec. 1951.



F

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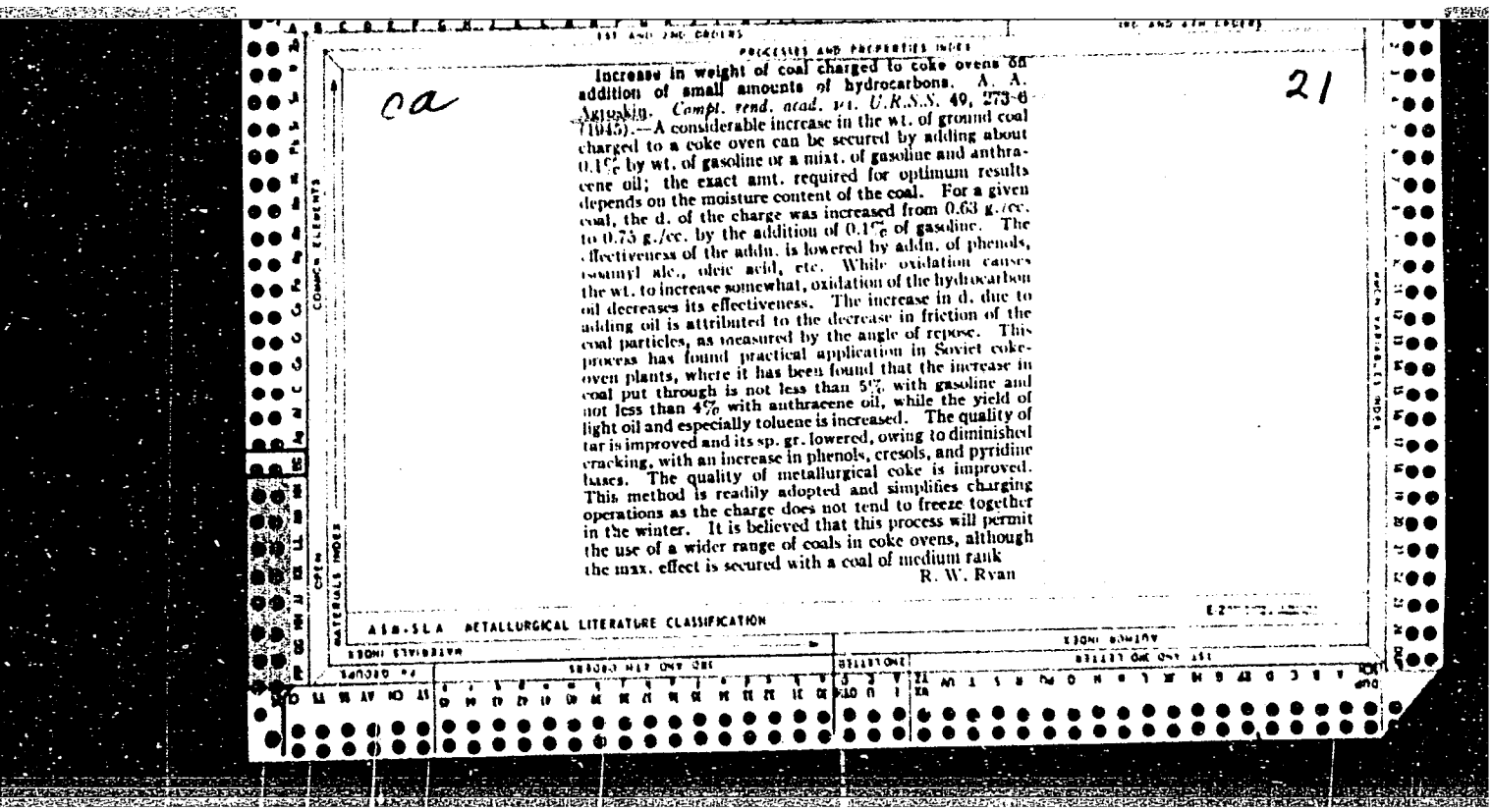
46. INCREASED YIELDS FROM COKE OVENS IN RUSSIA. Agroskin, A. (Compt. Rend. Acad, Sci. U.R.S.S. 10 Nov. 1945, 49, No.7; Chem. Metall. Engng, June 1946, 53, 198, 200).

Coke plants at Magnitogorsk, Kuznetsk, and elsewhere in Russia have for the past three years been using a method of washing [redacted] coal with gasoline which provides increased yields of coke and also has a favourable effect on the tar. Anthracenic oil has also been used as a wash. Much of the technique used is similar to comparable developments in the U.S.A. The chief results so far have been: (1) Increased production of coke ovens generally is not less than 5% if the charge is moistened with gasoline, and not less than 4% if anthracenic oil is used. (2) The increased weight of the charge from the wetting improves the quality of tars by diminishing cracking. (3) The quality of metallurgical coke is improved. (4) The technique can be rapidly and easily installed in any sort of coke plant. It can be used with all sors of coal and different degrees of humidity. (5) The technique simplifies changing of coke ovens. The washed coal



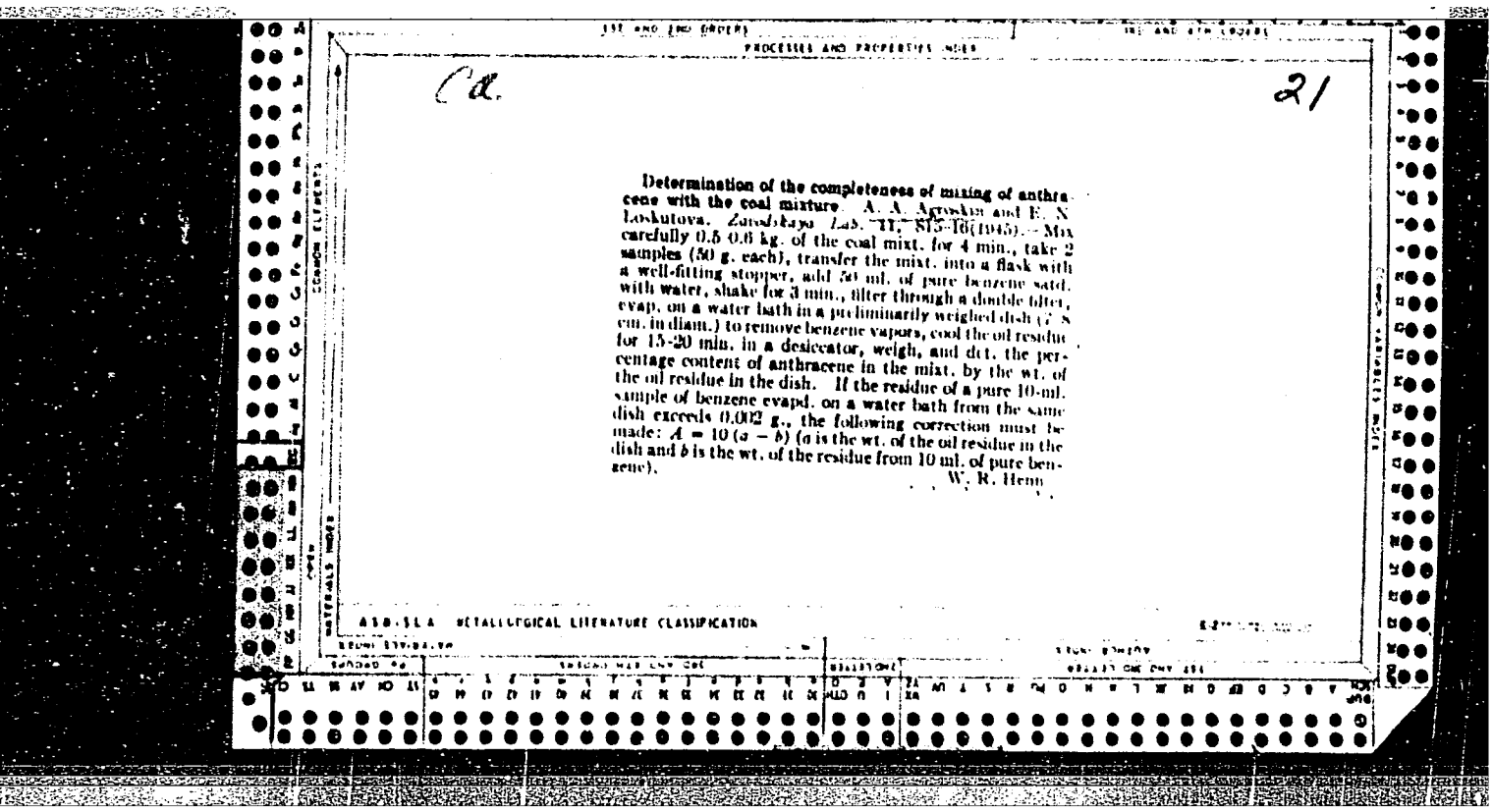
ca

21

Increase in weight of coal charged to coke ovens on addition of small amounts of hydrocarbons. A. A. Agroskin. *Compt. rend. acad. sci. U.R.S.S.* 49, 273-6 (1945).—A considerable increase in the wt. of ground coal charged to a coke oven can be secured by adding about 0.1% by wt. of gasoline or a mixt. of gasoline and anthracene oil; the exact amt. required for optimum results depends on the moisture content of the coal. For a given coal, the d. of the charge was increased from 0.63 g./cc. to 0.75 g./cc. by the addition of 0.1% of gasoline. The effectiveness of the addn. is lowered by addn. of phenols, cetamyl alc., oleic acid, etc. While oxidation causes the wt. to increase somewhat, oxidation of the hydrocarbon oil decreases its effectiveness. The increase in d. due to adding oil is attributed to the decrease in friction of the coal particles, as measured by the angle of repose. This process has found practical application in Soviet coke-oven plants, where it has been found that the increase in coal put through is not less than 5% with gasoline and not less than 4% with anthracene oil, while the yield of light oil and especially toluene is increased. The quality of tar is improved and its sp. gr. lowered, owing to diminished cracking, with an increase in phenols, cresols, and pyridine bases. The quality of metallurgical coke is improved. This method is readily adopted and simplifies charging operations as the charge does not tend to freeze together in the winter. It is believed that this process will permit the use of a wider range of coals in coke ovens, although the max. effect is secured with a coal of medium rank

R. W. Ryan

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



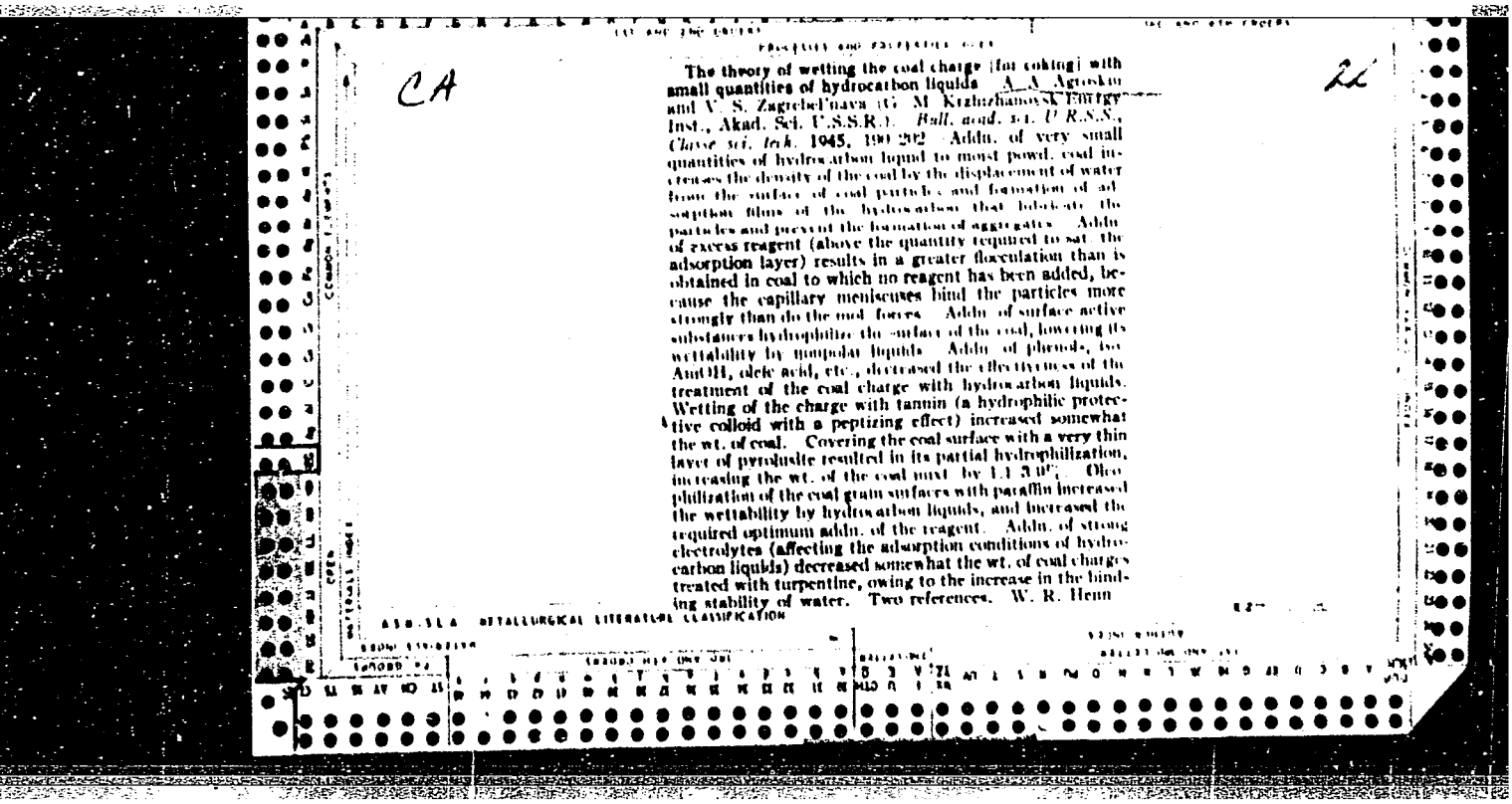
Ca.

21

Determination of the completeness of mixing of anthracene with the coal mixture. A. A. Agroskin and E. N. Loskutova. *Zavodskaya Lab.* 11, 815-16(1945).—Mix carefully 0.5-0.6 kg. of the coal mixt. for 4 min., take 2 samples (50 g. each), transfer the mixt. into a flask with a well-fitting stopper, add 50 ml. of pure benzene satd. with water, shake for 3 min., filter through a double filter, evap. on a water bath in a preliminarily weighed dish (7 cm. in diam.) to remove benzene vapors, cool the oil residue for 15-20 min. in a desiccator, weigh, and det. the percentage content of anthracene in the mixt. by the wt. of the oil residue in the dish. If the residue of a pure 10-ml. sample of benzene evapd. on a water bath from the same dish exceeds 0.002 g., the following correction must be made: $A = 10(a - b)$ (a is the wt. of the oil residue in the dish and b is the wt. of the residue from 10 ml. of pure benzene).

W. R. Henn

A S B - S L A METALLURGICAL LITERATURE CLASSIFICATION



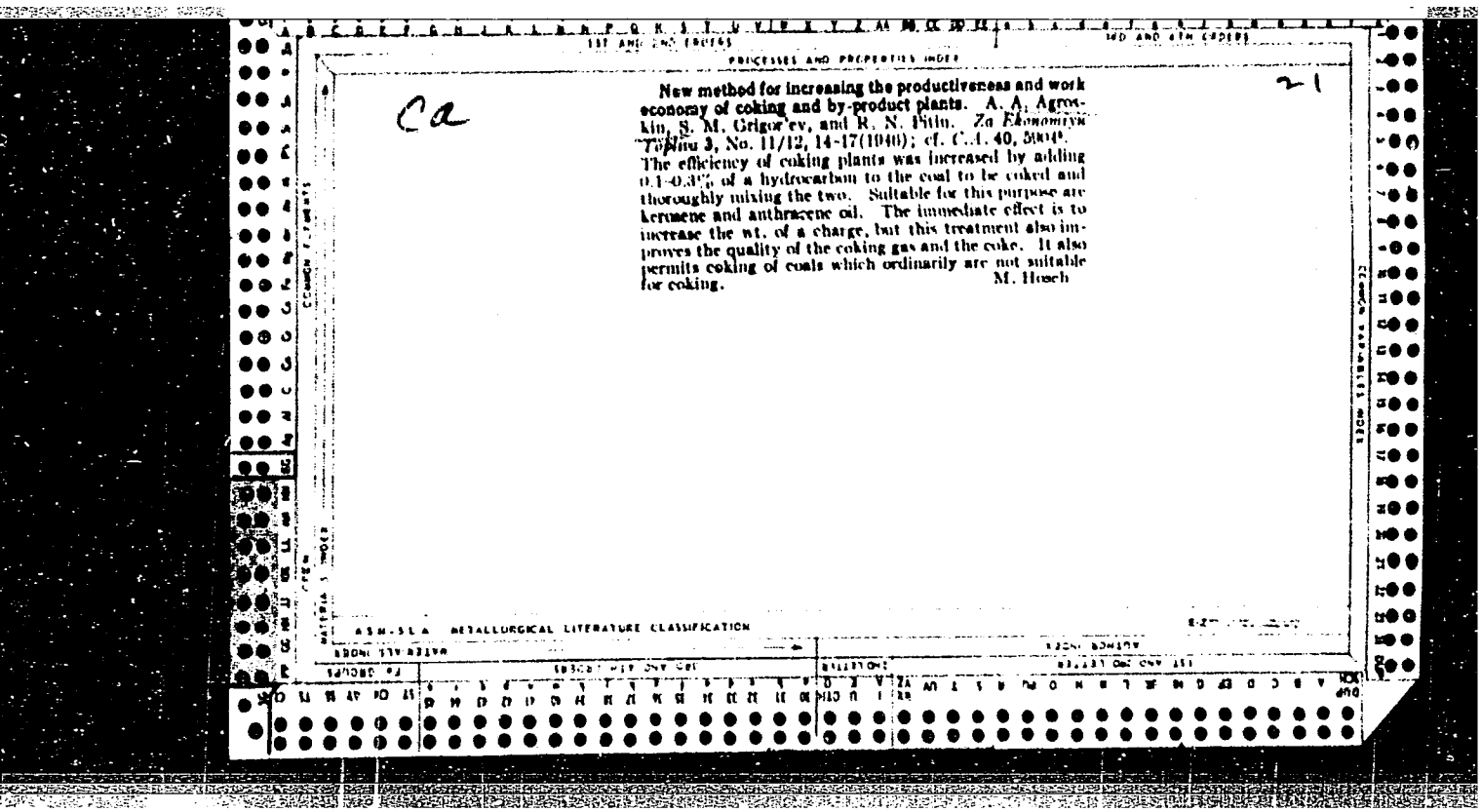
CA

The theory of wetting the coal charge [for coking] with small quantities of hydrocarbon liquids. A. A. Agroskin and V. S. Zagrebel'naya (G. M. Krzhizhanovskii Energy Inst., Akad. Sci. U.S.S.R.). *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1945, 199-202. Addn. of very small quantities of hydrocarbon liquid to moist powd. coal increases the density of the coal by the displacement of water from the surface of coal particles and formation of adsorption films of the hydrocarbon that lubricate the particles and prevent the formation of aggregates. Addn. of excess reagent (above the quantity required to sat. the adsorption layer) results in a greater flocculation than is obtained in coal to which no reagent has been added, because the capillary menisci bind the particles more strongly than do the mol. forces. Addn. of surface active substances hydrophilizes the surface of the coal, lowering its wettability by nonpolar liquids. Addn. of phenols, bu AmOH, oleic acid, etc., decreased the effectiveness of the treatment of the coal charge with hydrocarbon liquids. Wetting of the charge with tannin (a hydrophilic protective colloid with a peptizing effect) increased somewhat the wt. of coal. Covering the coal surface with a very thin layer of pyrolusite resulted in its partial hydrophilization, increasing the wt. of the coal mixt. by 1.1-3.0%. Oleophilization of the coal grain surfaces with paraffin increased the wettability by hydrocarbon liquids, and increased the required optimum addn. of the reagent. Addn. of strong electrolytes (affecting the adsorption conditions of hydrocarbon liquids) decreased somewhat the wt. of coal charges treated with turpentine, owing to the increase in the binding stability of water. Two references. W. R. Henn

AGROSKIN, A. A.

Aromatization of Motor Fuels. M.A.Kapelyushnikov, N.P. Chizhevskiy, and A.A.Agroskin. USSR 66,962, Aug 31, 1946. Prio to entering the aromization furnace, the hydrocarbons are subjected to a thermal pre-treatment, e.g., cracking in the vapor phase at 560-600°.

H. Hoseh



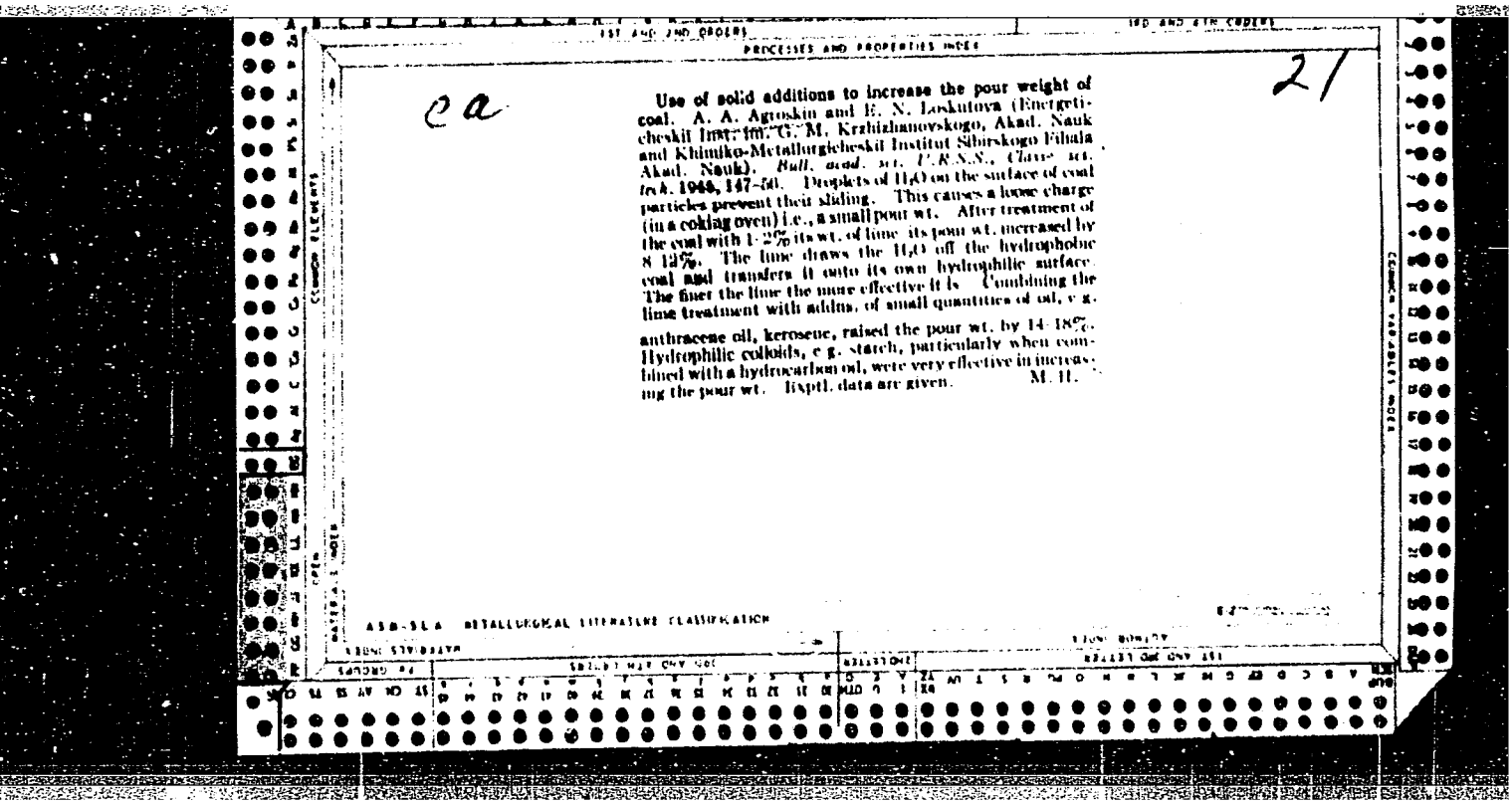
PROCESSES AND PROPERTIES INDEX

Ca

21

New method for increasing the productiveness and work economy of coking and by-product plants. A. A. Agroskin, S. M. Grigor'ev, and R. N. Pilin. *Za Ekonomiyu Topliva* 3, No. 11/12, 14-17(1940); cf. C.A. 40, 5004⁹. The efficiency of coking plants was increased by adding 0.1-0.3% of a hydrocarbon to the coal to be coked and thoroughly mixing the two. Suitable for this purpose are kerosene and anthracene oil. The immediate effect is to increase the wt. of a charge, but this treatment also improves the quality of the coking gas and the coke. It also permits coking of coals which ordinarily are not suitable for coking.
M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



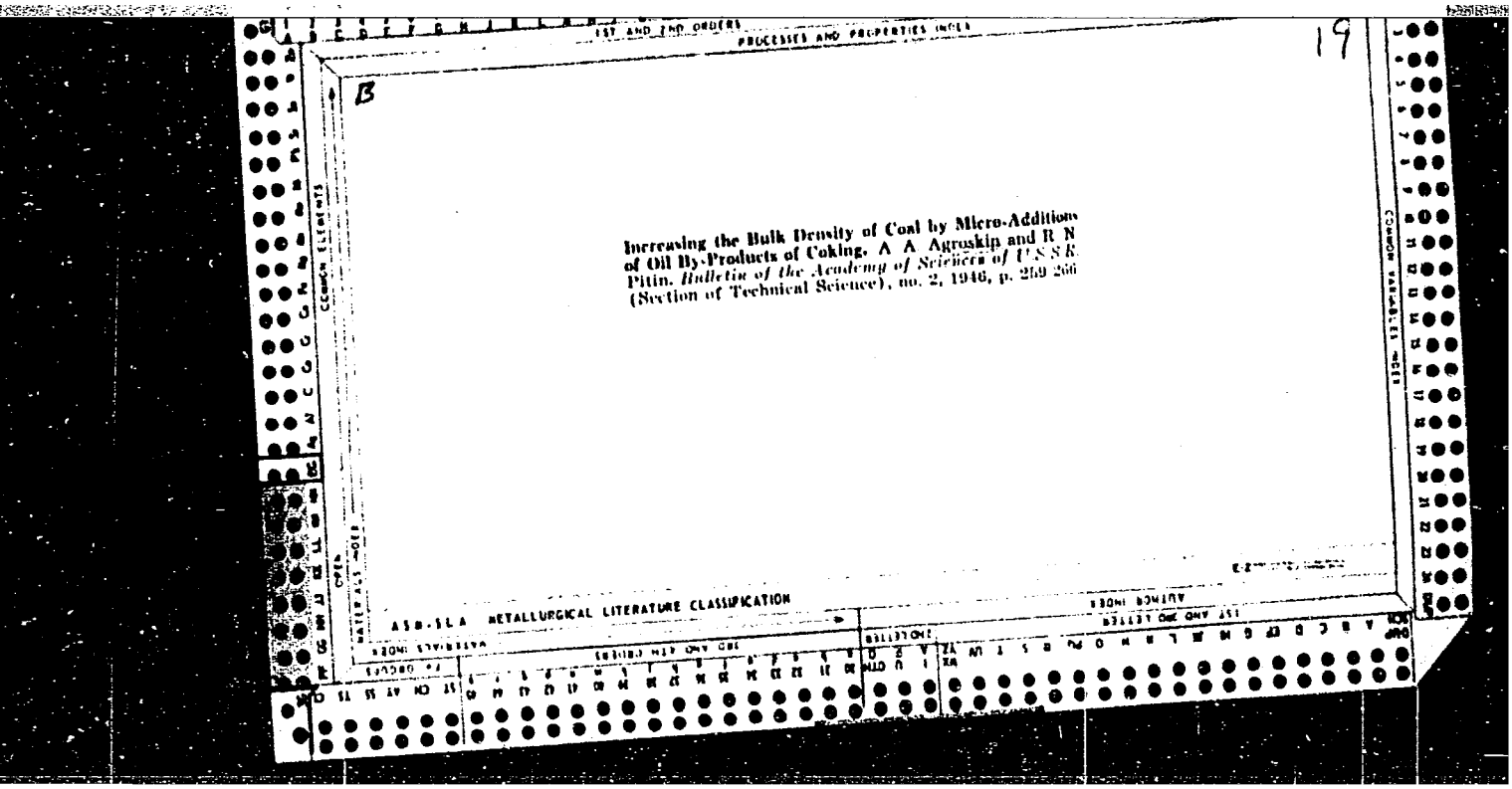
PROCESSES AND PROPERTIES INDEX

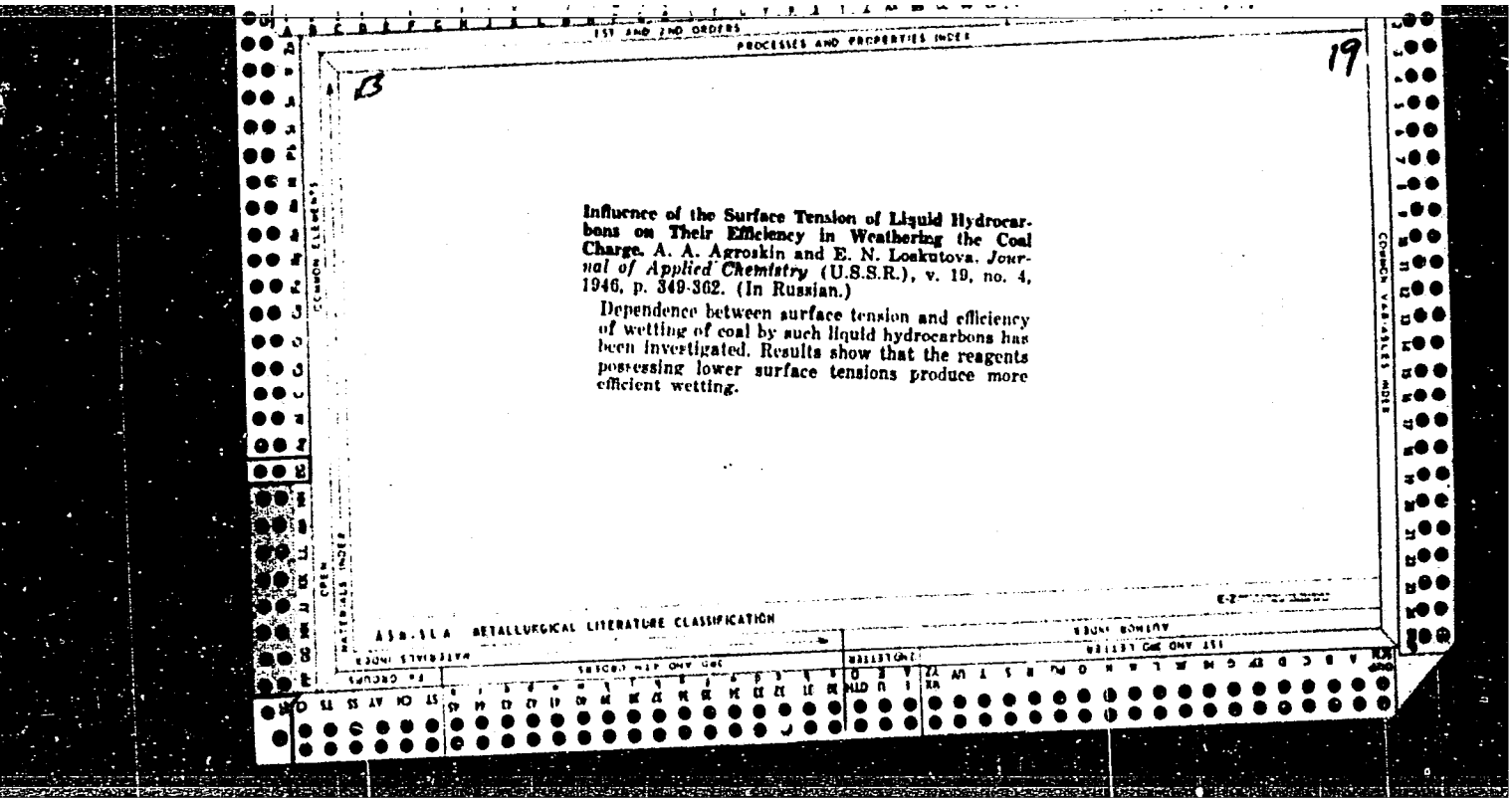
ca

21

Use of solid additions to increase the pour weight of coal. A. A. Agroskin and E. N. Laskutova (Energeticheskii Inst. im. G. M. Krzhizhanovskogo, Akad. Nauk and Khimiko-Metallurgicheskii Institut Sibirskogo Filiala Akad. Nauk). *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1948, 147–50. Droplets of H_2O on the surface of coal particles prevent their sliding. This causes a loose charge (in a coking oven) i.e., a small pour wt. After treatment of the coal with 1–2% its wt. of lime its pour wt. increased by 8–12%. The lime draws the H_2O off the hydrophobic coal and transfers it onto its own hydrophilic surface. The finer the lime the more effective it is. Combining the lime treatment with additn. of small quantities of oil, e.g. anthracene oil, kerosene, raised the pour wt. by 14–18%. Hydrophilic colloids, e.g. starch, particularly when combined with a hydrocarbon oil, were very effective in increasing the pour wt. Exptl. data are given. M. H.

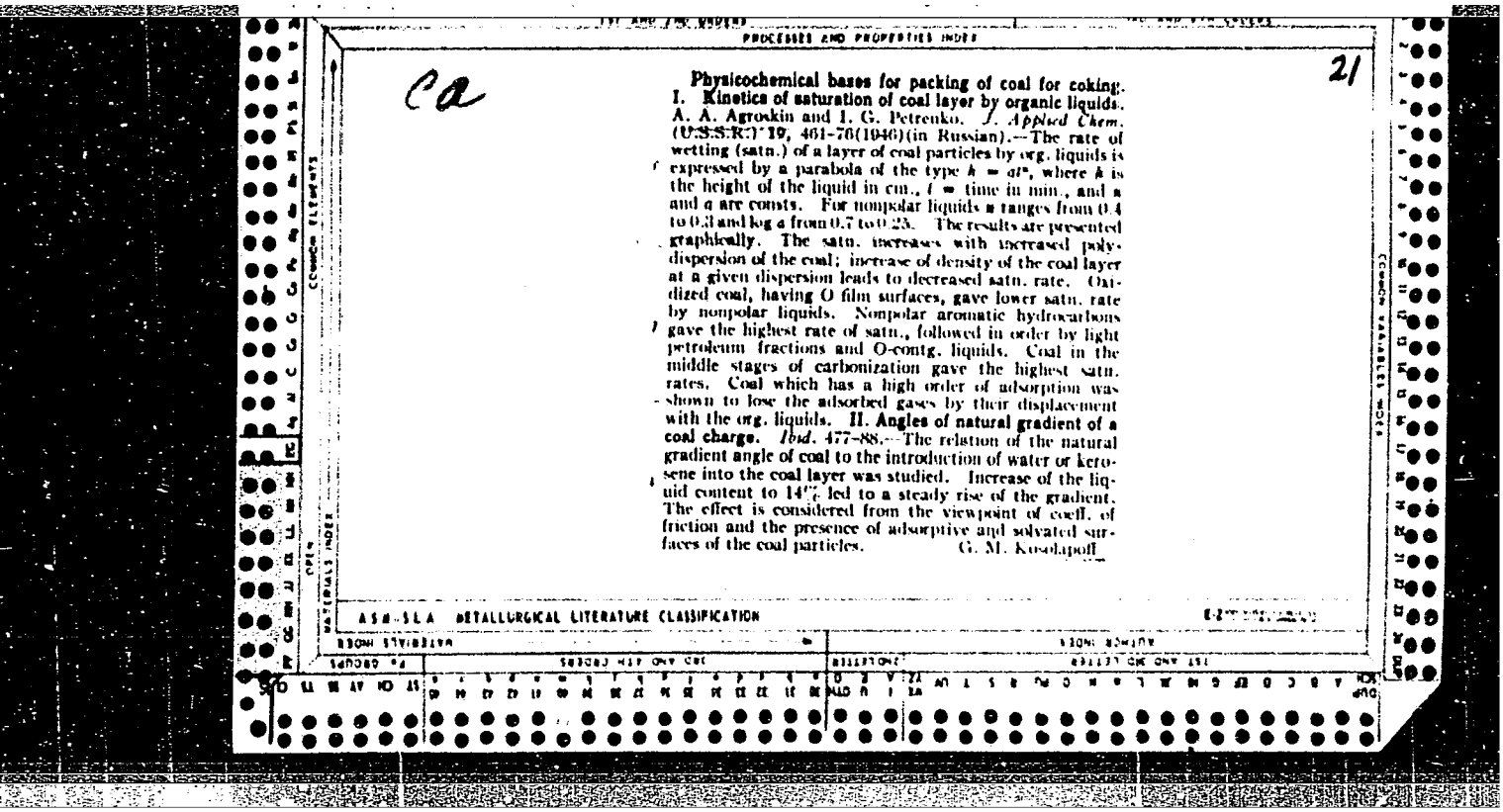
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION





Influence of the Surface Tension of Liquid Hydrocarbons on Their Efficiency in Weathering the Coal Charge. A. A. Agroskin and E. N. Loskutova. *Journal of Applied Chemistry* (U.S.S.R.), v. 19, no. 4, 1946, p. 349-362. (In Russian.)

Dependence between surface tension and efficiency of wetting of coal by such liquid hydrocarbons has been investigated. Results show that the reagents possessing lower surface tensions produce more efficient wetting.



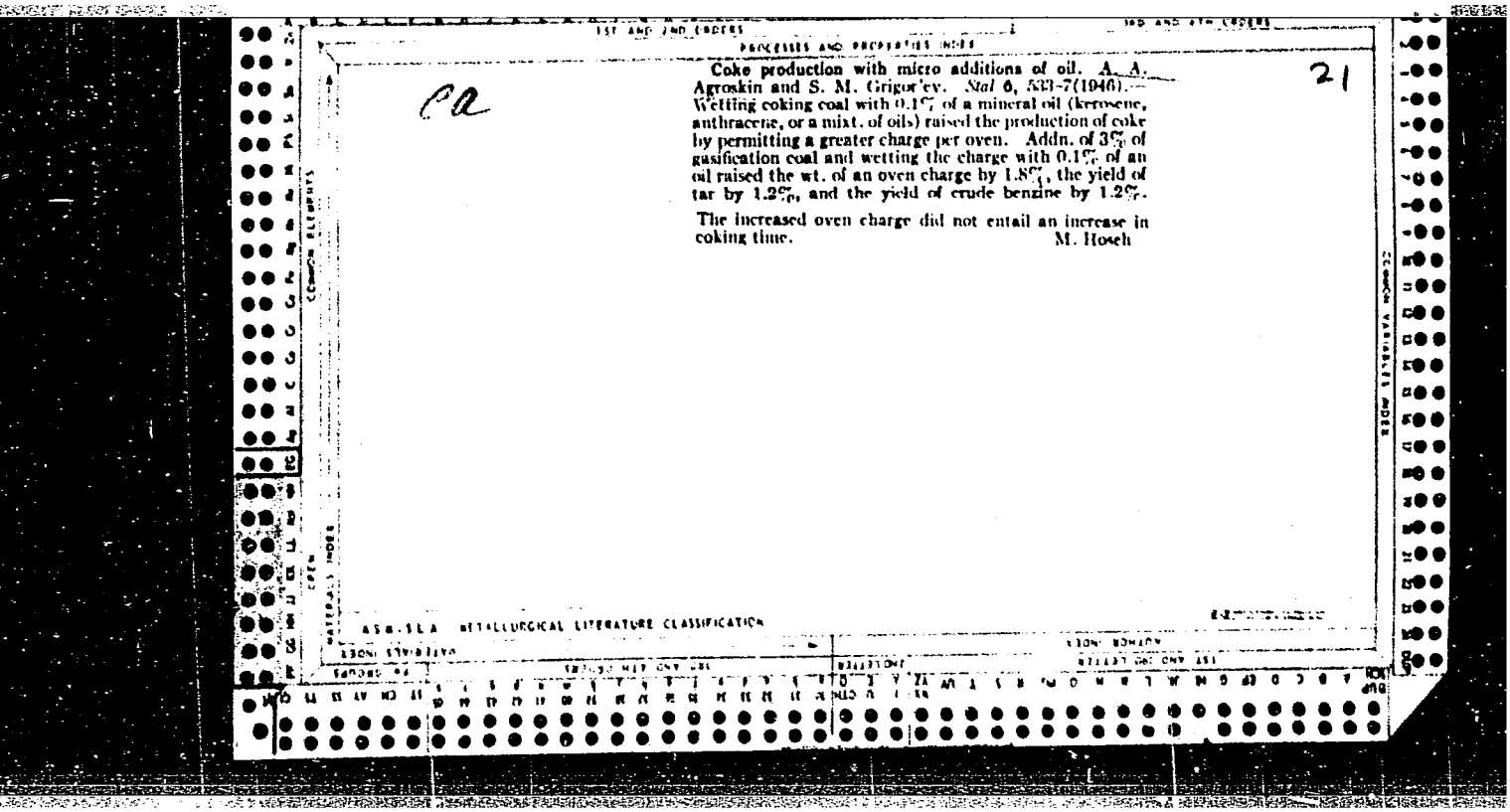
PROCESSES AND PROPERTIES INDEX

Ca

21

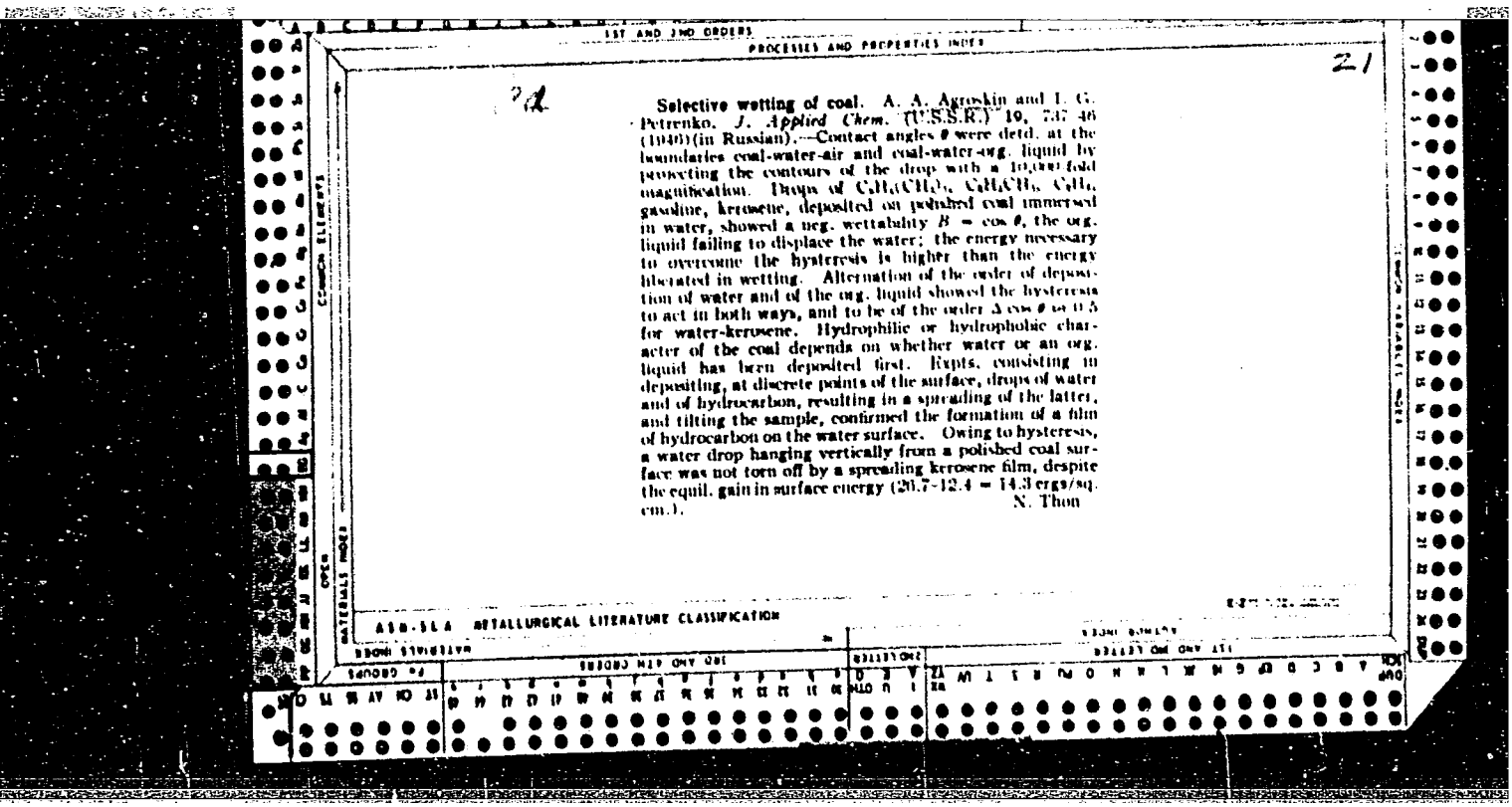
Physicochemical bases for packing of coal for coking. I. Kinetics of saturation of coal layer by organic liquids. A. A. Agrokin and I. G. Petrenko. *J. Applied Chem.* (U.S.S.R.) 19, 461–76(1946)(in Russian).—The rate of wetting (satn.) of a layer of coal particles by org. liquids is expressed by a parabola of the type $h = at^n$, where h is the height of the liquid in cm., t = time in min., and n and a are consts. For nonpolar liquids n ranges from 0.4 to 0.3 and log a from 0.7 to 0.25. The results are presented graphically. The satn. increases with increased polydispersion of the coal; increase of density of the coal layer at a given dispersion leads to decreased satn. rate. Oxidized coal, having O film surfaces, gave lower satn. rate by nonpolar liquids. Nonpolar aromatic hydrocarbons gave the highest rate of satn., followed in order by light petroleum fractions and O-contg. liquids. Coal in the middle stages of carbonization gave the highest satn. rates. Coal which has a high order of adsorption was shown to lose the adsorbed gases by their displacement with the org. liquids. **II. Angles of natural gradient of a coal charge.** *Ibid.* 477–88.—The relation of the natural gradient angle of coal to the introduction of water or kerosene into the coal layer was studied. Increase of the liquid content to 14% led to a steady rise of the gradient. The effect is considered from the viewpoint of coeff. of friction and the presence of adsorptive and solvated surfaces of the coal particles. G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Coke production with micro additions of oil. A. A. Agroskin and S. M. Grigor'ev. *Stal* 6, 533-7(1946). Wetting coking coal with 0.1% of a mineral oil (kerosene, anthracene, or a mixt. of oils) raised the production of coke by permitting a greater charge per oven. Addn. of 3% of gasification coal and wetting the charge with 0.1% of an oil raised the wt. of an oven charge by 1.8%, the yield of tar by 1.2%, and the yield of crude benzine by 1.2%.

The increased oven charge did not entail an increase in coking time. M. Hoseh



1ST AND 2ND ORDERS

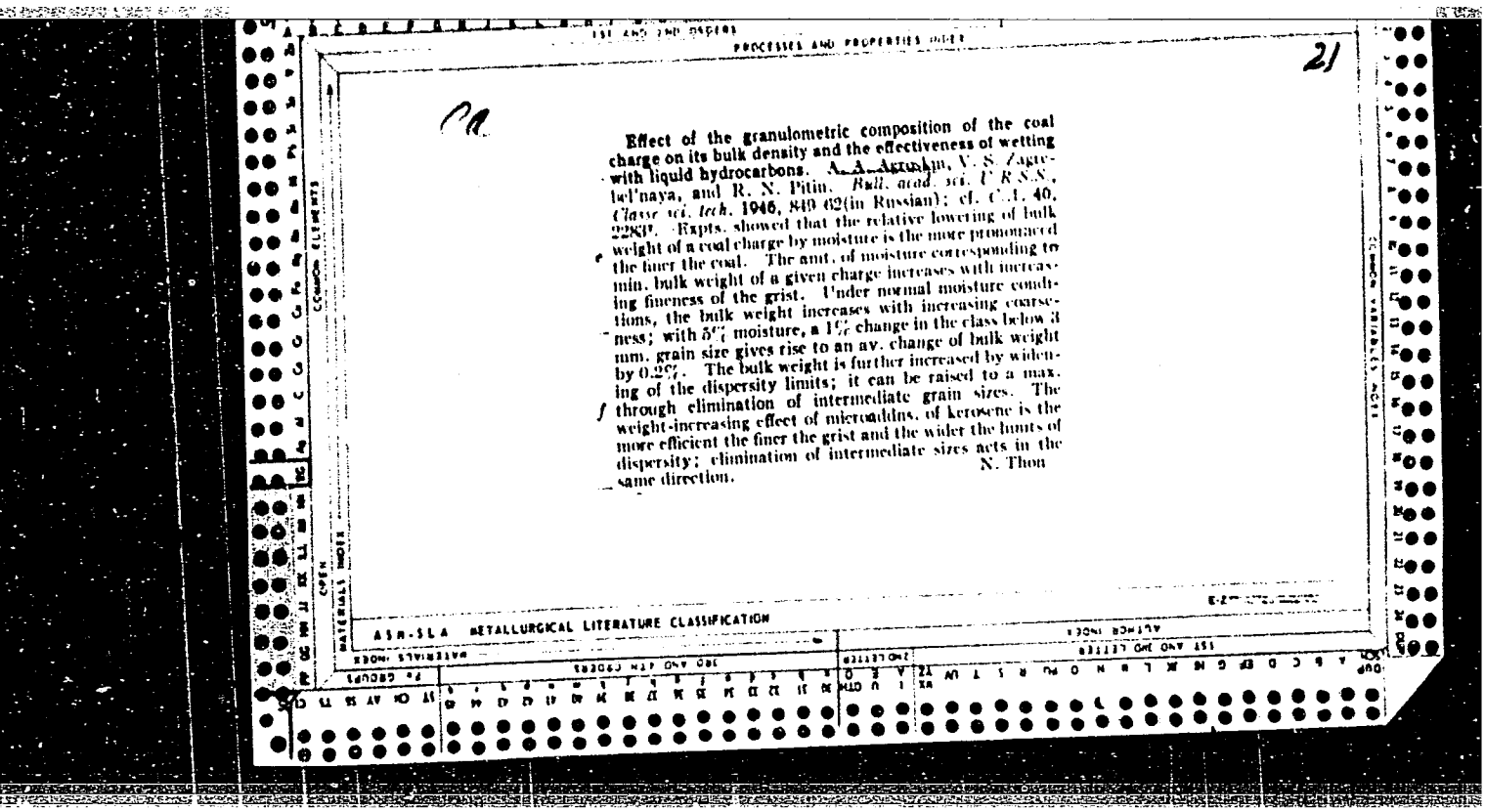
PROCESSES AND PROPERTIES INDEX

21

Selective wetting of coal. A. A. Agroskin and I. G. Petrenko. *J. Applied Chem.* (U.S.S.R.) 10, 737-46 (1940)(in Russian).—Contact angles θ were detd. at the boundaries coal-water-air and coal-water-org. liquid by projecting the contours of the drop with a 10,000-fold magnification. Drops of $C_6H_5(CH_3)$, $C_6H_4(CH_3)_2$, C_6H_5, gasoline, kerosene, deposited on polished coal immersed in water, showed a neg. wettability $B = \cos\theta$, the org. liquid failing to displace the water; the energy necessary to overcome the hysteresis is higher than the energy liberated in wetting. Alternation of the order of deposition of water and of the org. liquid showed the hysteresis to act in both ways, and to be of the order $\Delta \cos\theta = 0.5$ for water-kerosene. Hydrophilic or hydrophobic character of the coal depends on whether water or an org. liquid has been deposited first. Expts. consisting in depositing, at discrete points of the surface, drops of water and of hydrocarbon, resulting in a spreading of the latter, and tilting the sample, confirmed the formation of a film of hydrocarbon on the water surface. Owing to hysteresis, a water drop hanging vertically from a polished coal surface was not torn off by a spreading kerosene film, despite the equil. gain in surface energy (20.7–12.4 = 14.3 ergs/sq. cm.).

N. Thon

A 50-51 A METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

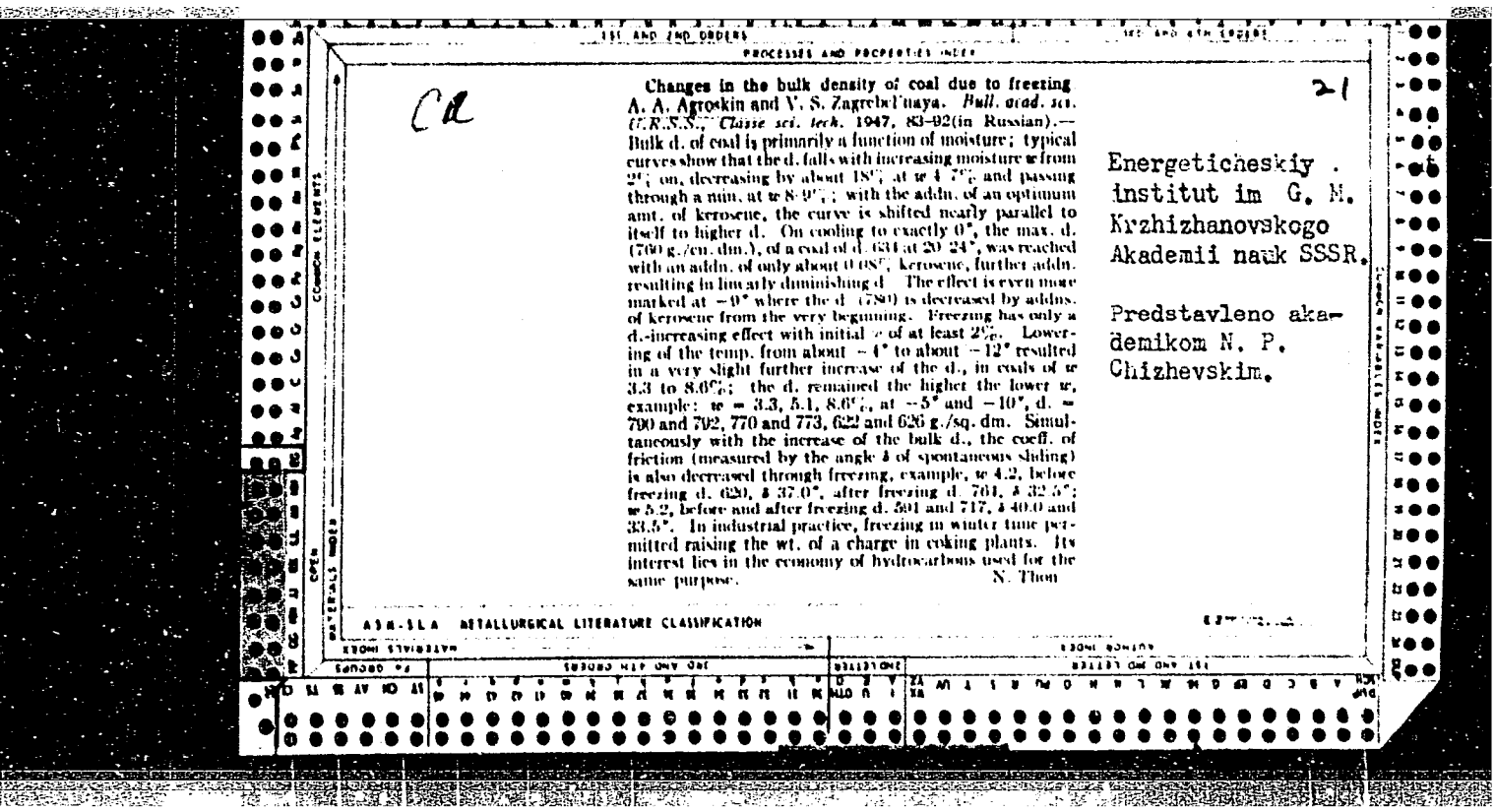
21

Effect of the granulometric composition of the coal charge on its bulk density and the effectiveness of wetting with liquid hydrocarbons. A. A. Agrushin, V. S. Zagrebel'naya, and R. N. Pitin. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1946, 849-62(in Russian); cf. C.A. 40, 2280. Expts. showed that the relative lowering of bulk weight of a coal charge by moisture is the more pronounced the finer the coal. The amt. of moisture corresponding to min. bulk weight of a given charge increases with increasing fineness of the grist. Under normal moisture conditions, the bulk weight increases with increasing coarseness; with 5% moisture, a 1% change in the class below 3 mm. grain size gives rise to an av. change of bulk weight by 0.2%. The bulk weight is further increased by widening of the dispersity limits; it can be raised to a max. through elimination of intermediate grain sizes. The weight-increasing effect of microadditns. of kerosene is the more efficient the finer the grist and the wider the limits of dispersity; elimination of intermediate sizes acts in the same direction. N. Thon

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AGROSKIN, [illegible]; GRIGOR'YEV, S.M.; ZAGREBEL'NAYA, V.S.; LOSKUTOVA, Ye.N.; PETRENKO, I.G.; PITIN, R.N.; CHIZHEVSKIY, N.P., akademik, otvetstvennyy redaktor; VOROVITSKIY, I.B., redaktor; AUZAN, N.P., tekhnicheskiy redaktor

[Increase of the weight of coal per cubic meter by microadditives of liquid hydrocarbon; a collection of articles] Uvelichenie nasypnogo vesa uglia mikrodobavkami uglevodorodnykh zhidkostei; sbornik rabot. Moskva, Izd-vo Akademii nauk SSSR, 1947. 398 p.
(Coke) (Coal) (MLRA 9:9)



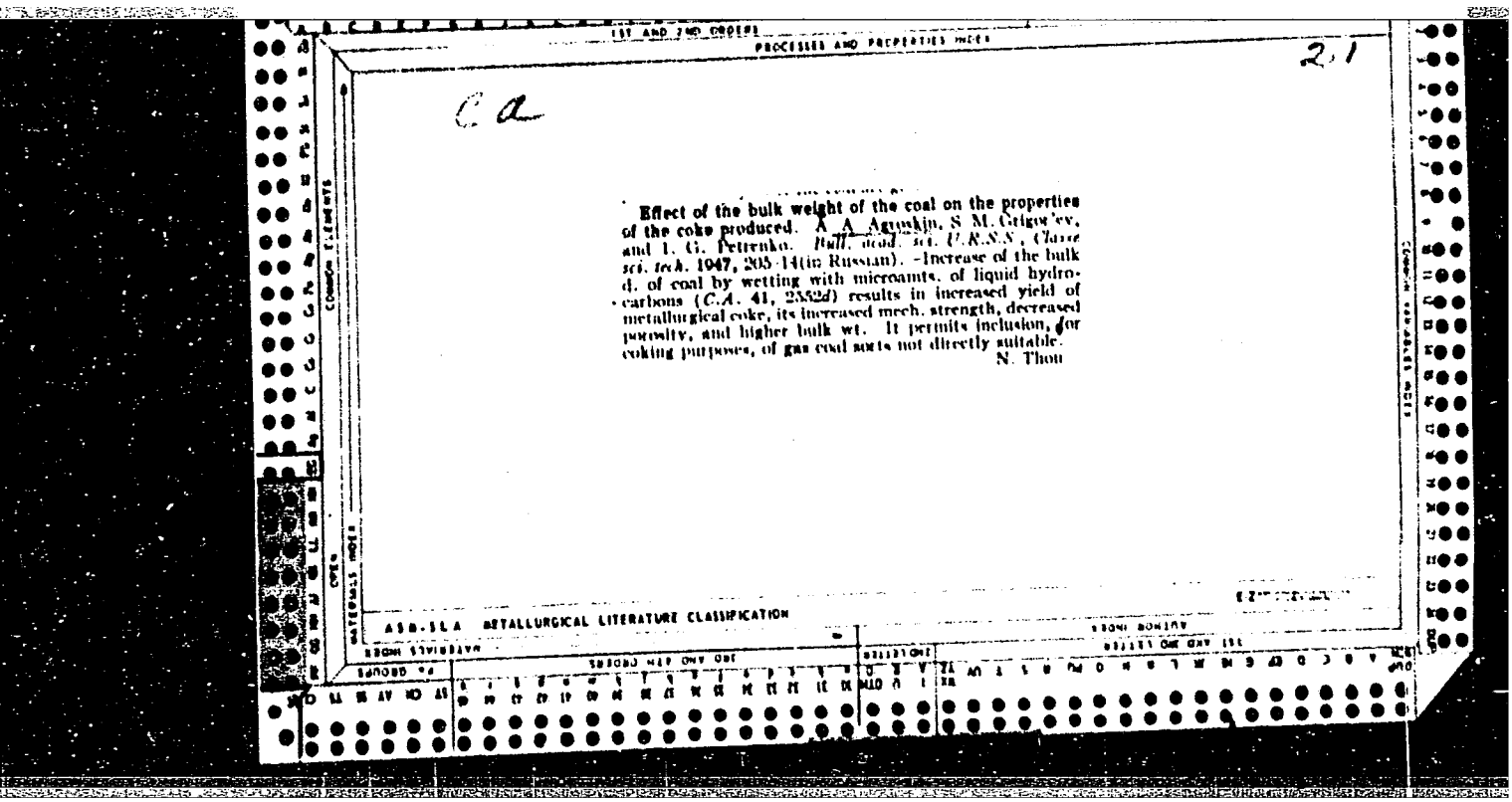
Ca

21

Changes in the bulk density of coal due to freezing. A. A. Agroskin and V. S. Zagrebel'naya. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1947, 83–92(in Russian).—Bulk d. of coal is primarily a function of moisture; typical curves show that the d. falls with increasing moisture w from 2%, on, decreasing by about 18%, at w 4.7%, and passing through a min. at w 8.9%; with the addn. of an optimum amt. of kerosene, the curve is shifted nearly parallel to itself to higher d. On cooling to exactly 0°, the max. d. (790 g./cu. dm.), of a coal of d. 634 at 20–24°, was reached with an addn. of only about 0.08% kerosene, further addn. resulting in linearly diminishing d. The effect is even more marked at −0° where the d. (780) is decreased by addns. of kerosene from the very beginning. Freezing has only a d.-increasing effect with initial w of at least 2%. Lowering of the temp. from about −4° to about −12° resulted in a very slight further increase of the d., in coals of w 3.3 to 8.0%; the d. remained the higher the lower w, example: w = 3.3, 5.1, 8.6%, at −5° and −10°, d. = 790 and 702, 770 and 773, 622 and 626 g./sq. dm. Simultaneously with the increase of the bulk d., the coeff. of friction (measured by the angle δ of spontaneous sliding) is also decreased through freezing, example, w 4.2, before freezing d. 620, δ 37.0°, after freezing d. 701, δ 32.5°; w 5.2, before and after freezing d. 591 and 717, δ 40.0 and 33.5°. In industrial practice, freezing in winter time permitted raising the wt. of a charge in coking plants. Its interest lies in the economy of hydrocarbons used for the same purpose. N. Thon

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

Predstavleno akademikom N. P. Chizhevskim.

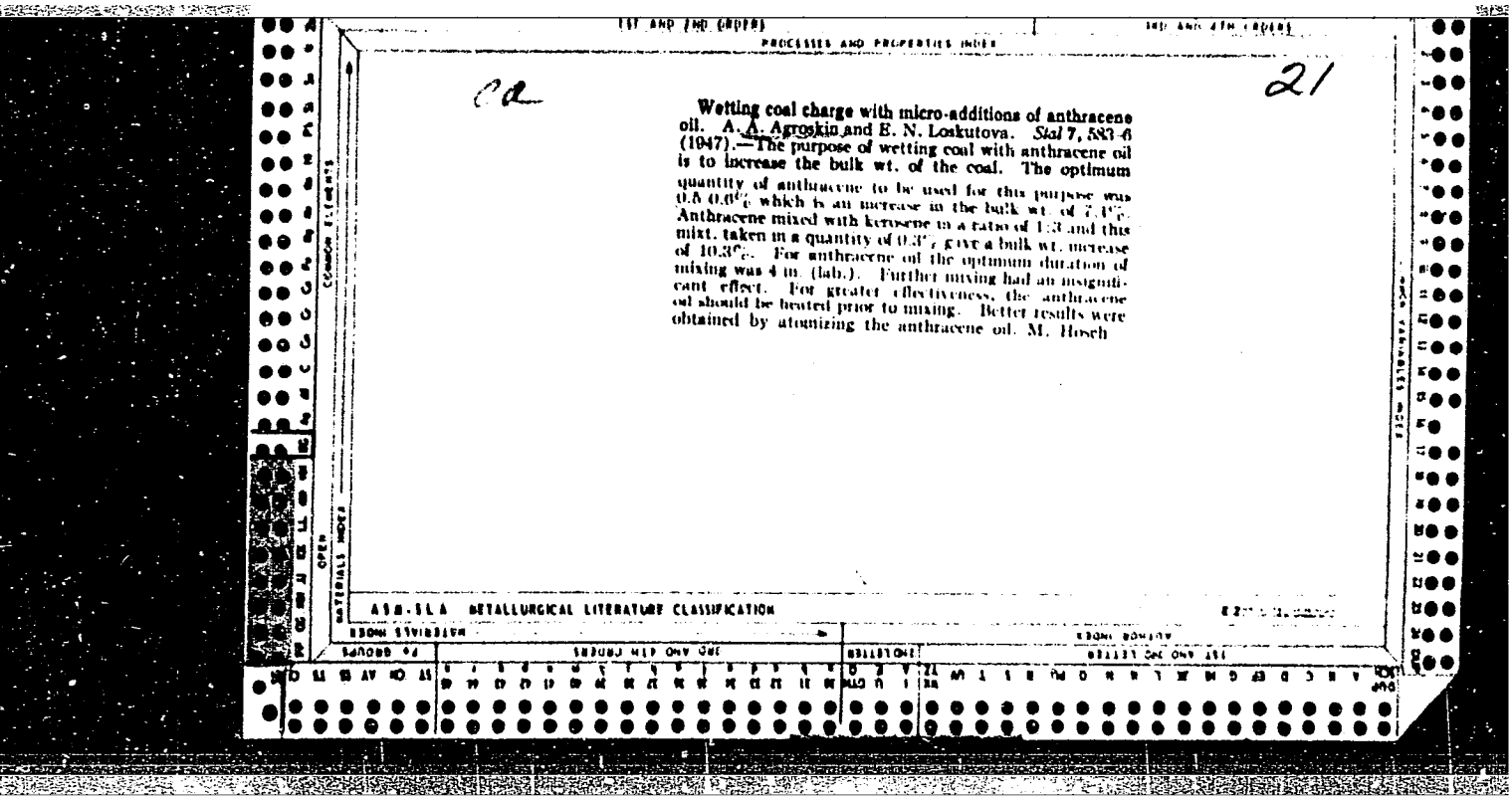


Ca

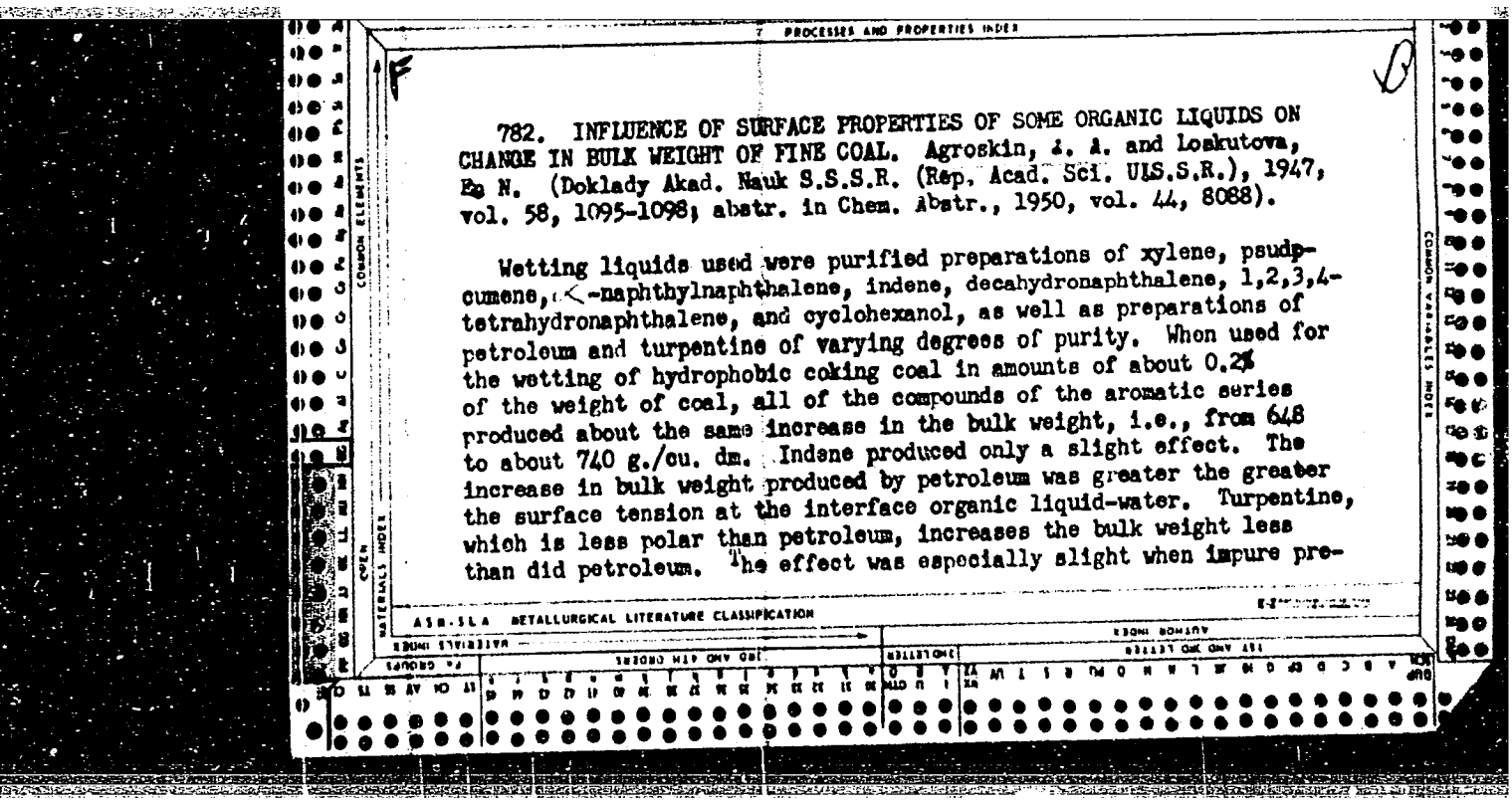
2.1

Effect of the bulk weight of the coal on the properties of the coke produced. A. A. Agunkin, S. M. Grigor'ev, and I. G. Petrenko. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1947, 205-14(in Russian). -Increase of the bulk d. of coal by wetting with microamts. of liquid hydrocarbons (*C.A.* 41, 2332*d*) results in increased yield of metallurgical coke, its increased mech. strength, decreased porosity, and higher bulk wt. It permits inclusion, for coking purposes, of gas coal sorts not directly suitable.
N. Thon

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



Wetting coal charge with micro-additions of anthracene oil. A. A. Agroskin and E. N. Loskutova. *Stal* 7, 583-6 (1947).—The purpose of wetting coal with anthracene oil is to increase the bulk wt. of the coal. The optimum quantity of anthracene to be used for this purpose was 0.5 0.6% which is an increase in the bulk wt. of 7.4%. Anthracene mixed with kerosene in a ratio of 1:3 and this mixt. taken in a quantity of 0.3% give a bulk wt. increase of 10.3%. For anthracene oil the optimum duration of mixing was 4 m. (lab.). Further mixing had an insignificant effect. For greater effectiveness, the anthracene oil should be heated prior to mixing. Better results were obtained by atomizing the anthracene oil. M. Hoseh



7 PROCESSES AND PROPERTIES INDEX

782. INFLUENCE OF SURFACE PROPERTIES OF SOME ORGANIC LIQUIDS ON CHANGE IN BULK WEIGHT OF FINE COAL. Agroskin, A. A. and Loskutova, Ye N. (Doklady Akad. Nauk S.S.S.R. (Rep. Acad. Sci. U.S.S.R.), 1947, vol. 58, 1095-1098; abstr. in Chem. Abstr., 1950, vol. 44, 8088).

Wetting liquids used were purified preparations of xylene, psudp-cumene, α-naphthylnaphthalene, indene, decahydronaphthalene, 1,2,3,4-tetrahydronaphthalene, and cyclohexanol, as well as preparations of petroleum and turpentine of varying degrees of purity. When used for the wetting of hydrophobic coking coal in amounts of about 0.2% of the weight of coal, all of the compounds of the aromatic series produced about the same increase in the bulk weight, i.e., from 648 to about 740 g./cu. dm. Indene produced only a slight effect. The increase in bulk weight produced by petroleum was greater the greater the surface tension at the interface organic liquid-water. Turpentine, which is less polar than petroleum, increases the bulk weight less than did petroleum. The effect was especially slight when impure pre-

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

parations were used. Cyclohexanol produced little effect. Changing the surface of the coal by oxidation intensified the effects of the wetting agents. The addition of surface-active substances, as Nekal and saponins, increased the bulk weight of the moistened coal sharply. The addition of 0.125% of the weight of coal of Nekal produced an increase of 12.8%. When coal wet with the optimum amount of petroleum was treated with Nekal, the increase in bulk weight was reduced from 10.5% to 0.5%. As the amount of Nekal was increased, the surface of the coal became hydrophilic and the wettability by petroleum was increased. The bulk weight of wetted graphite was not essentially increased by petroleum unless large amounts (5-6%) were used. This effect can be explained by the capillary binding of the liquid by the graphite. The addition of 0.1 molecule of cyclohexanol to 1000 g. of graphite, however, increased the bulk weight by 36%. There was an almost complete peptization of the graphite particles.

AGROSKIN, A. A.

Coking, Moskva, Gos. nauch-techn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1948.
374 p. (49-21233)

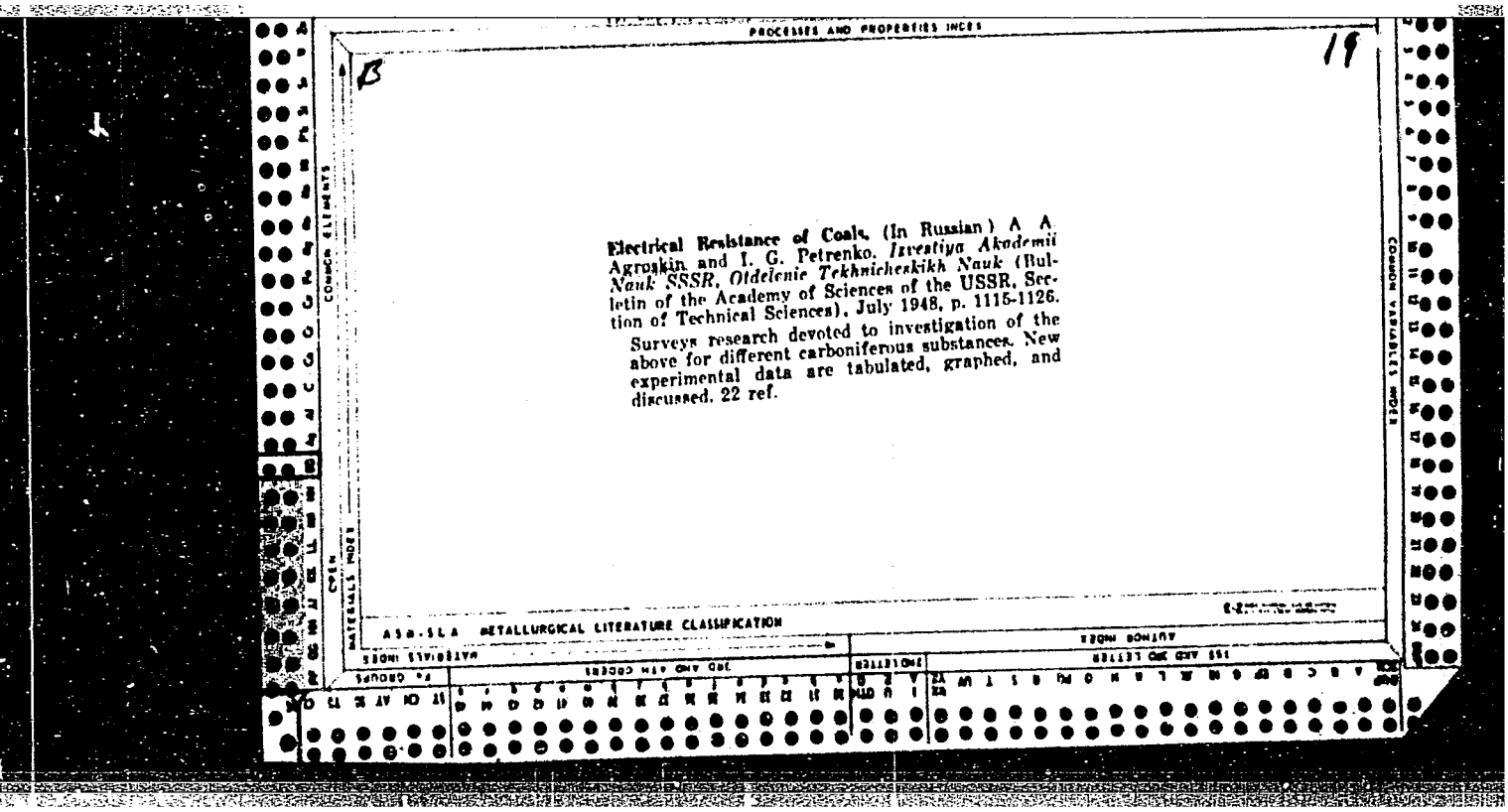
TP336.A55

Electric resistance of coals. A. A. Agroskin and I. G. Petrenko (Energetcheskii Inst. im. G.M. Krzhizhanovskogo, Akad. Nauk S.S.S.R.). *Izvest. Akad. Nauk S.S.S.R., Otdel Tekh. Nauk* **1948**, 113-20; cf. *C.A.* **44**, 3056.—Various samples of hard coal, gas coal, and fat coal showed a drop of their elec. resistivity ρ from about 1×10^{10} to 1×10^{6} ohm cm. at room temp. to 100-5 ohm cm. at 900°. The fall of ρ is particularly fast between 200-250° and 800°, much slower above 800°. Soft coal and shale show an initial decrease of ρ on heating up to 50-100°, then an increase to a max. at about 150-200°, then the usual decrease. This effect is no doubt due to elimination of moisture. An approx. law of the decrease of ρ with the temp. can be established only for the temp. range 250-800°; the variation is roughly represented by $\log \rho = a - bt$, the values of the consts. depending on the sort of coal or shale. N. Thon

CA

Electric resistance of coals and shales on heating. A. A. Agroskin and I. G. Petrenko. *Zavodskaya Lab.* 14, 807–12(1948).—Measurements were made on 30-g. samples of material ground to grain sizes up to 2 mm., by the ammeter-voltmeter method up to 600° and the bridge method above 600°. The applied d.-c. voltage, within the limits 4–140 v., has no significant effect on the elec. resistance. Grain size has an influence only up to about 350°. The effect of moisture also disappears rapidly at higher temps. On the whole, the specific elec. resistance ρ of various types of hard coal, brown coal, and shale decreases from 10^{10} ohm-cm. at room temp. to 10 ohm-cm. at 900°. Between 0 and 230°, hard coal shows a regular decrease of ρ, whereas for soft coal and shale ρ decreases between 0 and 50–100°, and increases up to a max. at 230°. Between 200 and 800°, ρ decreases regularly with rising temp., $\log \rho = a - bt$, with $a \sim 12$, $b \sim 1.2 \times 10^{-3}$. Above 800°, the fall of ρ becomes slower, ρ being usually smaller than 100 ohm-cm. Materials with a higher content of volatile matter have a somewhat higher ρ. N. Thon

Power Eng. Inst. Acad. Sci. USSR



PROCESSES AND PROPERTIES INDEX

B

19

Electrical Resistance of Coals. (In Russian) A. A. Agroskin and I. G. Petrenko. *Izvestiya Akademii Nauk SSSR, Otdelenie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences), July 1948, p. 1115-1126.

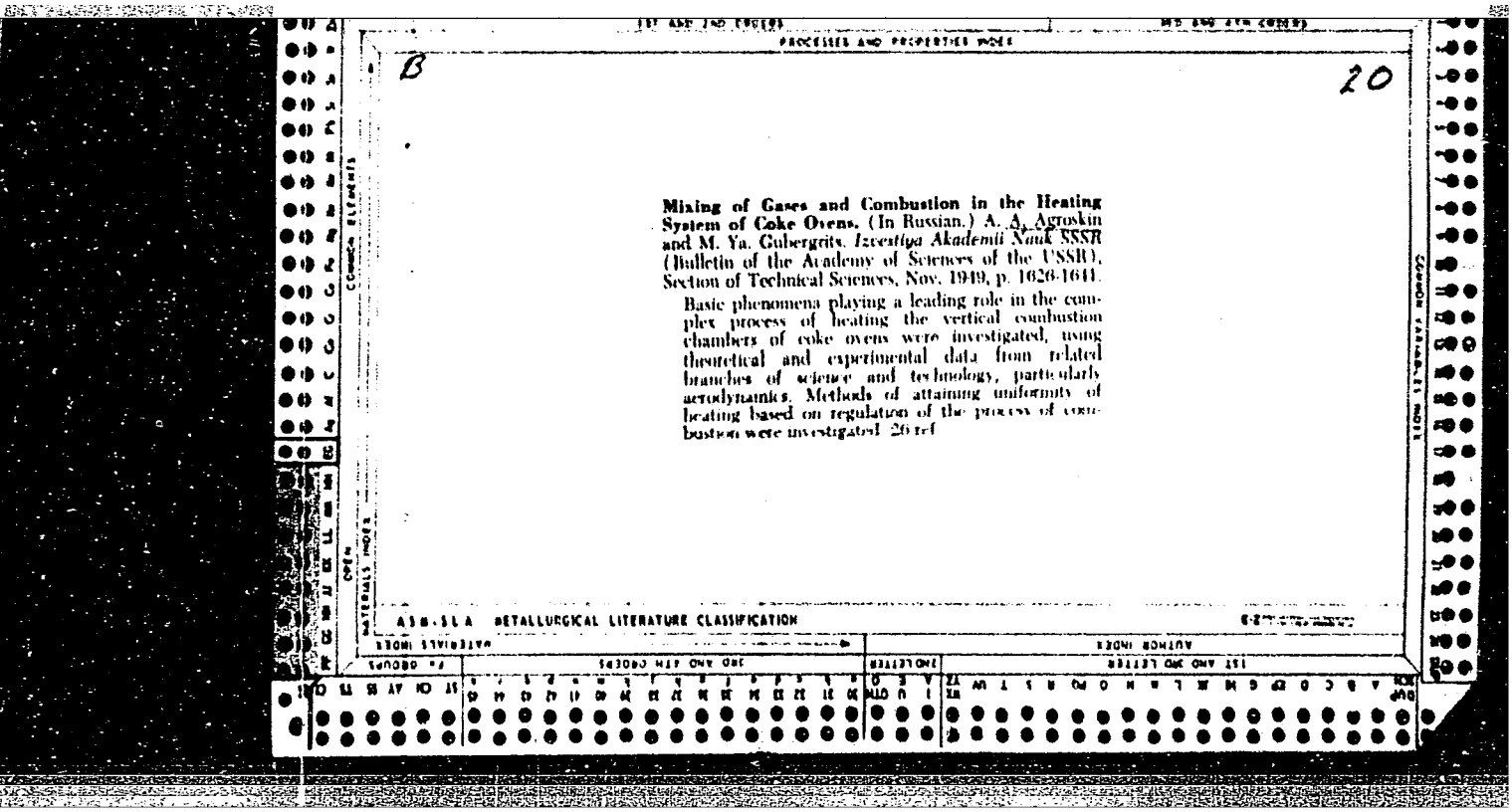
Surveys research devoted to investigation of the above for different carboniferous substances. New experimental data are tabulated, graphed, and discussed. 22 ref.

METALLURGICAL LITERATURE CLASSIFICATION

CA

Bulk weight of some coals of the Donets basin. A. A. Agroskin, A. D. Mikhallik, R. N. Pitin, and V. S. Supronov. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1949, 532-7.—The bulk wt. of samples of Donets coal of up to 6-mm. particle size reaches a min. at 7-8% H_2O content. An addn. of 0.05–0.8% of kerosine causes a progressive increase in bulk wt. to a max. which in some cases is in excess of 20%. The optimal amt. of kerosine varies with the coal used and with its H_2O content, being about 0.1–0.4%. Kerosine appears to be suitable for increasing the bulk wt. of coke-oven charge. Bruno C. Metzner

Power Eng Inst imeni G. M. Krzhizhanovskiy, AcadSci USSR, 6pp



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Mixing of Gases and Combustion in the Heating System of Coke Ovens. (In Russian.) A. A. Agroskin and M. Ya. Gubergrits. *Izvestiya Akademii Nauk SSSR* (Bulletin of the Academy of Sciences of the USSR), Section of Technical Sciences, Nov. 1949, p. 1626-1641.

Basic phenomena playing a leading role in the complex process of heating the vertical combustion chambers of coke ovens were investigated, using theoretical and experimental data from related branches of science and technology, particularly aerodynamics. Methods of attaining uniformity of heating based on regulation of the process of combustion were investigated. 26 ref

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AGROSKIN, A.A., professor; LEYTES, V.A., otvetstvennyy redaktor; TAYTS, Ye.M. otvetstvennyy redaktor; ROMANOVA, L.A., redaktor izdatel'stva; KOROVENKOVA, Z.A., tekhnicheskiy redaktor

[Chemical technology of coal] Khimicheskaia tekhnologiia uglia. Moskva, Ugletekhizdat, 1954. 251 p. (MLRA 10:1)
(Coal--Analysis)

ZLOBINSKIY, Boris Mikhaylovich; TSYLEV, L.M., professor, doktor tekhnicheskikh nauk, retsenzent; SHAROV, S.I., professor, doktor tekhnicheskikh nauk, retsenzent; AGROSKIN, A.A., professor, doktor tekhnicheskikh nauk, otvetstvennyy redaktor; RYKOV, N.A., redaktor izdatel'stva; NADEINSKAYA, A.A., tekhnicheskiy redaktor

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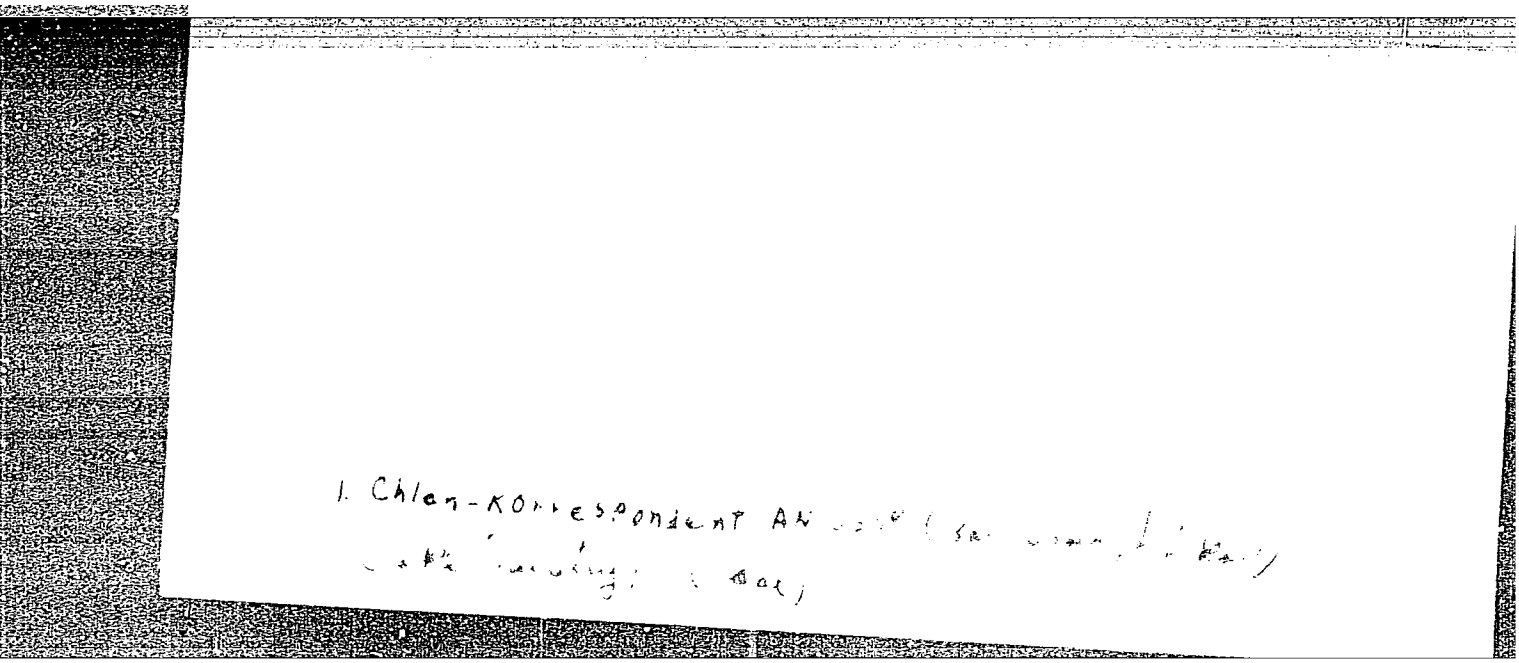

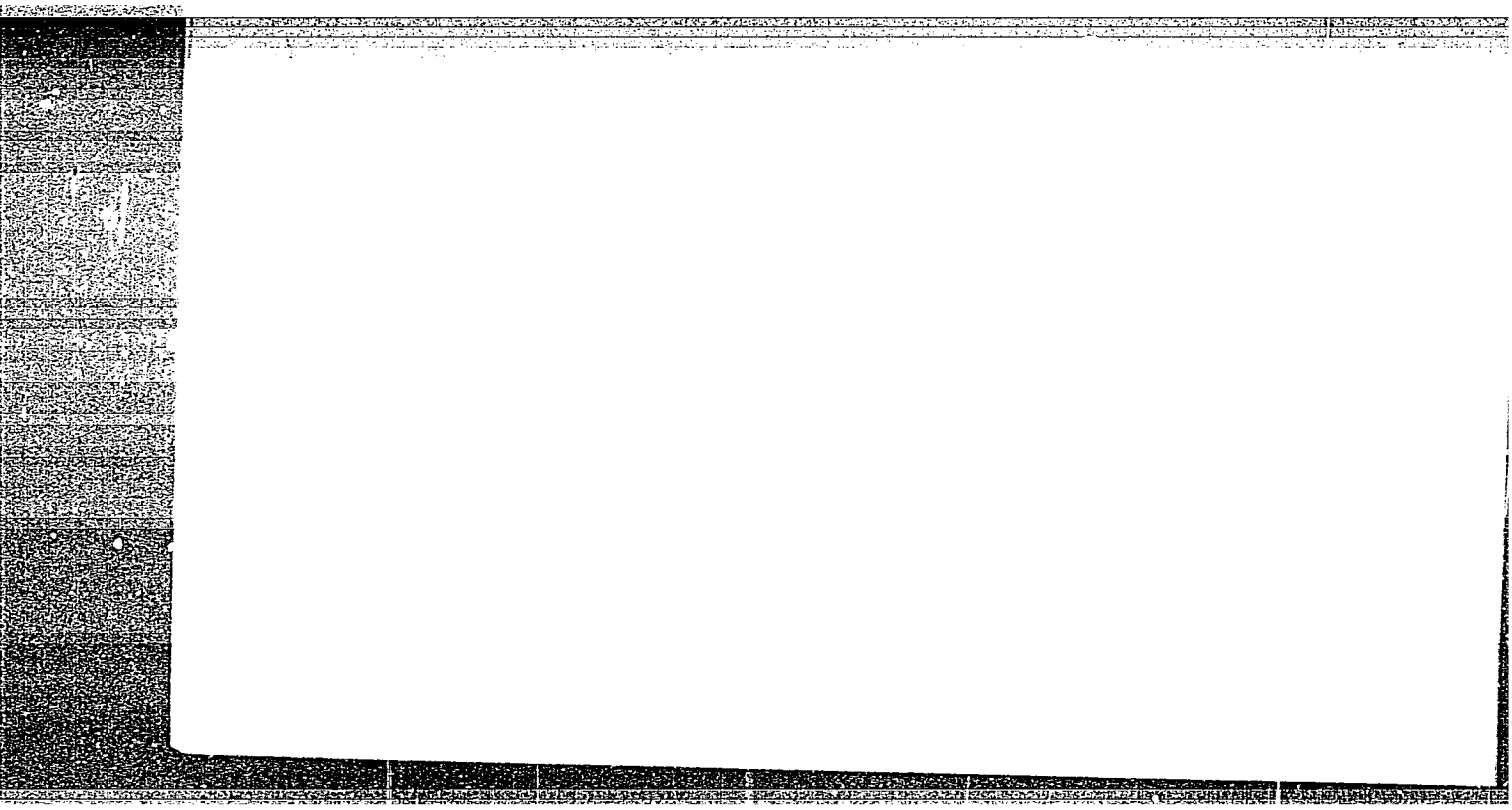

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533P. THERMAL COAL UPGRADING. (THERMISCHE KOHLEVEREDLUNG). Agroskin, A.A. (Halle) Verlag VEB Wilhelm Knapp, 1957, German Ed., 246pp., D.M. 16; abstr. in BrennstChemie, 17 July 1957, vol. 38, 222; and in Gas- u. Wasserfach (Gas), 2 Aug. 1957, vol. 98, 794). Coal upgrading processes, such as carbonisation and gasification, and their products are surveyed. Test methods, gas treatment and recovery of by-products are dealt with.

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AGROSKIN, A.A., doktor tekhnicheskikh nauk, professor; MELAMED, R.Ye.; MIRINGOF, N.S.

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AGROSKIN, Anatoliy Abramovich

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Author: Professor at VNIIPODZEMGAS (All-Union Research and Planning Inst. of Underground Gas)