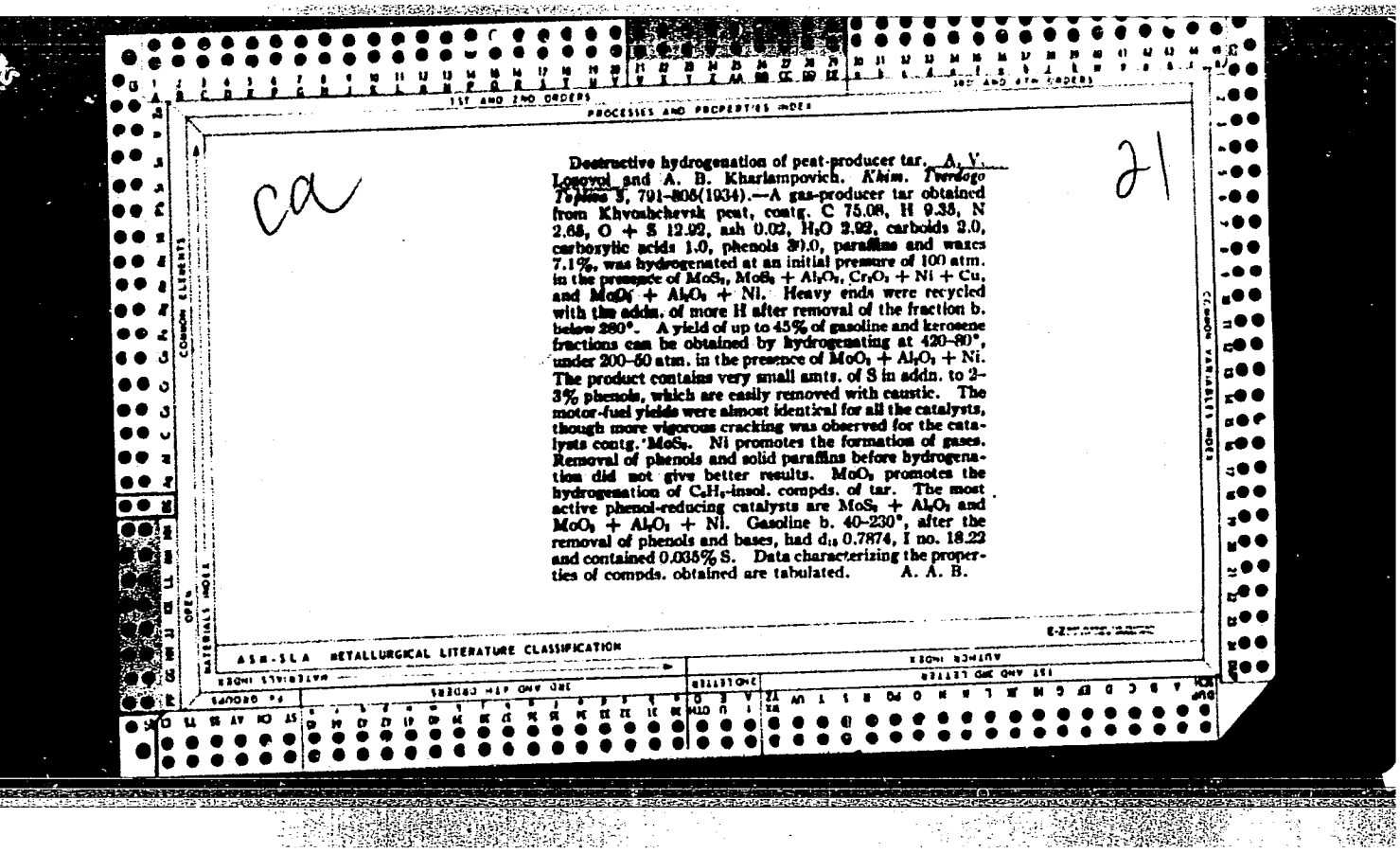
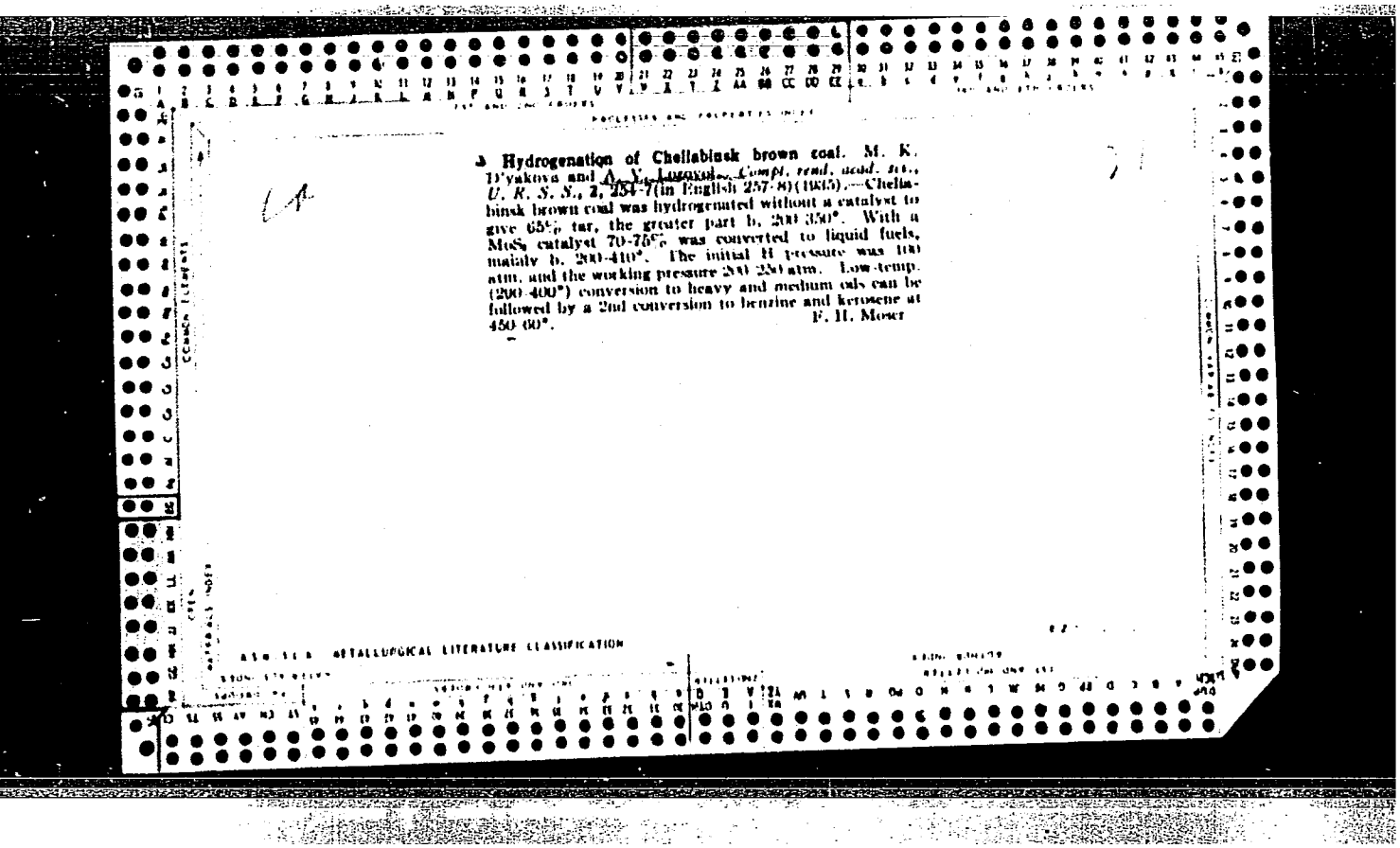
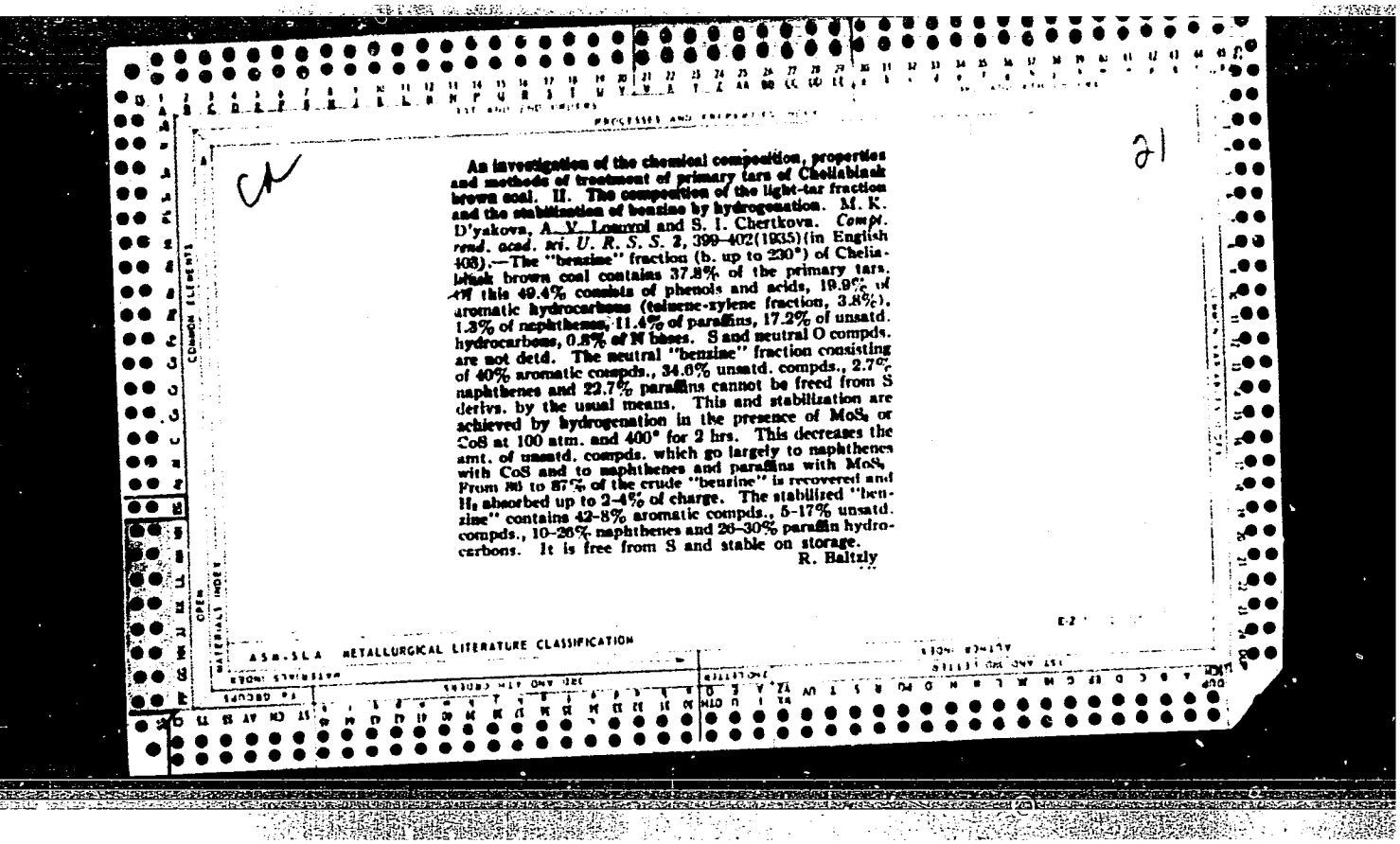


Destructive hydrogenation of peat-producer tar. A. V. Lozovoi and A. B. Kharlampovich. *Khim. Tverdogo Topliva* 5, 791–808(1934).—A gas-producer tar obtained from Khvoshchevsk peat, contg. C 75.08, H 9.35, N 2.68, O + S 12.92, ash 0.02, H_2O 2.92, carboids 2.0, carboxylic acids 1.0, phenols 3).0, paraffins and waxes 7.1%, was hydrogenated at an initial pressure of 100 atm. in the presence of MoS_2, MoS_3 + Al_2O_3, Cr_2O_3 + Ni + Cu, and MoO_3 + Al_2O_3 + Ni. Heavy ends were recycled with the addn. of more H after removal of the fraction b. below 280°. A yield of up to 45% of gasoline and kerosene fractions can be obtained by hydrogenating at 420–80°, under 200–50 atm. in the presence of MoO_3 + Al_2O_3 + Ni. The product contains very small amts. of S in addn. to 2–3% phenols, which are easily removed with caustic. The motor-fuel yields were almost identical for all the catalysts, though more vigorous cracking was observed for the catalysts contg. MoS_2. Ni promotes the formation of gases. Removal of phenols and solid paraffins before hydrogenation did not give better results. MoO_3 promotes the hydrogenation of C_5H_5N-insol. compds. of tar. The most active phenol-reducing catalysts are MoS_2 + Al_2O_3 and MoO_3 + Al_2O_3 + Ni. Gasoline b. 40–230°, after the removal of phenols and bases, had d_{15} 0.7874, I no. 18.22 and contained 0.035% S. Data characterizing the properties of compds. obtained are tabulated. A. A. B.



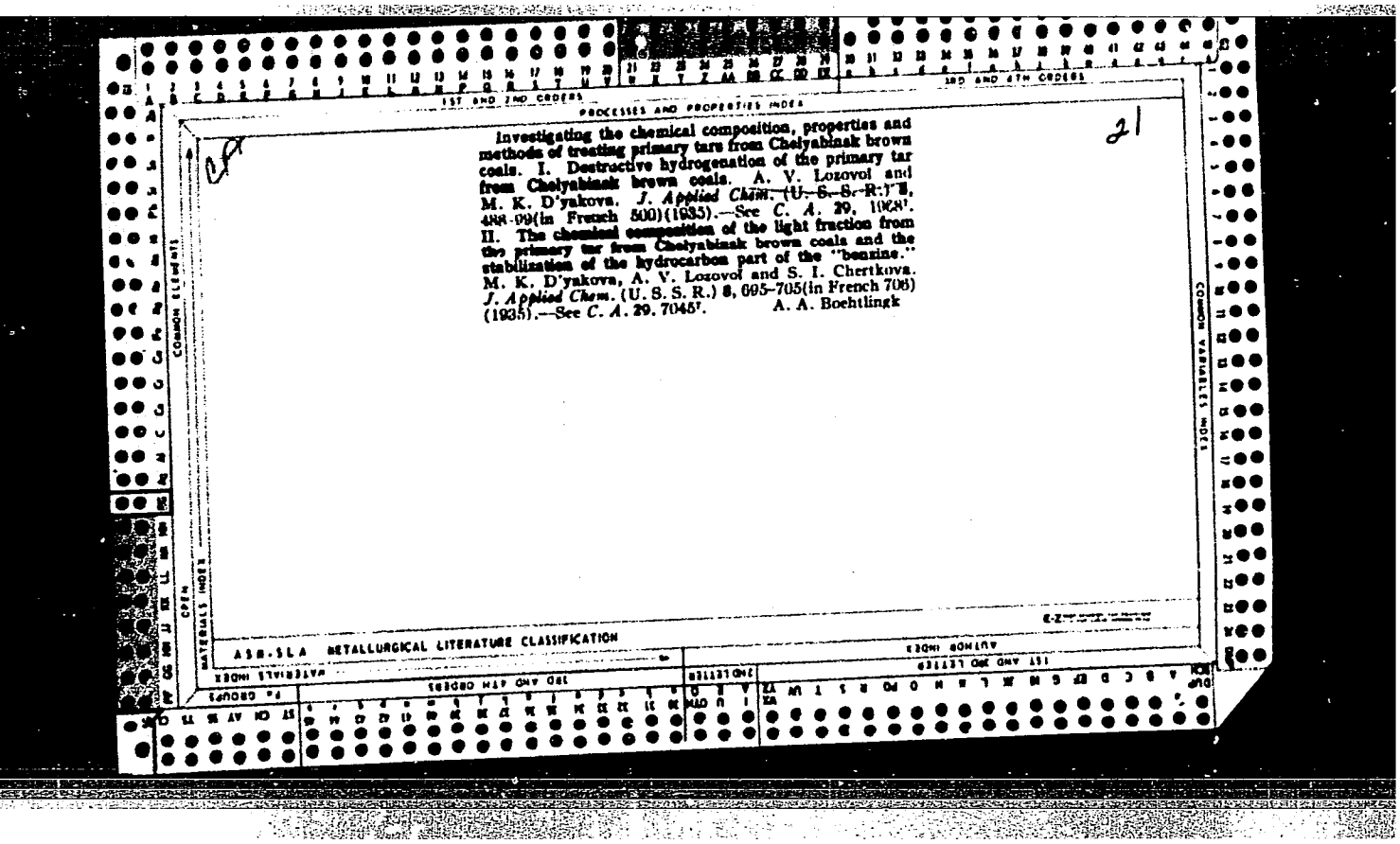
Hydrogenation of Chellabinsk brown coal. M. K. D'yakova and A. V. Lozovoi. *Compt. rend. acad. sci., U. R. S. S.*, 2, 254-7(in English 257-8)(1935).—Chellabinsk brown coal was hydrogenated without a catalyst to give 65% tar, the greater part b. 200-350°. With a MoS catalyst 70-75% was converted to liquid fuels, mainly b. 200-410°. The initial H pressure was 100 atm. and the working pressure 200-250 atm. Low-temp. (200-400°) conversion to heavy and medium oils can be followed by a 2nd conversion to benzine and kerosene at 450-60°.

F. H. Moser



An investigation of the chemical composition, properties and methods of treatment of primary tars of Chelialinsk brown coal. II. The composition of the light-tar fraction and the stabilization of benzine by hydrogenation. M. K. D'yakova, A. V. Lozovoi and S. I. Chertkova. *Compt. rend. acad. sci. U. R. S. S.* 2, 399–402(1935)(in English 408).—The "benzine" fraction (b. up to 230°) of Chelialinsk brown coal contains 37.8% of the primary tars, of this 49.4% consists of phenols and acids, 19.9% of aromatic hydrocarbons (toluene-xylene fraction, 3.8%), 1.3% of naphthenes, 11.4% of paraffins, 17.2% of unsatd. hydrocarbons, 0.8% of N bases. S and neutral O compds. are not detd. The neutral "benzine" fraction consisting of 40% aromatic compds., 34.6% unsatd. compds., 2.7% naphthenes and 22.7% paraffins cannot be freed from S derivs. by the usual means. This and stabilization are achieved by hydrogenation in the presence of MoS_3 or CoS at 100 atm. and 400° for 2 hrs. This decreases the amt. of unsatd. compds. which go largely to naphthenes with CoS and to naphthenes and paraffins with MoS_3. From 80 to 87% of the crude "benzine" is recovered and H_2 absorbed up to 2–4% of charge. The stabilized "benzine" contains 42–8% aromatic compds., 5–17% unsatd. compds., 10–26% naphthenes and 26–30% paraffin hydrocarbons. It is free from S and stable on storage.

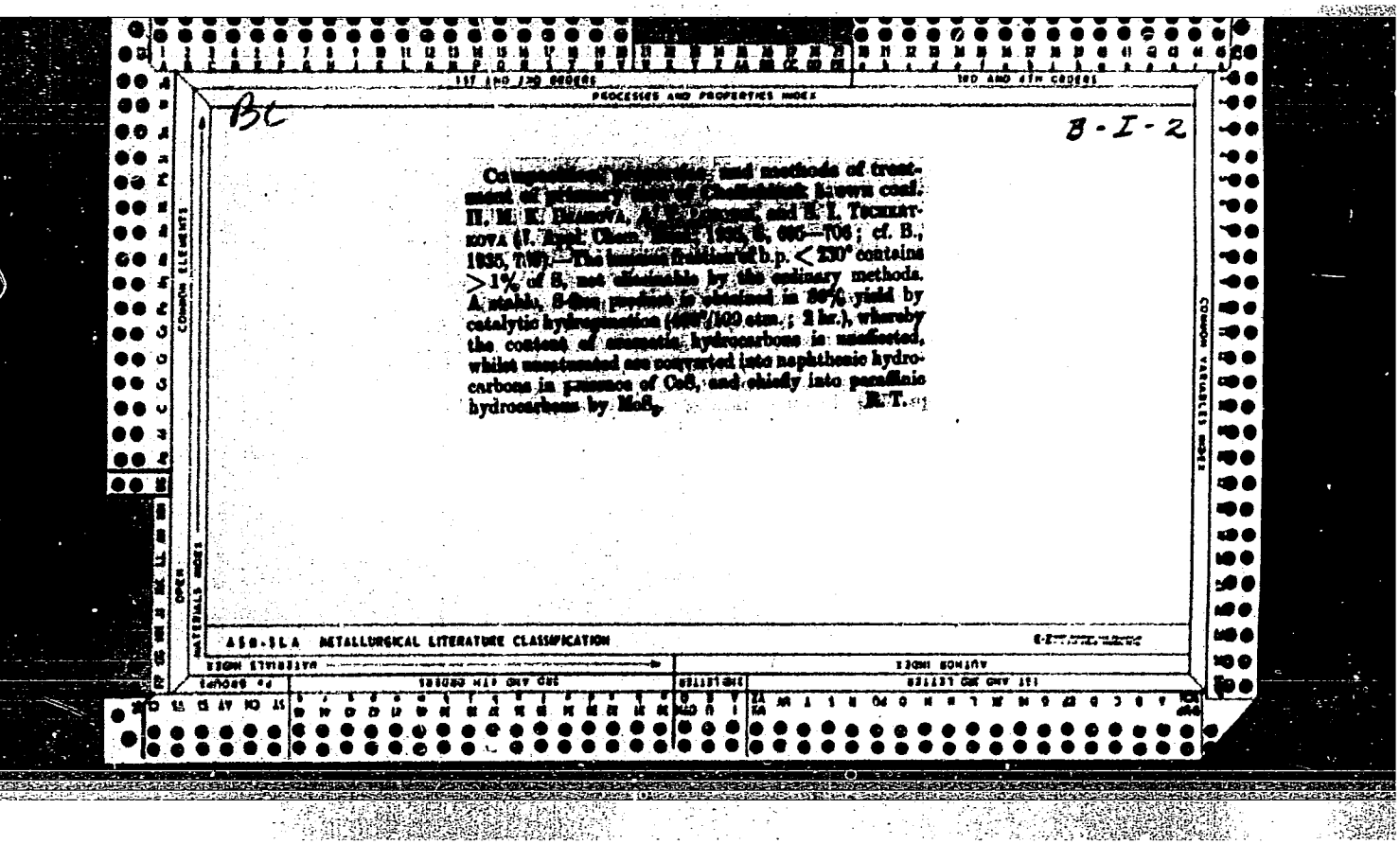
R. Baltzly



PROCESSES AND PROPERTIES INDEX

Investigating the chemical composition, properties and methods of treating primary tars from Chelyabinsk brown coals. I. Destructive hydrogenation of the primary tar from Chelyabinsk brown coals. A. V. Lozovoi and M. K. D'yakova. *J. Applied Chem.* (U. S. S. R.) 8, 488-99(in French 500)(1935).—See *C. A.* 29, 1028⁷. II. The chemical composition of the light fraction from the primary tar from Chelyabinsk brown coals and the stabilization of the hydrocarbon part of the "benzine." M. K. D'yakova, A. V. Lozovoi and S. I. Chertkova. *J. Applied Chem.* (U. S. S. R.) 8, 695-705(in French 706)(1935).—See *C. A.* 29, 7045⁷. A. A. Boehtlingk

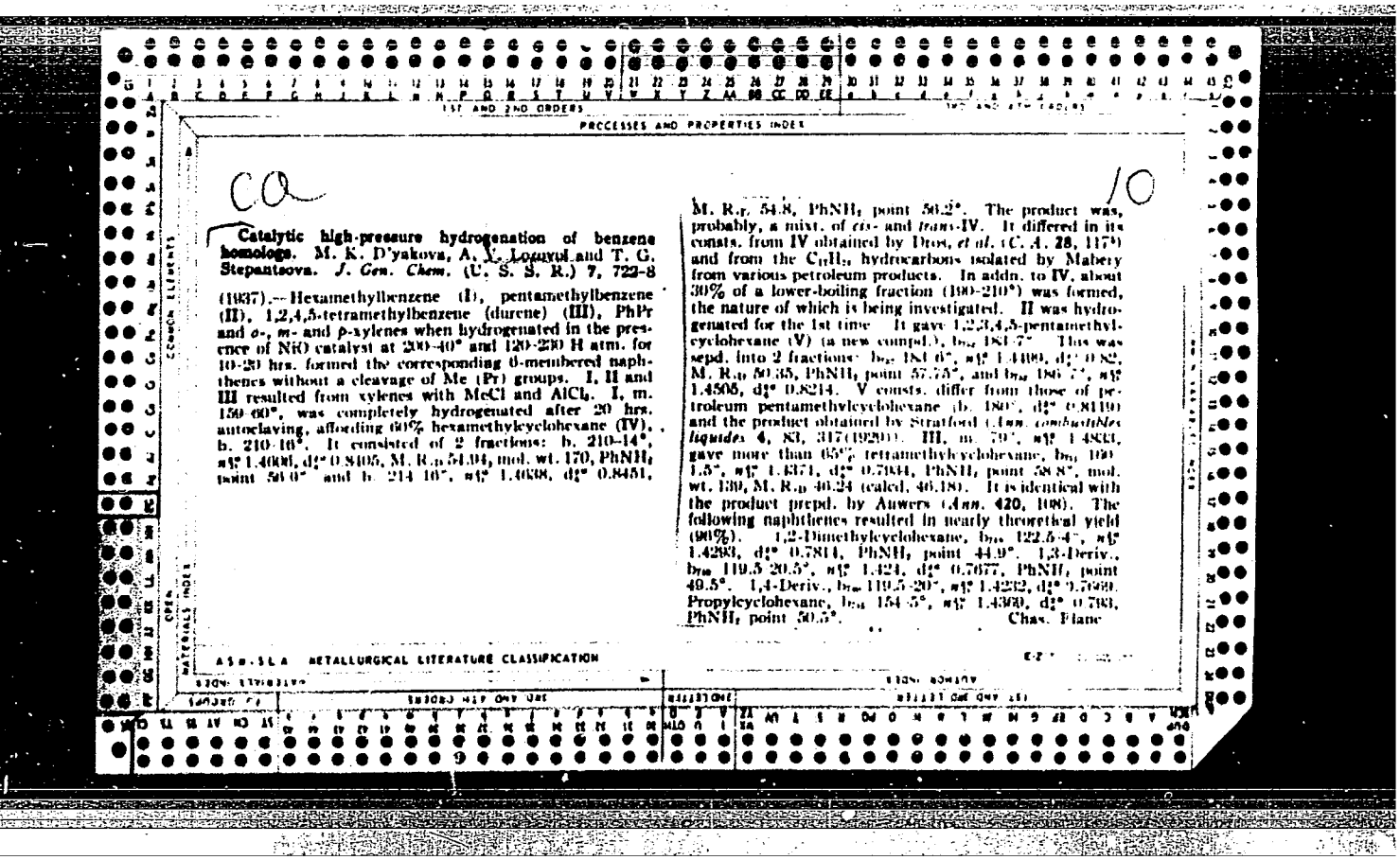
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



B-I-2

Commercial [illegible] and methods of treatment of [illegible]. II. M. K. DZHAFAROV, A. A. [illegible], and E. I. TSCHERTKOVA (J. Appl. Chem. [illegible], 1938, 8, 695—706; cf. B., 1935, 709).—The [illegible] b.p. < 230° contains > 1% of S, not eliminable by the ordinary methods. A stable, S-free product is obtained in 80% yield by catalytic hydrogenation (400°/100 atm.; 2 hr.), whereby the content of aromatic hydrocarbons is unaffected, whilst unsaturated are converted into naphthenic hydrocarbons in presence of CoS, and chiefly into paraffinic hydrocarbons by MoS$_2$. R. T.

A58-51A METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

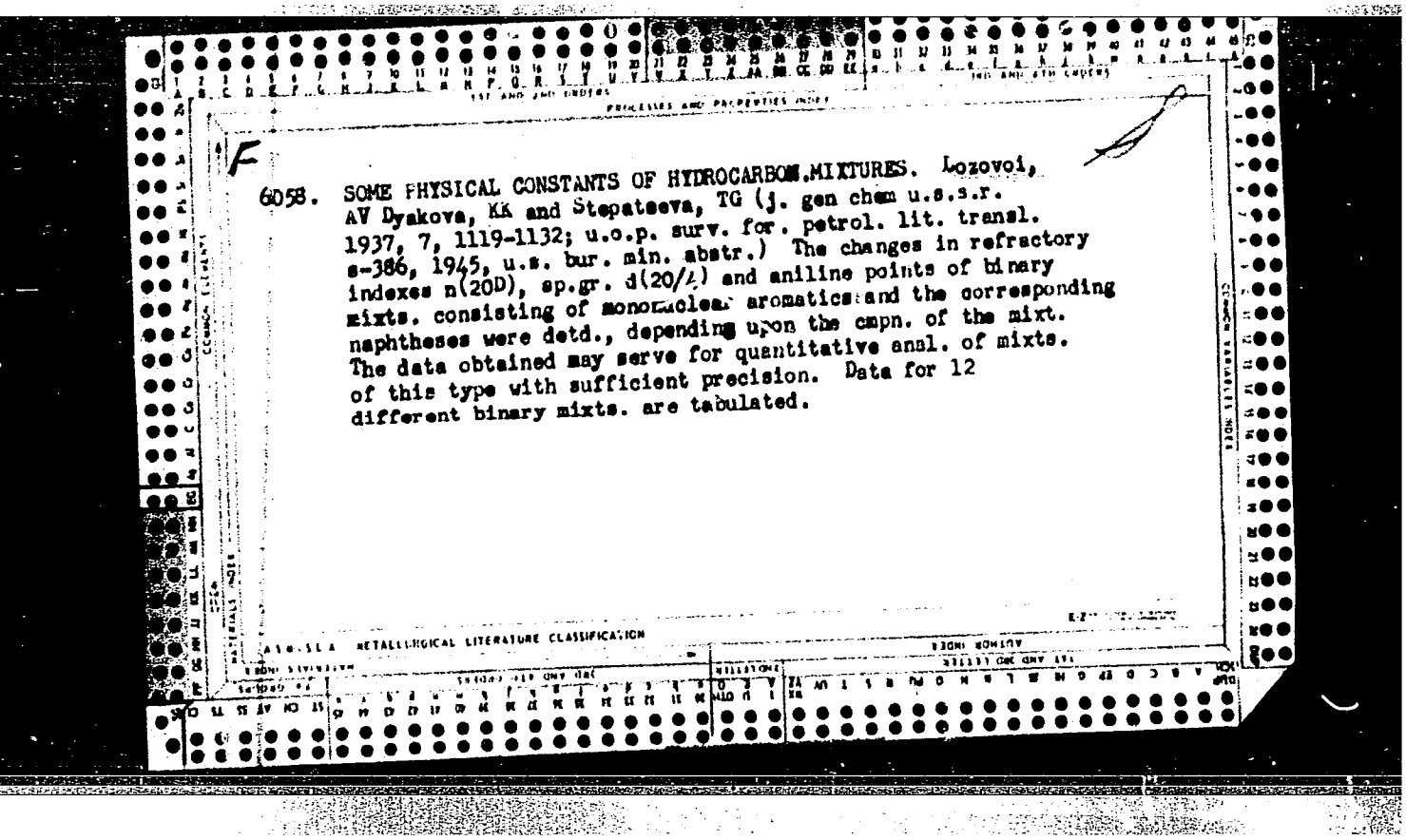
PROCESSES AND PROPERTIES INDEX

CA

10

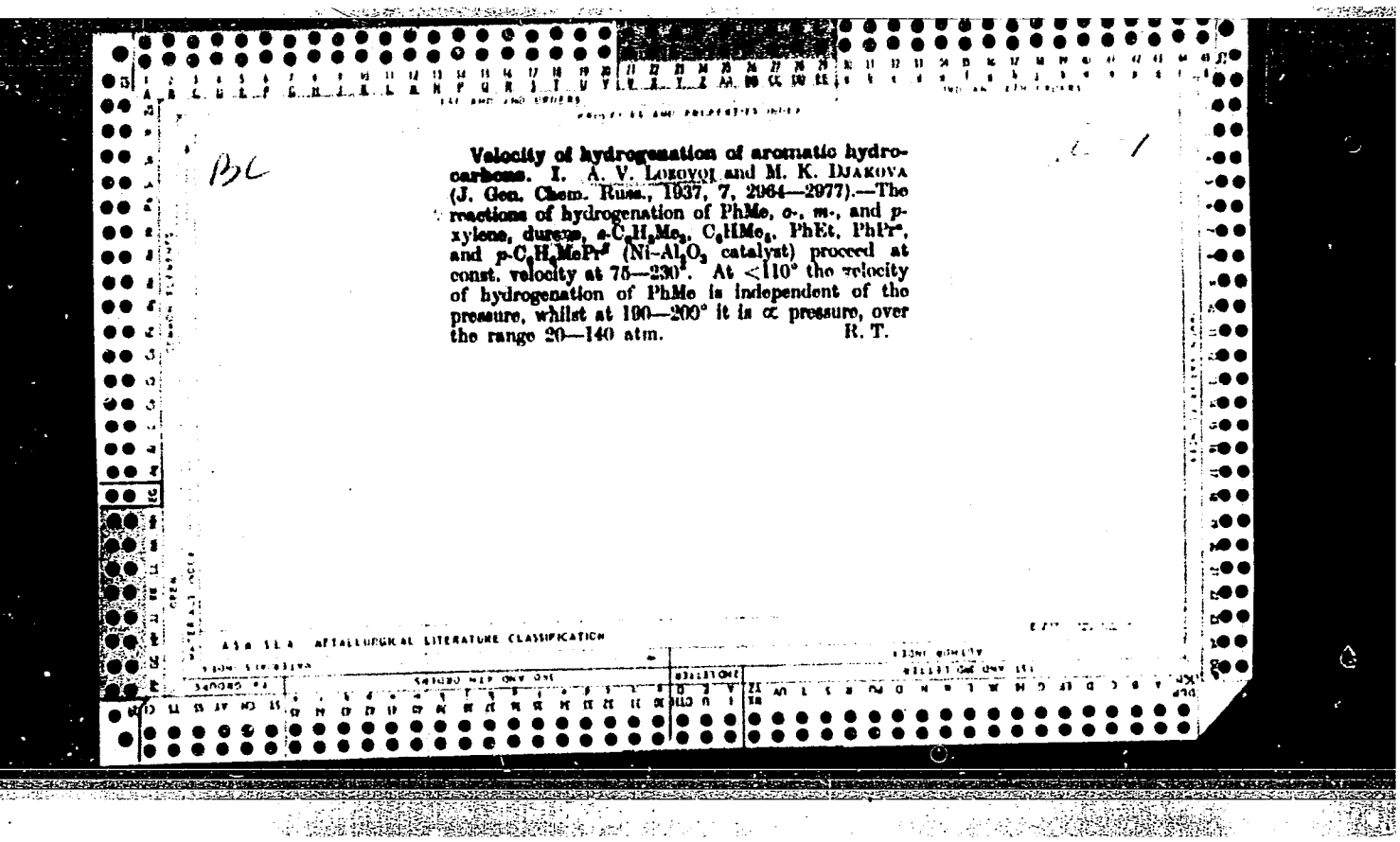
Catalytic high-pressure hydrogenation of benzene homologs. M. K. D'yakova, A. V. Lozovoi and T. G. Stepantsova. *J. Gen. Chem.* (U. S. S. R.) 7, 722-8 (1937).—Hexamethylbenzene (I), pentamethylbenzene (II), 1,2,4,5-tetramethylbenzene (durene) (III), PhPr and *o*-, *m*- and *p*-xylenes when hydrogenated in the presence of NiO catalyst at 200-40° and 120-230 H atm. for 10-20 hrs. formed the corresponding 6-membered naphthenes without a cleavage of Me (Pr) groups. I, II and III resulted from xylenes with MeCl and $AlCl_3$. I, m. 159-60°, was completely hydrogenated after 20 hrs. autoclaving, affording 60% hexamethylcyclohexane (IV), b. 210-10°. It consisted of 2 fractions: b. 210-14°, n_D^{20} 1.4000, d_4^{20} 0.8105, M. R. 54.04, mol. wt. 170, $PhNH_2$ point 50.0° and b. 214-16°, n_D^{20} 1.4038, d_4^{20} 0.8451, M. R. 54.8, $PhNH_2$ point 50.2°. The product was, probably, a mixt. of *cis*- and *trans*-IV. It differed in its consts. from IV obtained by Dyos, *et al.* (C. A. **28**, 1179) and from the C_6H_{12} hydrocarbons isolated by Mabery from various petroleum products. In addn. to IV, about 30% of a lower-boiling fraction (190-210°) was formed, the nature of which is being investigated. II was hydrogenated for the 1st time. It gave 1,2,3,4,5-pentamethylcyclohexane (V) (a new compd.), b_{760} 181.7°. This was sepd. into 2 fractions: b_{760} 181.6°, n_D^{20} 1.4400, d_4^{20} 0.82, M. R. 50.35, $PhNH_2$ point 57.75°, and b_{760} 186.7°, n_D^{20} 1.4505, d_4^{20} 0.8214. V consts. differ from those of petroleum pentamethylcyclohexane (b. 180°, d_4^{20} 0.8110) and the product obtained by Stratford (*Ann. combustibles liquides* **4**, 83, 317(1929)). III, m. 79°, n_D^{20} 1.4833, gave more than 65% tetramethylcyclohexane, b_{60} 100-1.5°, n_D^{20} 1.4371, d_4^{20} 0.7934, $PhNH_2$ point 58.8°, mol. wt. 130, M. R. 46.24 (calcd. 46.18). It is identical with the product prepd. by Auwers (*Ann.* **420**, 108). The following naphthenes resulted in nearly theoretical yield (90%). 1,2-Dimethylcyclohexane, b_{760} 122.5-4°, n_D^{20} 1.4293, d_4^{20} 0.7814, $PhNH_2$ point 44.9°. 1,3-Deriv., b_{760} 119.5-20.5°, n_D^{20} 1.424, d_4^{20} 0.7677, $PhNH_2$ point 49.5°. 1,4-Deriv., b_{760} 119.5-20°, n_D^{20} 1.4232, d_4^{20} 0.7690. Propylcyclohexane, b_{760} 154.5°, n_D^{20} 1.4360, d_4^{20} 0.793, $PhNH_2$ point 50.5°. Chas. Blanc

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

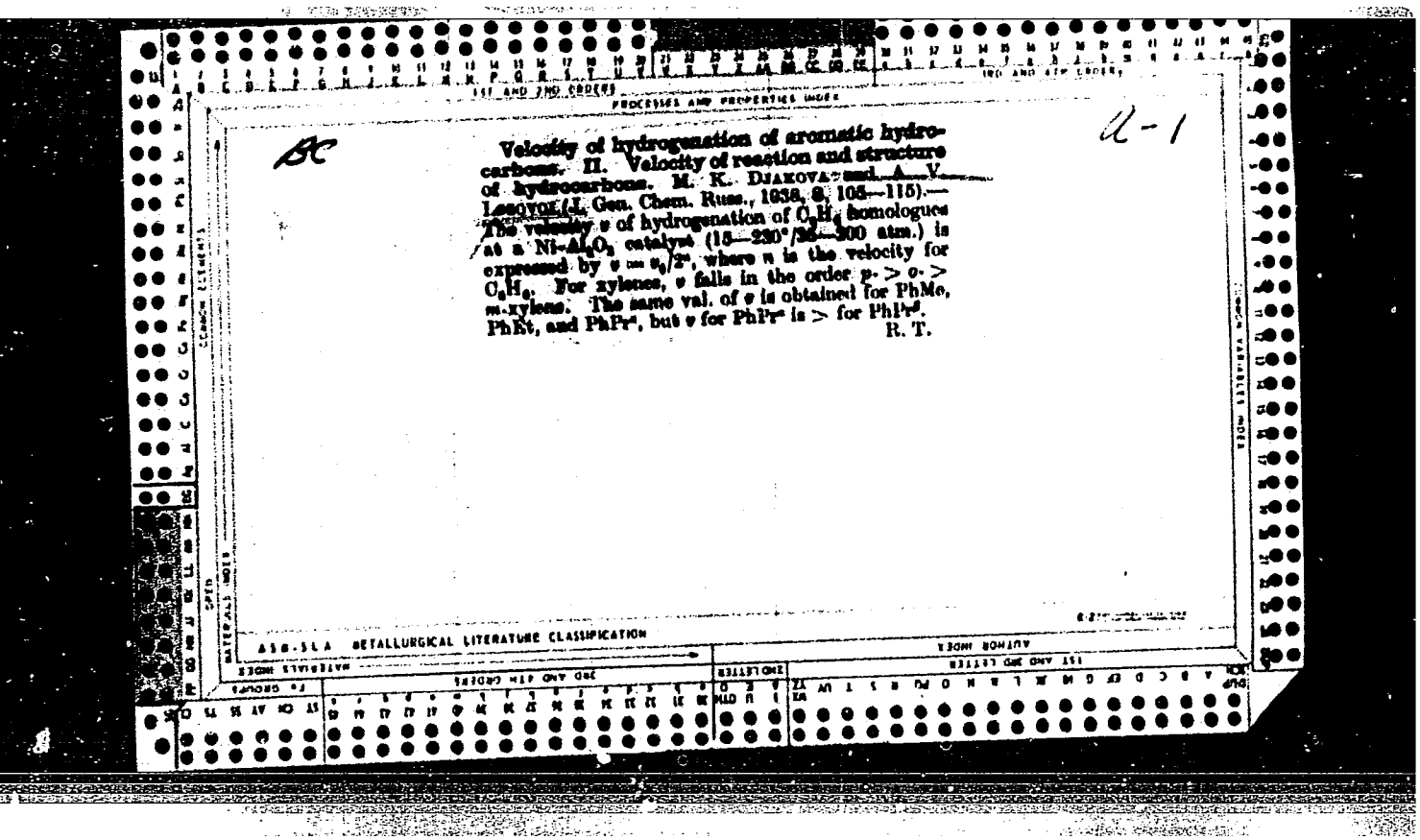


F

6058. SOME PHYSICAL CONSTANTS OF HYDROCARBON MIXTURES. Lozovoi, AV Dyakova, KA and Stepateeva, TG (j. gen chem u.s.s.r. 1937, 7, 1119-1132; u.o.p. surv. for. petrol. lit. transl. s-386, 1945, u.s. bur. min. abstr.) The changes in refractory indexes n(20D), sp.gr. d(20/4) and aniline points of binary mixts. consisting of mononuclear aromatics and the corresponding naphtheses were detd., depending upon the cmpn. of the mixt. The data obtained may serve for quantitative anal. of mixts. of this type with sufficient precision. Data for 12 different binary mixts. are tabulated.



Velocity of hydrogenation of aromatic hydrocarbons. I. A. V. Logovoi and M. K. Djakova (J. Gen. Chem. Russ., 1937, 7, 2964—2977).—The reactions of hydrogenation of PhMe, *o*-, *m*-, and *p*-xylene, durene, *s*-$C_6H_3Me_3$, C_6HMe_5, PhEt, $PhPr^n$, and *p*-$C_6H_4MePr^n$ (Ni–Al_2O_3 catalyst) proceed at const. velocity at 75—230°. At <110° the velocity of hydrogenation of PhMe is independent of the pressure, whilst at 190—200° it is ∝ pressure, over the range 20—140 atm. R. T.

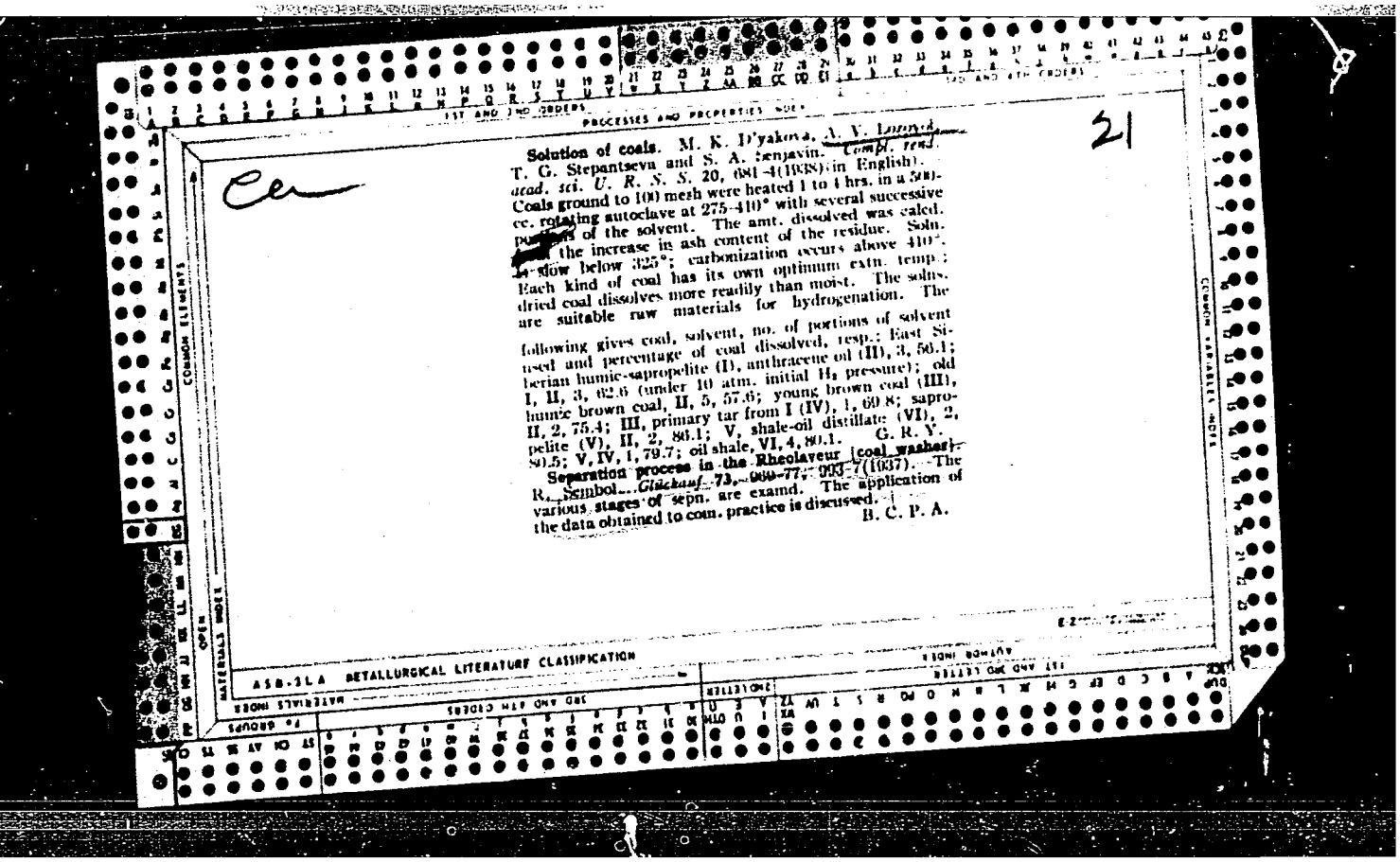


BC

Velocity of hydrogenation of aromatic hydrocarbons. II. Velocity of reaction and structure of hydrocarbons. M. K. Djakova and A. V. Lesovoi (J. Gen. Chem. Russ., 1938, 8, 105—115).—The velocity v of hydrogenation of C_6H_5 homologues at a Ni-Al_2O_3 catalyst (15—230°/35—300 atm.) is expressed by $v = v_0/2^n$, where n is the velocity for C_6H_6. For xylenes, v falls in the order p- > o- > m-xylene. The same val. of v is obtained for PhMe, PhEt, and PhPr^n, but v for PhPr^i is > for PhPr^n.

R. T.

d-1



PROCESSES AND PROPERTIES INDEX

21

Solution of coals. M. K. D'yakova, A. V. Lozovoi, T. G. Stepantseva and S. A. Tenjavin. *Compt. rend. acad. sci. U. R. S. S.* 20, 681-4(1938)(in English). Coals ground to 100 mesh were heated 1 to 4 hrs. in a 500-cc. rotating autoclave at 275-410° with several successive portions of the solvent. The amt. dissolved was calcd. from the increase in ash content of the residue. Soln. is slow below 325°; carbonization occurs above 410°. Each kind of coal has its own optimum extn. temp.; dried coal dissolves more readily than moist. The solns. are suitable raw materials for hydrogenation. The following gives coal, solvent, no. of portions of solvent used and percentage of coal dissolved, resp.: East Siberian humic-sapropelite (I), anthracene oil (II), 3, 56.1; I, II, 3, 62.6 (under 10 atm. initial H_2 pressure); old humic brown coal, II, 5, 57.6; young brown coal (III), II, 2, 75.4; III, primary tar from I (IV), 1, 69.8; sapropelite (V), II, 2, 86.1; V, shale-oil distillate (VI), 2, 80.5; V, IV, 1, 79.7; oil shale, VI, 4, 80.1. G. R. V.

Separation process in the Rheolaveur [coal washer]. R. Scimbol. *Glückauf* 73, 969-77, 993-7(1937). The various stages of sepn. are examd. The application of the data obtained to coal. practice is discussed.

B. C. P. A.

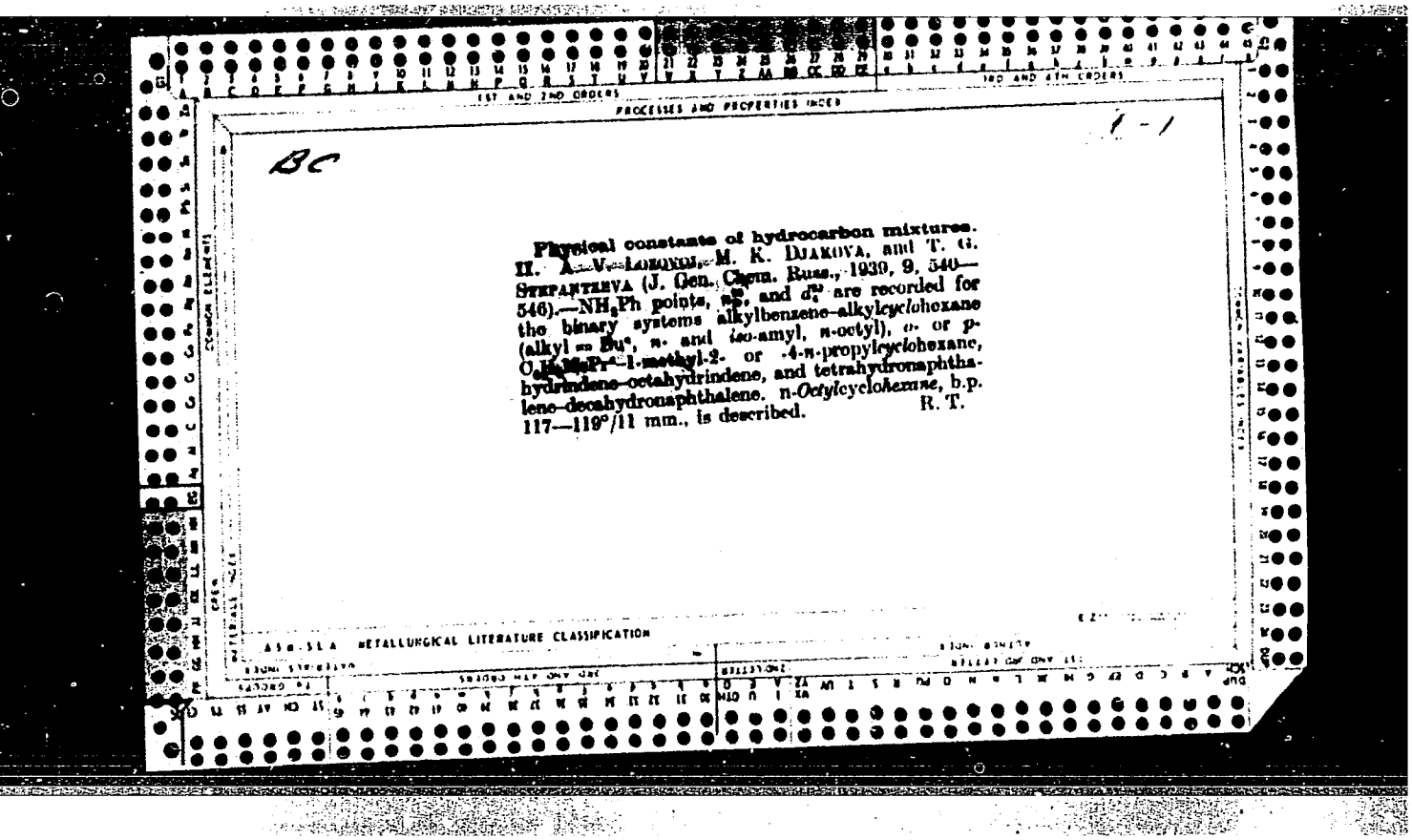
ASB-3LA METALLURGICAL LITERATURE CLASSIFICATION

D'YAKOVA, M. K., LOZOVOY, A. V.

p. 26

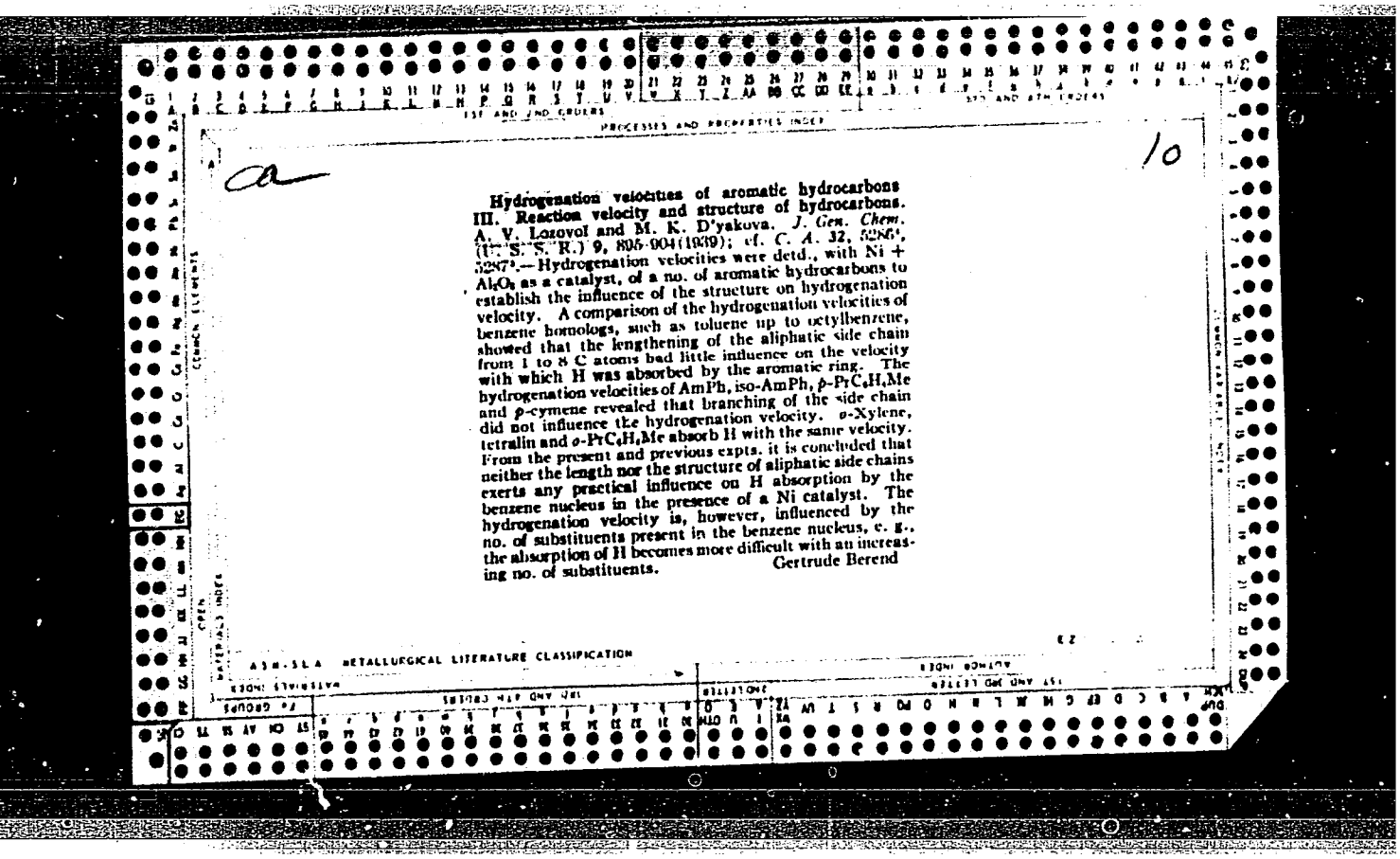
"Hydrogenation of Certain Homologues of Benzene Under Pressure of Hydrogen II," Zhur. Obshch. Khim., 9, No. 1, 1939. Institute of Combustible Minerals, Academy of Sciences USSR, Laboratory of Hydrogenation, Received 5 May 1938.

Report U-1517, 22 Oct. 1951.



BC

Physical constants of hydrocarbon mixtures. II. A. V. Lozovoi, M. K. Djakova, and T. G. Stepantseva (J. Gen. Chem. Russ., 1939, 9, 540—546).—NH_2Ph points, n_D^{20}, and d_4^{20} are recorded for the binary systems alkylbenzene–alkylcyclohexane (alkyl = Bu^s, *n*- and *iso*-amyl, *n*-octyl), *o*-, or *p*-$C_6H_4Me_2$-1-methyl-2- or -4-*n*-propylcyclohexane, hydrindene–octahydrindene, and tetrahydronaphthalene–decahydronaphthalene. *n-Octylcyclohexane*, b.p. 117—119°/11 mm., is described. R. T.



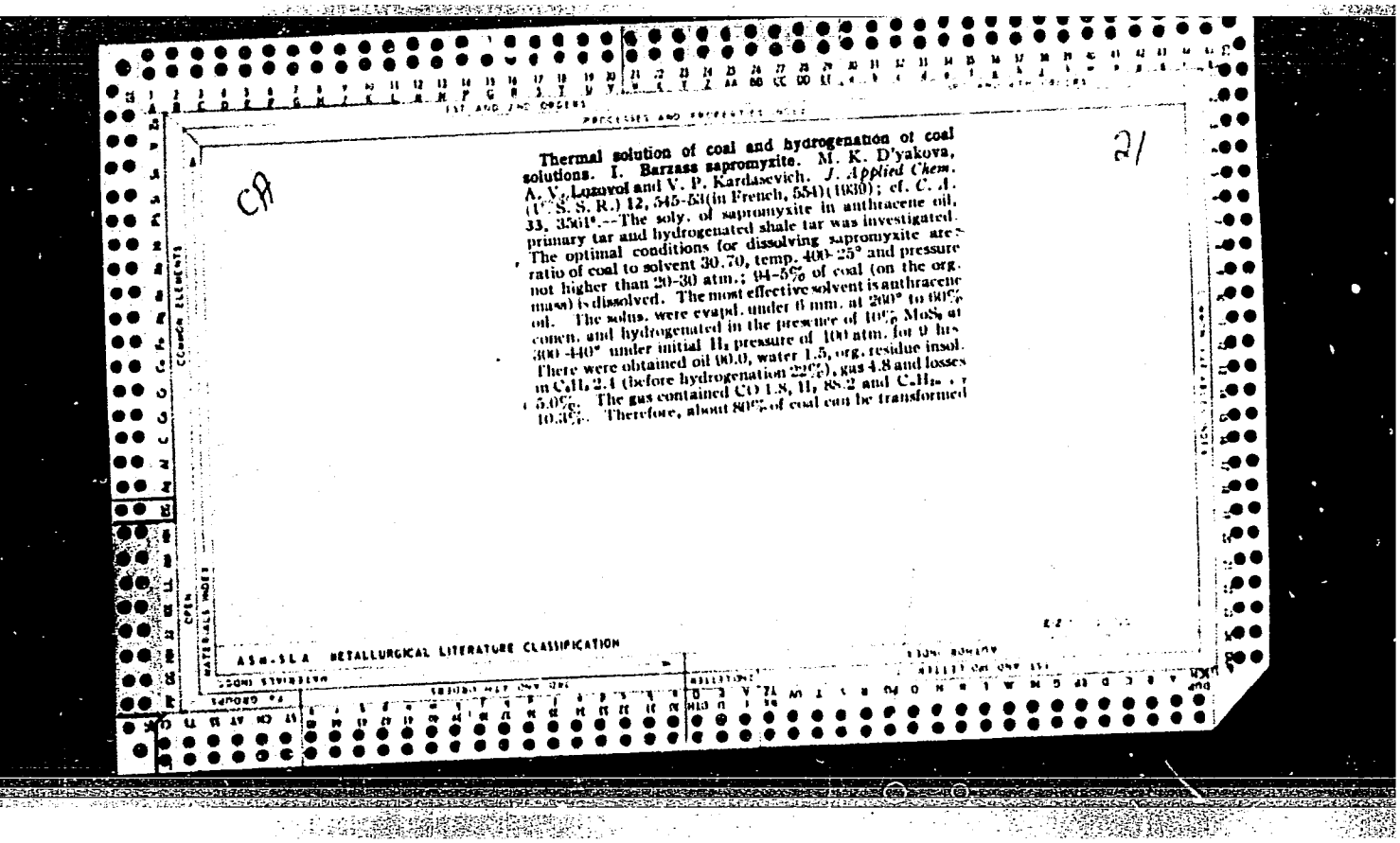
PROCESSES AND PROPERTIES INDEX

10

Hydrogenation velocities of aromatic hydrocarbons III. Reaction velocity and structure of hydrocarbons. A. V. Lozovol and M. K. D'yakova. *J. Gen. Chem.* (U. S. S. R.) 9, 895-904 (1939); cf. *C. A.* 32, 5286⁵, 5287⁹.—Hydrogenation velocities were detd., with Ni + Al_2O_3 as a catalyst, of a no. of aromatic hydrocarbons to establish the influence of the structure on hydrogenation velocity. A comparison of the hydrogenation velocities of benzene homologs, such as toluene up to octylbenzene, showed that the lengthening of the aliphatic side chain from 1 to 8 C atoms had little influence on the velocity with which H was absorbed by the aromatic ring. The hydrogenation velocities of AmPh, iso-AmPh, *p*-PrC_6H_4Me and *p*-cymene revealed that branching of the side chain did not influence the hydrogenation velocity. *o*-Xylene, tetralin and *o*-PrC_6H_4Me absorb H with the same velocity. From the present and previous expts. it is concluded that neither the length nor the structure of aliphatic side chains exerts any practical influence on H absorption by the benzene nucleus in the presence of a Ni catalyst. The hydrogenation velocity is, however, influenced by the no. of substituents present in the benzene nucleus, e. g., the absorption of H becomes more difficult with an increasing no. of substituents.

Gertrude Berend

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

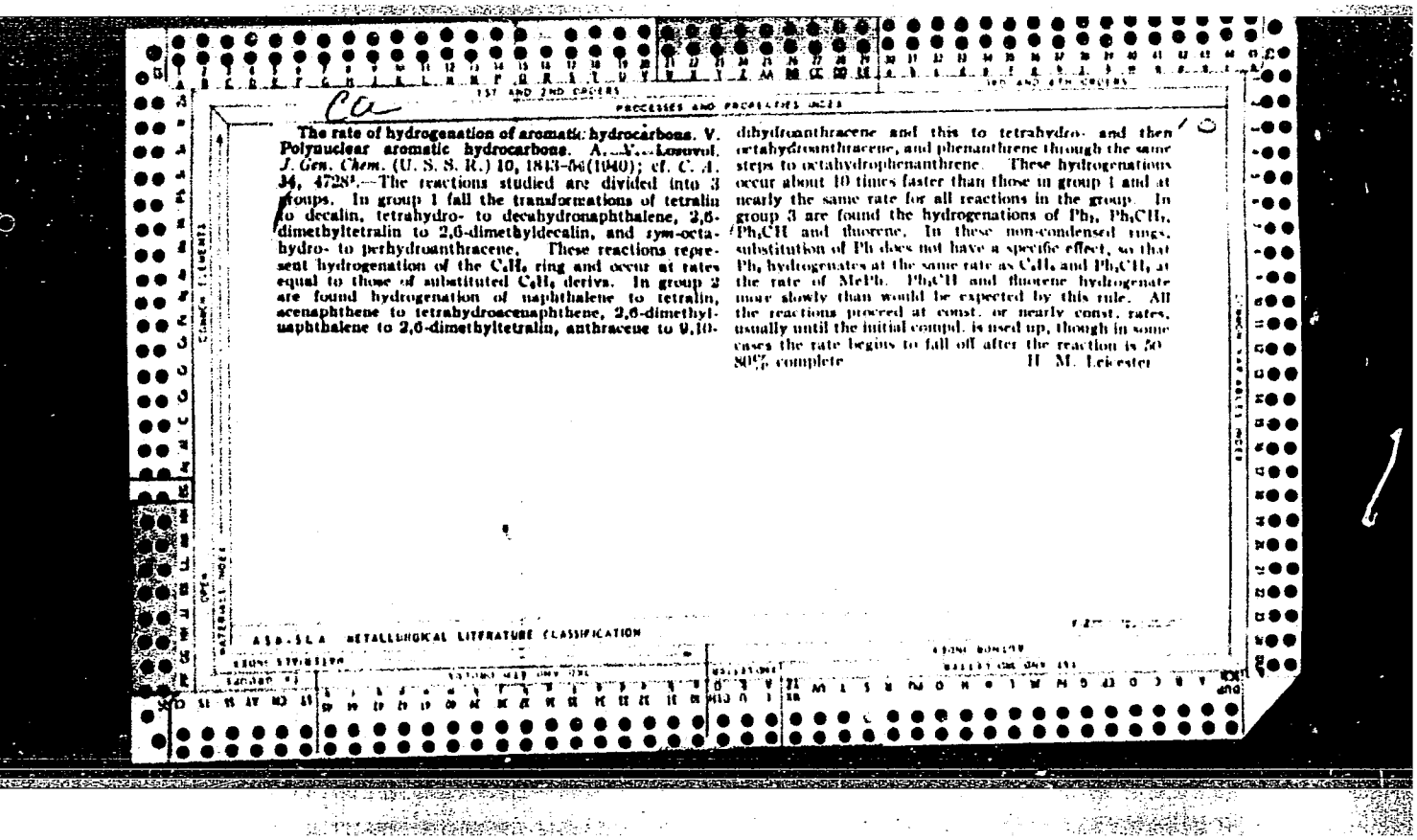


Thermal solution of coal and hydrogenation of coal solutions. I. Barzass sapromyxite. M. K. D'yakova, A. V. Lozovoi and V. P. Kardasevich. *J. Applied Chem.* (U. S. S. R.) 12, 545-53(in French, 554)(1939); cf. *C. A.* 33, 3561⁹.--The soly. of sapromyxite in anthracene oil, primary tar and hydrogenated shale tar was investigated. The optimal conditions for dissolving sapromyxite are: ratio of coal to solvent 30.70, temp. 400-25° and pressure not higher than 20-30 atm.; 94-5% of coal (on the org. mass) is dissolved. The most effective solvent is anthracene oil. The solns. were evapd. under 6 mm. at 200° to 80% concn. and hydrogenated in the presence of 10% MoS_2 at 300-440° under initial H_2 pressure of 100 atm. for 9 hrs. There were obtained oil 90.0, water 1.5, org. residue insol. in CCl_4 2.4 (before hydrogenation 22%), gas 4.8 and losses 5.0%. The gas contained CO 1.8, H_2 88.2 and C_nH_{2n+2} 10.3%. Therefore, about 80% of coal can be transformed

LOZOVOY, A. V.; D'YAKOVA, M. K.

"The Speeds of Hydrogenation of Aromatic and Unsaturated Hydrocarbons," Part IV, Zhur. Obshch. Khim., 10, No. 1, 1940. Institute of Mineral Fuels, Academy of Sciences USSR Received 17, July 1939.

Report U-1526, 24 Oct 51.



Ca

PROCESSES AND PROPERTIES INDEX

The rate of hydrogenation of aromatic hydrocarbons. V. Polynuclear aromatic hydrocarbons. A. V. Lozovoi. *J. Gen. Chem.* (U. S. S. R.) 10, 1813–56(1940); cf. *C. A.* 34, 4728⁵.—The reactions studied are divided into 3 groups. In group 1 fall the transformations of tetralin to decalin, tetrahydro- to decahydronaphthalene, 2,6-dimethyltetralin to 2,6-dimethyldecalin, and *sym*-octahydro- to perhydroanthracene. These reactions represent hydrogenation of the C_6H_6 ring and occur at rates equal to those of substituted C_6H_6 derivs. In group 2 are found hydrogenation of naphthalene to tetralin, acenaphthene to tetrahydroacenaphthene, 2,6-dimethylnaphthalene to 2,6-dimethyltetralin, anthracene to 9,10-dihydroanthracene and this to tetrahydro- and then octahydroanthracene, and phenanthrene through the same steps to octahydrophenanthrene. These hydrogenations occur about 10 times faster than those in group 1 and at nearly the same rate for all reactions in the group. In group 3 are found the hydrogenations of Ph_2, Ph_2CH_2, Ph_3CH and fluorene. In these non-condensed rings, substitution of Ph does not have a specific effect, so that Ph_2 hydrogenates at the same rate as C_6H_6 and Ph_2CH_2 at the rate of MePh. Ph_3CH and fluorene hydrogenate more slowly than would be expected by this rule. All the reactions proceed at const. or nearly const. rates, usually until the initial compd. is used up, though in some cases the rate begins to fall off after the reaction is 50–80% complete. H. M. Leicester

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

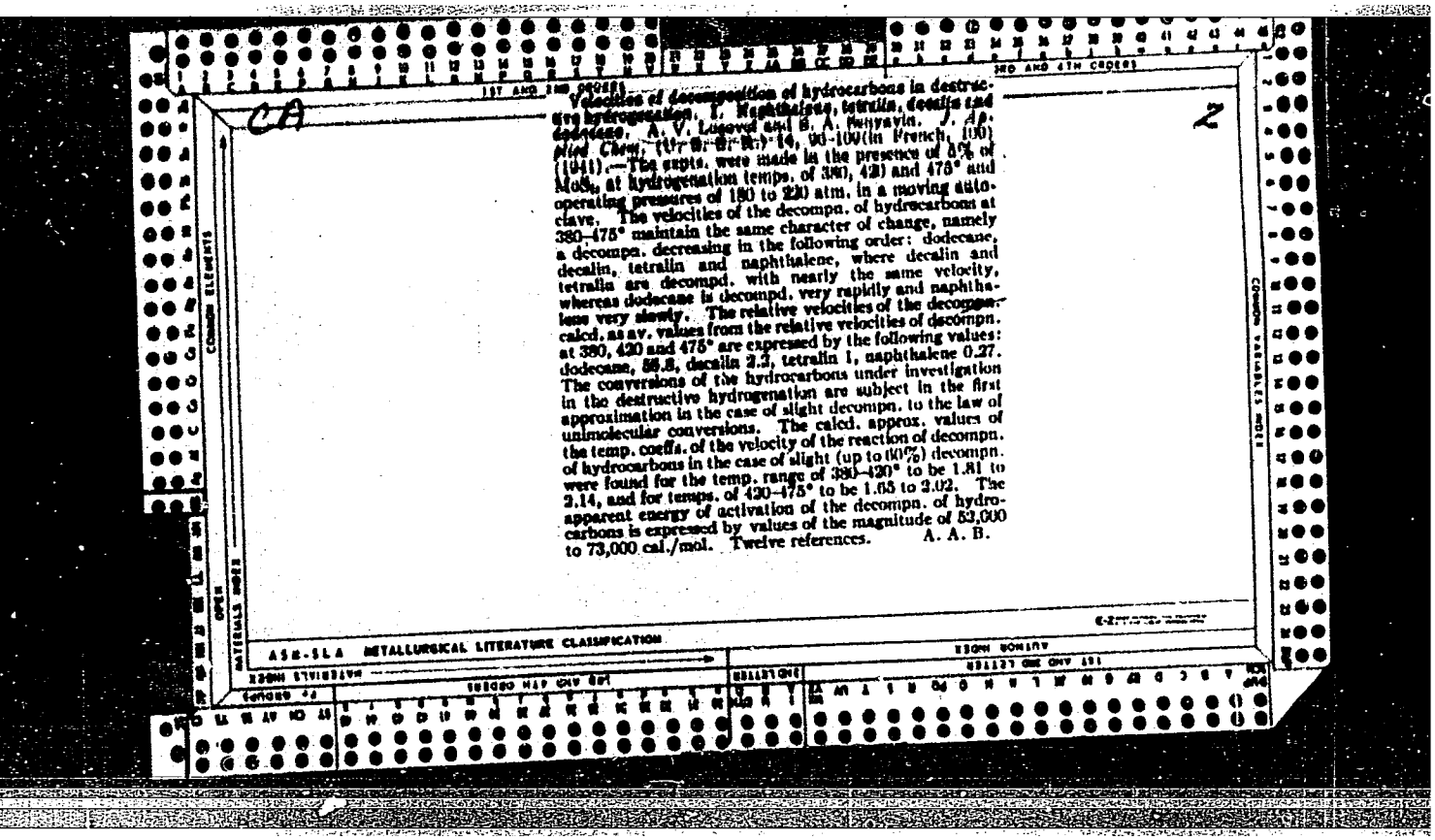
1. LOZOVOY, A. V.

2. USSR (600)

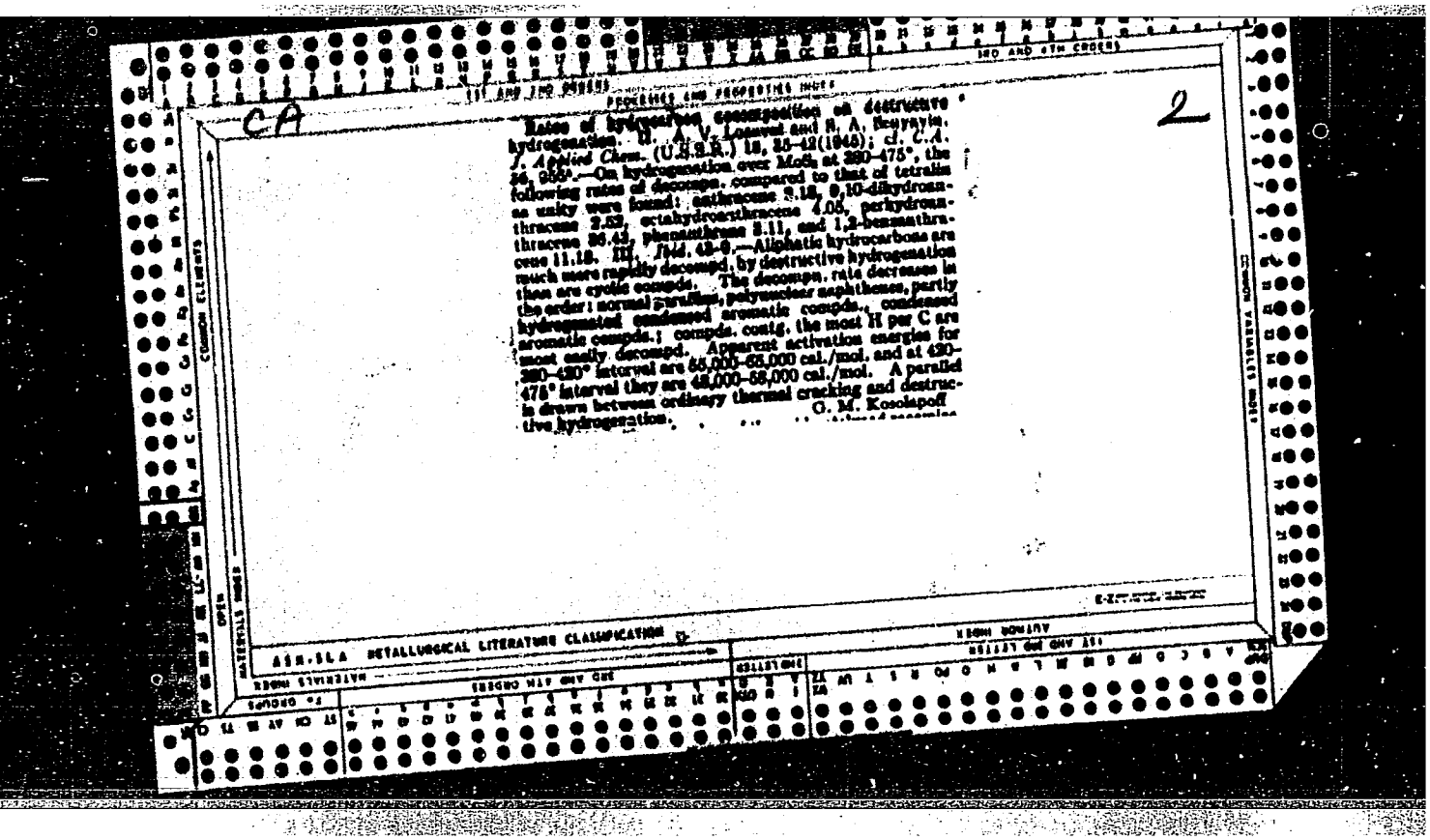
- p.1855

"The Influence of Certain Substitutes on the Speed of Hydrogenation of the Benzene Ring" Zhur Obshch. Khim., 10, No. 21, 1940. Institute of Mineral Fuels, Academy of Sciences USSR. Received 19 May 1940.

9. Report U-1612, 2 Jan. 1952.



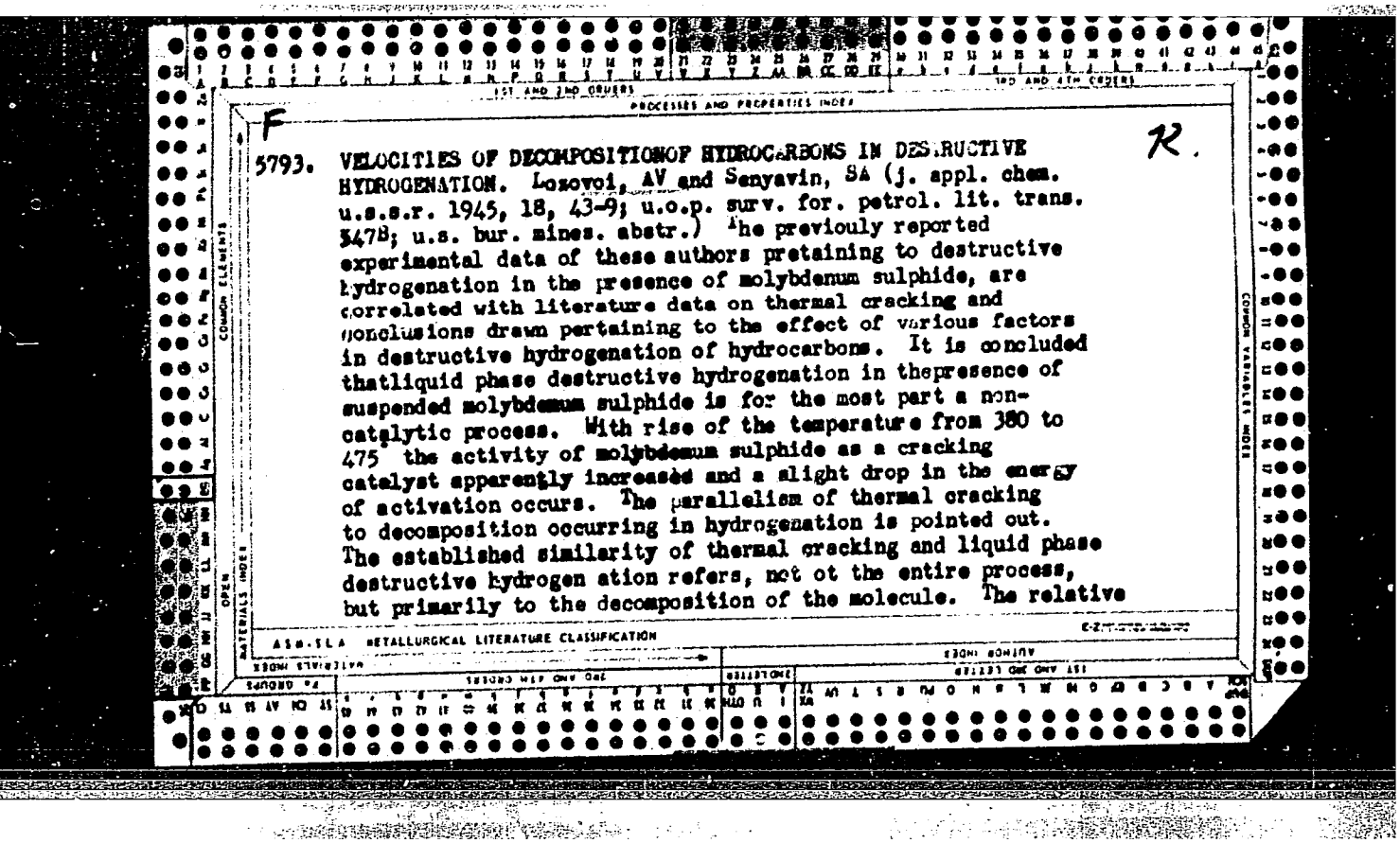
Velocities of decomposition of hydrocarbons in destructive hydrogenation. I. Naphthalene, tetralin, decalin and dodecane. A. V. Lozovoi and B. A. Kazanskii. *J. Appl. Chem.* (U.S.S.R.) 14, 90-100 (in French, 100) (1941).—The expts. were made in the presence of 5% of MoS_2 at hydrogenation temps. of 380, 420 and 475° and operating pressures of 180 to 220 atm. in a moving autoclave. The velocities of the decompn. of hydrocarbons at 380–475° maintain the same character of change, namely a decompn. decreasing in the following order: dodecane, decalin, tetralin and naphthalene, where decalin and tetralin are decompd. with nearly the same velocity, whereas dodecane is decompd. very rapidly and naphthalene very slowly. The relative velocities of the decompn. calcd. as av. values from the relative velocities of decompn. at 380, 420 and 475° are expressed by the following values: dodecane, 56.8, decalin 2.2, tetralin 1, naphthalene 0.27. The conversions of the hydrocarbons under investigation in the destructive hydrogenation are subject in the first approximation in the case of slight decompn. to the law of unimolecular conversions. The calcd. approx. values of the temp. coeffs. of the velocity of the reaction of decompn. of hydrocarbons in the case of slight (up to 10%) decompn. were found for the temp. range of 380–420° to be 1.81 to 2.14, and for temps. of 420–475° to be 1.65 to 2.02. The apparent energy of activation of the decompn. of hydrocarbons is expressed by values of the magnitude of 52,000 to 73,000 cal./mol. Twelve references. A. A. B.


CA

2

Rates of hydrogenation, decomposition and destructive hydrogenation. II. A. V. Lozovoi and N. A. Reyzvikh. *J. Applied Chem.* (U.S.S.R.) 18, 35–42(1945); cf. C.A. 34, 2554.—On hydrogenation over MoS at 390–475°, the following rates of decompn. compared to that of tetralin as unity were found: anthracene 3.18, 9,10-dihydroanthracene 2.52, octahydroanthracene 4.05, perhydroanthracene 86.43, phenanthrene 3.11, and 1,2-benzanthracene 11.18. III. *Ibid.* 43–9.—Aliphatic hydrocarbons are much more rapidly decompd. by destructive hydrogenation than are cyclic compds. The decompn. rate decreases in the order: normal paraffins, polymethylene naphthenes, partly hydrogenated condensed aromatic compds., condensed aromatic compds.; compds. contg. the most H per C are most easily decompd. Apparent activation energies for 390–420° interval are 65,000–68,000 cal./mol. and at 420–475° interval they are 48,000–68,000 cal./mol. A parallel is drawn between ordinary thermal cracking and destructive hydrogenation.

G. M. Kosolapoff



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5793. VELOCITIES OF DECOMPOSITIONOF HYDROCARBONS IN DESTRUCTIVE HYDROGENATION. Lozovoi, AV and Senyavin, SA (j. appl. chem. u.s.s.r. 1945, 18, 43-9; u.o.p. surv. for. petrol. lit. trans. 547B; u.s. bur. mines. abstr.) The previouly reported experimental data of these authors pretaining to destructive hydrogenation in the presence of molybdenum sulphide, are correlated with literature data on thermal cracking and conclusions drawn pertaining to the effect of various factors in destructive hydrogenation of hydrocarbons. It is concluded thatliquid phase destructive hydrogenation in thepresence of suspended molybdenum sulphide is for the most part a non-catalytic process. With rise of the temperature from 380 to 475 the activity of molybdenum sulphide as a cracking catalyst apparently increased and a slight drop in the energy of activation occurs. The parallelism of thermal cracking to decomposition occurring in hydrogenation is pointed out. The established similarity of thermal cracking and liquid phase destructive hydrogen ation refers, not ot the entire process, but primarily to the decomposition of the molecule. The relative

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velocities of decomposition of molecules with about equal numbers of carbon atoms, decrease in the following order; normal paraffins polynuclear naphthenes, partly hydrogenated fused ring aromatics fused ring aromatics, i.e. hydrocarbons with close numbers of carbon atoms undergo destructive hydrogenation the more rapidly the higher the proportion of hydrogen they contain. Among aromatics the following series is formed in the order of increasing decomposition velocities: naphthanen, anthracene (phenanthrene), benzanthracene. Each additional ring in the molecule accelerates the reaction 5-10 times. In the naphthene series the correspondingincrease is 16 times. The above regularities are valid for the temperature range 380-475 , Within 380-420 , the temperature coefficient of the velocity of the destructive hydrogen is within 1.85 to 2.05, the apparent energy of activation from 55,000 to 65,000 cal./mol within 420 to 475 these values are 1.6-1.75 and 48,000-58,000 cal/mole reppectively.

Lozovoy, A.V.

Rates of hydrogenation of aromatic and unsaturated hydrocarbons. VI. Hydrogenation in the presence of molybdenum disulfide. A. V. Lozovoi and S. A. Seuyavin. *Sbornik Statei Obshchei Khim., Akad. Nauk S.S.S.R.* 1, 254–65(1953); cf. *C.A.* 35, 4370⁸.—Relative rates of hydrogenation of monocyclic aromatic hydrocarbons (C_6H_6, MePh, EtPh, *m*-xylene, mesitylene, Me_3C_6H) as well as $C_{10}H_8$, cyclohexene, 1-methylcyclohexene, and 1-methyl-3-cyclohexene were detd. in the presence of MoS_2 at 380° and 420° at high H pressure. The rate of hydrogenation is almost unaffected by introduction of 1–6 Me groups and the previously established rule (*loc. cit.*) for Ni does not apply in this instance. Neither is there a noticeable effect produced by increasing the size of the sidechain from Me to Et. Tetrahydronaphthalene is hydrogenated about 3 times as rapidly, $C_{10}H_8$ about 14 times as rapidly, and 1-methyl-3-cyclohexene about 180 times as rapidly as C_6H_6. Introduction of Me at the point of unsatn. retards hydrogenation; e.g. 1-methylcyclohexene is hydrogenated at a rate which is 40% of that of hydrogenation of cyclohexene. The rate of hydrogenation of ethylenic compounds is greater than that of aromatics of polycyclic type, which in turn are more reactive than those of true benzenoid compds. At low degrees of conversion the hydrogenation of C_6H_6 approaches a zero-order reaction in respect to hydrocarbon and nearly 1st-order in respect to H. The temp. coeffs. in hydrogenation of C_6H_6 and MePh in the interval 410–30° are 1.22 and 1.29, with activation energies of 10,000 and 24,500 cal./mole. At high pressure of H, MoS_2 catalyzes hydrogenation of C_6H_6 even at 240–50°. G. M. Kosolapoff

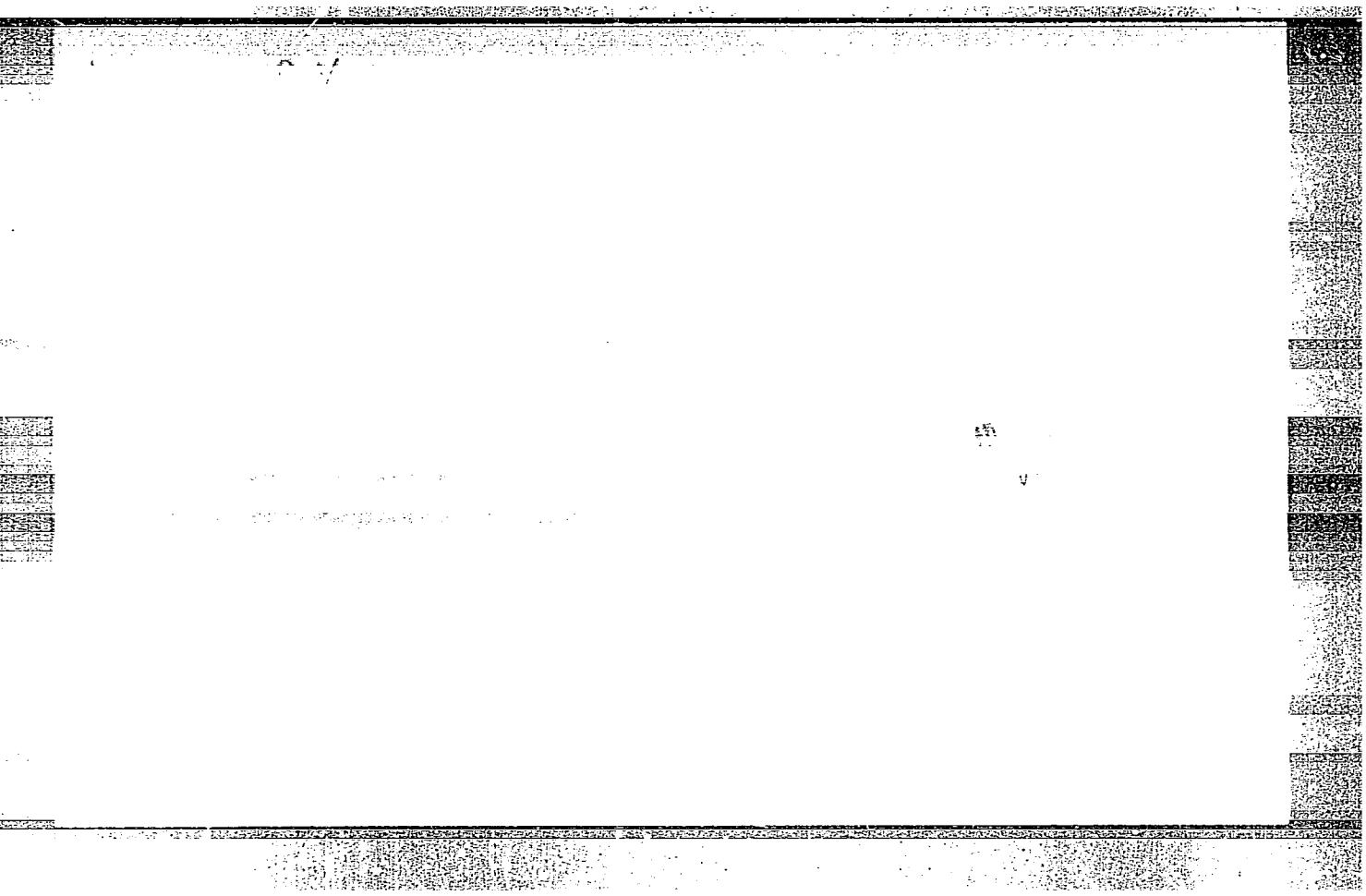
LOZOVOY, A. V. and SENYAVIN, J. A.

On the Rate of Hydrogenation of Aromatic Hydrocarbons. VII. Hydrogenation of Benzene and its Homologues in the Presence of Tungsten Disulfide, page 1035, Sbornik statey po obshchey Khimii (Collection of Papers on General Chemistry), Vol II, Moscow-Leningrad, 1953, pages 1680-1686.

Inst of Mineral Fuels, Acad Sci USSR

Lozovoi, N. V. USSR

The relationship between the structure of hydrocarbons and phenols, and the rate of their hydrogenation, cracking and reduction under hydrogen pressure. A. V. Lozovoi. *Trudy Inst. Goryuch. Iskopaemykh Akad. Nauk S.S.S.R.* 3, 124-39(1954).—The principal reactions involved in the destructive hydrogenation of fuel oil were investigated, i.e. hydrogenation of unsatd. hydrocarbons with rupture of C bonds, the splitting of mols. accompanied by hydrogenation of the fragments, and the reduction of the O, N, and S compds. Hydrocarbon reduction was studied in the liquid phase at 40–230° and 35–70 atm. pressure and with a special high-pressure autoclave. The hydrocarbons to be studied were first carefully freed from traces of catalyst poisons by treatment with 90% H_2SO_4 and Na. An Al-Ni catalyst was used under "catalytically aseptic" conditions, as described previously, and the catalyst retained its original activity throughout the tests. W. M. Sternberg



APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000930630006-4"

Lozovoy, A.V.

USSR/Chemistry - Hydrogenation processes

Card 1/1 Pub. 151 - 18/37

Authors : Lozovoy, A. V., and Senyavin, S. A.

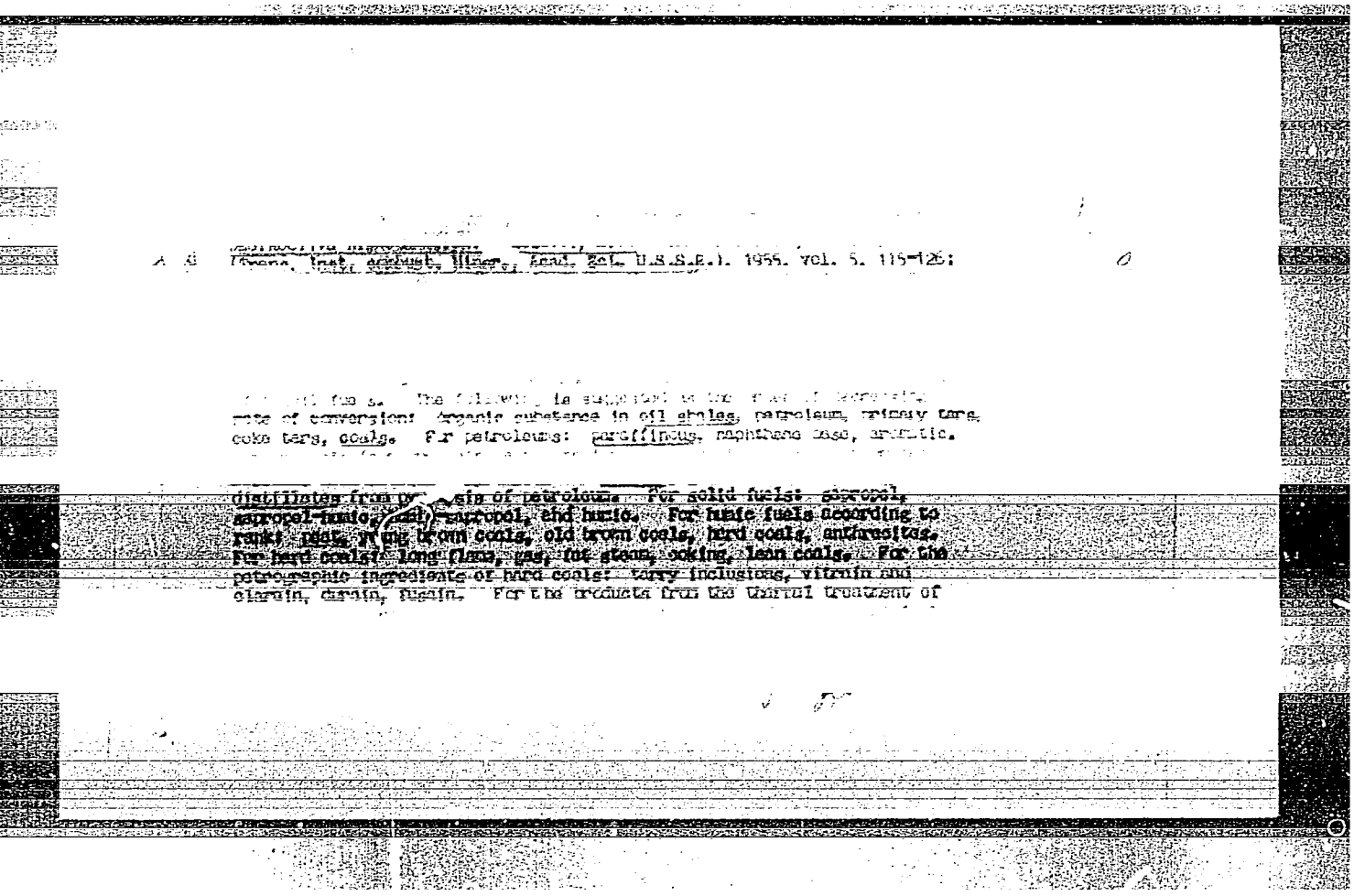
Title : Rate of hydrogenation of aromatic hydrocarbons. Part 8.- Hydrogenation of condensed aromatic hydrocarbons in the presence of tungsten disulfide

Periodical : Zhur. ob. khim. 24/10, 1803-1809, Oct 1954

Abstract : The relative rates of hydrogenation of condensed aromatic hydrocarbons - naphthalene, anthracene, chrysene and their hydro-derivatives, was investigated in the presence of a WS_2 catalyst at 400° temperature and a pressure of 150 atm. The kinetics of hydrogenation of condensed aromatic hydrocarbons is analyzed. The results obtained are shown in tables. The effect of molecule complication on the rate of hydrogenation of condensed arom. hydrocarbons, in comparison to the rate of naphthalene and chrysene hydrogenation, is explained. Eight references: 6-USSR; 1-USA and 1-Italian (1928-1953). Tables.

Institution : Academy of Sciences USSR, Institute of Minerals

Submitted : May 13, 1954



LOZOVOY, A.V.

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of solid mineral fuels I-12

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12869

Author : Kazanskiy B.A., Gonikberg M.G., Lozovoy A.V., Gavrilova A.Ye., Blonskaya A.I.

Inst : Institute of Mineral Fuels of the Academy of Sciences USSR

Title : Investigation of Hydrogenation of Coal at Hydrogen Pressure Above 1000 Atm.

Orig Pub : Tr. In-ta goryuchikh iskopayemykh AN SSSR, 1955, 6, 3-15

Abstract : Investigation, under laboratory conditions, of the hydrogenation of coal at 420° and pressure of 300-1700 atmospheres, with and without an Fe catalyst. It is shown that under the given conditions, the Fe catalyst has no effect on the hydrogenation process. Increase in pressure from 300-400 to 1200-1500 atmospheres doubles the total yield of gasoline and middle oil fraction,

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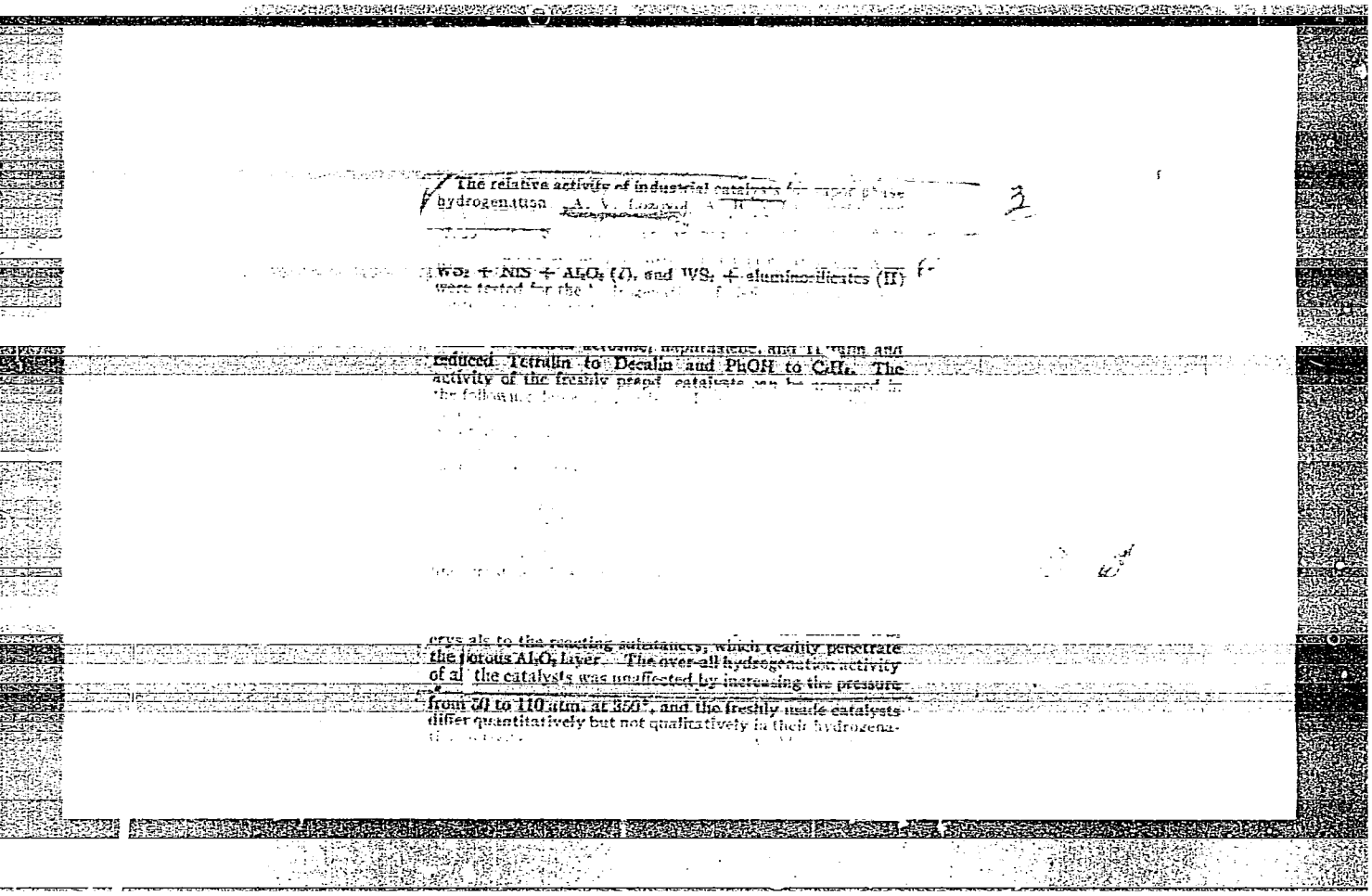

The relative activity of industrial catalysts [illegible] hydrogenation [illegible]

$WO_3 + NiS + Al_2O_3$ (I), and WS_2 + aluminosilicates (II) were tested for the [illegible]

reduced Tetralin to Decalin and PhOH to C_6H_{11}. The activity of the freshly prepd. catalysts can be arranged in the following [illegible]

crystals to the reacting substances, which readily penetrate the porous Al_2O_3 layer. The over-all hydrogenation activity of all the catalysts was unaffected by increasing the pressure from 60 to 110 atm. at 350°, and the freshly made catalysts differ quantitatively but not qualitatively in their hydrogena-

AID P - 2262

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 7/19

Authors : Lozovoy, A. V, S. A. Senyavin and A. B. Vol'-Epshteyn

Title : Activity of certain hydrogenation catalysts

Periodical: Zhur. prikl. khim., 28, no.2, 175-184, 1955

Abstract : Experiments with unsaturated hydrocarbons, (naphthalene, benzene, and tetralin) in the presence of 18 hydrogenation catalysts at temperatures of 420-450°C and pressures of 180-220 atm. are described. The catalysts consisted of oxides and sulfides of metals of the groups 4,5,6, and 8 of the periodic system. Four tables, 2 diagrams, 12 references (6 Russian: 1937-51).

Institution: Institute of Mineral Fuels of the Academy of Sciences of the USSR

Submitted : Je 18, 1953

Lozovoy, A. V.

p 11 p 180 (bot)

PHASE I BOOK EXPLOITATION 228

Vsesoyuznoye soveshchaniye po probleme iskusstvennogo zhidkogo topliva i tekhnologicheskikh gazov. 2d., Moscow, 1954.

Khimicheskaya pererabotka topliva; trudy soveshchaniya (Chemical Treatment of Fuel; Transactions of the Second All-Union Conference on Synthetic Liquid Fuel and Industrial Gases) Moscow, Izd-vo AN SSSR, 1957. 430 p. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut goryuchikh iskopayemykh.

Eds.: Lanin, V. A., Doctor of Chemical Sciences (semi-coking); Lozovoy, A. V., Doctor of Chemical Sciences (hydrogenation); Shishakov, N. V., Doctor of Technical Sciences (gasification); Ed. of Publishing House: Bankvitser, A. L.; Tech. Ed.: Kiseleva, A. A.; Corrector: Bobrov, V. A.

PURPOSE: This book is intended to promote technical progress and to assist in the exchange of experience among scientists working on the production of synthetic liquid fuels and gases.

COVERAGE: This monograph contains selected reports delivered at the Second All-Union Conference on Synthetic Liquid Fuel and Gases which was held in Moscow from November 25, 1954 to December 2, 1954. The reports deal with such subjects as

Card 1/20

the theory and technology of semi-coking of solid fuels, gasification, hydrogenation, and thermal diffusion. The reports also discuss the use of gases as raw material for the production of synthetic liquid fuel and chemical products. This monograph is extensively illustrated with diagrams and tables. For references see Table of Contents. The following institutions are mentioned in this monograph: IGI AN SSSR (Institut goryuchikh iskopayemykh imeni G. M. Krzhizhanovskogo AN SSSR—Institute of Mineral Fuels imeni G. M. Krzhizhanovskiy of the Academy of Sciences, USSR), VNIGI (Vesesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo zhidkogo topliva i gaza — All-Union Scientific Research Institute of Synthetic Liquid Fuels and Gases), Irkutskiy gosudarstvennyy universitet imeni A. A. Zhdanova (Irkutsk State University imeni A. A. Zhdanov), Ural'skiy politekhnicheskiy institut imeni S. M. Kirova (Ural Polytechnic Institute imeni S. M. Kirov), Institut teploenergetiki AN UkrSSR (Institute of Thermal Power Engineering, Academy of Sciences, UkrSSR), Laboratoriya khimicheskoy pererabotki topliv Instituta teploenergetiki AN UkrSSR (Ukrainian Academy of Sciences Laboratory for the Chemical Treatment of Fuels), Slantsekhimicheskiy kombinat "Kiviyli" ("Kiviyli" Shale-Chemical Combine), VNIIPS (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke slantsev—The All-Union Scientific Research Institute for Shale Processing), Institut nefti AN SSSR (Petroleum Institute, Academy of Sciences, USSR), Institut energetiki i khimii Vostochno-Sibirskogo filiala AN SSSR

(Power and Chemistry Institute, East Siberian Branch of the Academy of Sciences, USSR), TsIATIM (Tsentral'nyy nauchno-issledovatel'skiy institut aviatsionnykh topliv i masel — Central Scientific Research Institute of Aviation Fuels and Lubricants), GIAP (Gosudarstvennyy institut azotnoy promyshlennosti — State Institute of the Nitrogen Industry), Saratovskiy gosudarstvennyy institut imeni, N. G. Chernyshevskogo (Saratov State University imeni, N. G. Chernyshevskiy), Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza (All-Union Scientific Research Institute of Natural Gas), Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva (All-Union Scientific Research Institute of Petroleum and Gas Refining and Synthetic Liquid Fuel Production), VTI (Vsesoyuznyy teplotekhnicheskiy institut im. F. Dzerzhinskogo — All-Union Heat Engineering Institute im. F. Dzerzhinskiy), and MEI (Moskovskiy energeticheskiy institut im. Molotov — Moscow Institute of Energetics im. Molotov).

TABLE OF CONTENTS:

Field 5

There are 14 references of which 9 are Soviet and 5 are English. Reference is made to the following institutions which assisted in the study of raw material for semi-coking: Irkutskiy gosudarstvennyy universitet (Irkutsk State University), Ural'skiy politekhnicheskiy institut (Ural Politechnic Institute), Institut organicheskoy Khimii Akademii nauk SSSR (Institute of Organic Chemistry, Academy of Sciences, USSR).

Lanin, V.A. (IGI AN SSSR) (Deceased). Role and Significance of Scientific Research in the Effective Use of Low Temperature Tars 18

There are no references and no facilities are listed. The one personality referred to is S. R. Sergiyenko.

Larina, V. A. (Irkutskiy gosudarstvennyy universitet). Raw Material Base for Semi-coking in Eastern Siberia 23

There are 3 Soviet references. Twelve tables are included. The following personalities are mentioned: A. V. Kalabina, A. Ye. Favorskiy, and M. F. Shostakovskiy.

The following personalities are referred to: L. P. Ukhov, Docent, and his assistants A. A. Bashkirtseva and B. S. Gurevich; B. I. Timin, Docent, and his assistants Ye. S. Ekel' and Z. D. Kablova. Extensive work in thermal dissolution of fuel was done by M. K. D'yakova and A. V. Lozov. One table and one diagram are included. There are no references.

No personalities are referred to and there are no references. The only facility mentioned is the Energeticheskiy institut imeni, G. M. Krzhizhanovskogo AN SSSR (Power Institute imeni G. M. Krzhizhanovskiy, Academy of Sciences, SSSR). Eight diagrams are included.

The personalities referred to are: Ye. I. Kazakov who demonstrated the advantage of using a gaseous heat-carrier instead of a solid carrier; B. K. Klimov, Corresponding Member, Academy of Sciences, USSR, active in the establishment (1945) of the first power-chemical plant using gaseous and solid heat carriers at the Gusinoozersk Power Plant of the East Siberian Railroad; I. Ye. Kubynin and L. I. Girshman, Members of Komissiya Prezidiuma AN SSSR (Commission of the Presidium, Akademy of Sciences, USSR). The facilities mentioned are: Elektrostantsiya zavoda Libknekhte (the power plant of the K. Libknekht Plant at Dnepropetrovsk). DPRZ (Dnepropetrovskiy parovozoremontnyy zavod—Dnepropetrovsk Locomotive Repair Plant), Gusinoozerskaya elektrostantsiya (Gusinoozersk Power Plant), Sodovyy zavod Buryat-Mongol'skoy ASSR (Soda Plant in the Buryat-Mongol'skaya ASSR), IZTM (Irkutskiy savod tyazhelogo mashinostroyeniya—Irkutsk Heavy Machine-building Plant), Irkutskiy gorno-metallurgicheskiy institut (Irkutsk Mining and Metal-

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lurgical Institute), Zavod imeni Kuybysheva (Plant imeni Kuybyshev), and Institut energetiki i khimii Vostochno Sibirskogo filiala AN SSSR (Power and Chemistry Institute of the East Siberian Branch of the Academy of Sciences, USSR). Seven diagrams are included.

Al'tshuler, V. S. (IGI AN SSSR) and Shafir, G. S. (IGI AN SSSR).
Characteristics of Semi-coking of Solid Fuel Under Pressure 76

There are no references. Personalities mentioned are N. A. Orlova and N. D. Likhacheva of the Khar'kov Coal and Chemical Institute; A. D. Kokurina, O. A. Krylova, F. Fisher and his assistants who studied the effect of pressure on the thermal dissolution of fuels; B. K. Klimov, Ye. I. Kazakov, P. K. Kogerman, V. A. Lanin, G. Ye. Fridman, and V. P. Tsibasov who studied the effect of gas on semi-coking processes. Eight tables and two diagrams are included.

Kazakov, Ye. I. (IGI AN SSSR) and Malashenko, L. P. (IGI AN SSSR).
Dynamics of Separating Volatile Products in Semi-coking Fine-grained Shales in the Gas Flow 87

Card 7/20 There are 4 Soviet references. No personalities or facilities are mentioned. Six tables and 7 diagrams are included.

Nikolayev, G. A. (Slantsekhimicheskiy kombinat "Kiviyli"). Operating Shale-distilling Tunnel Furnaces of the "Kiviyli" Shale-chemical Combine 118

There are no references. The personalities mentioned are: M. S. Kulzhinskiy, engineer, and P. M. Sheloumov, chief designer. They are credited with producing the original design of tunnel type furnaces and introducing them in the shale industry. Facilities referred to include: Kokhtla-Yarve Slantsepererabatyvayushchiy zavod (Kokhtla-Yarve Shale Processing Plant), Kashpirskiy slantseperegonnyy zavod Kashpirsk Shale Distilling Plant), Slantsevyye predpriyatiya im. V. Kingiseppa (Shale Plant im. V. Kingisepp at Sallamyae in the Estonskaya SSR), Proyektnyy i nauchno-issledovatel'skiy institut mestnoy i slantsekhimicheskoy promyshlennosti (Planning and Scientific Research Institute of the Local and Shale-chemical Industry), Tallinskiy politekhnicheskiy institut (Tallin Polytechnic Institute), and Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Chemical Machine Building).

Feofilov, Ye. Ye. (VNIIPS). Production of Synthetic Liquid Fuel and of Chemical Products from Shale Tar 128

There are no references. The personalities mentioned include: V. F. Polozov

Chemical Treatment of Fuel (Cont.)

and M. V. Kobyl'skaya (both of the staff of VNIIPS); N. I. Zelenin and S. S. Serenov, who worked with the author in testing the components of shale tar; V. A. Lanin and his assistants of the IGI AN SSSR who studied the catalytic cracking of phenol-free shale tar fractions. Others were: A. P. Sivertsev; O. S. Kuratova; L. I. Gulyayeva; B. I. Ivanov; N. F. Sharonova; M. V. Pronina; G. N. Garmovskaya; and Kh. D. Raudsepp. The research workers, A. Ya. Drinberg and others of LKhTI (Leningradskiy khimiko-tekhnologicheskiy institut—Leningrad Institute of Chemical Technology) collaborated with staff members of the scientific research organizations of Estonskaya SSR. Other organizations mentioned were: Leningradskiy veterinarnyy institut (Leningrad Veterinary Institute); VIZR (Vsesoyuznyy nauchno-issledovatel'skiy institut zashchity rasteniy—All-Union Scientific Research Institute for the Protection of Plants); and TsIATIM (Tsentral'nyy nauchno-issledovatel'skiy institut aviamotorostroyeniya im. P. I. Baranova—Central Scientific Research Institute of Aircraft Engines im. P. I. Baranov).

Lanin, V. A. (IGI AN SSSR) (Deceased); Fridman, G. Ye. (IGI AN SSSR) and Peresleni, I. M. (IGI AN SSSR). Production of Motor Fuels from Generator Shale Tar 136

There are no references, personalities or facilities. Thirteen tables are included.

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There are no references, personalities or facilities. Two tables and four drawings are included.

The personalities mentioned are: V. I. Karzhev, Doctor of Sciences; N. S. Kurkova, A. R. Brun-Tsekhovoy, N. P. Volynskiy, and N. V. Sidorova. All of them are on the staff of the Petroleum Institute, Academy of Sciences, USSR. Ten tables and two drawings are included.

There are 5 references of which 4 are Soviet and one is German. The personalities mentioned include: M. S. Nemtsov, Ye. I. Prokopets, V. N. Khadzhinov, and I. I. Yeru. Eight tables are included.

There 18 Soviet references. The following personalities are mentioned: A. V. Lozovoy, Ye. I. Prokopets, M. S. Nemtsov, G. S. Landsberg, B. A. Kazanskiy, N. D. Zelinskiy, I. A. Musayen and G. D. Gal'pern. The facilities mentioned are VNIGI and IGI AN SSSR. Ten tables are included.

Lanin, V. A. (IGI AN SSSR); Pronina, M. V. (IGI AN SSSR); and Knyazeva, M. S. (IGI AN SSSR). Chemical Composition of Fractions of Liquid-phase Hydrogenated Cheremkhovo Lignite Tar 231

There are 7 references of which 3 are Soviet, one German, one English, one French, and one Dutch. The only personality mentioned is Ye. I. Tomina of VNIIPS (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke slantsev—All-Union Scientific Research Institute for Shale Processing). Twelve tables are included.

Gol'dshteyn, D. L. (TsIATIM); Agafonov, A. V. (TsIATIM); Rysakov, M. V. (TsIATIM); and Teregulov, D. Kh. (TsIATIM). Hydrofining of Sulfurous Petroleum Products to Obtain Commercial Motor Fuels. 245

The following personalities are mentioned: B. L. Moldavskiy, V. N. Pokorskiy, K. P. Lavrovskiy, P. V. Puchkov and A. V. Agafonov. Nine tables and 7 drawings are included.

D'yakova, M. K. (IGI AN SSSR). The Manufacture of Synthetic Liquid Fuel and Chemical Products by Means of Termal Solution of Solid Fuels 261

There are 7 Soviet References. No personalities or facilities are mentioned. Seven tables and 2 drawings are included.

D'yakova, M. K. (IGI AN SSSR); Vol'-Epshteyn, A. B. (IGI AN SSSR); and Sovetova, L. S. (IGI AN SSSR). Development of an Effective Method for Processing Coal and Shale Slurry Obtained During Hydrogenation and Thermal Dissolution. 276

There are 9 references of which 3 are Soviet, 4 English, one Japanese, and one German. No personalities or facilities are mentioned. Eight tables are included.

There are no references and no personalities. The following facilities are mentioned: VNIGI (Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo zhidkogo topliva i gaza — All-Union Scientific Research Institute of Synthetic Liquid Fuel and Gas), VTI (Vsesoyuznyy teplotekhnicheskiy institut imeni F. Dzerzhinskogo—All-Union Heat Engineering Institute im. F. Dzershinskiy), GIAP (Gosudarstvennyy institut azotnoy promyshlennosti — State Institute of the Nitrogen Industry), MEI (Moskovskiy energeticheskiy institut imeni Molotov — Moscow Institute of Power Engineering im. Molotov), MKhTI im. D. I. Mendeleyev (Moskovskiy khimiko-tekhnologicheskiy institut imeni. D. I. Mendeleyeva — Moscow Institute of Chemical Technology imeni D. I. Mendeleyev), IGI (Institut goryuchikh iskopayemykh — Institute of Mineral Fuels), and VNIIPS (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke slantsev — All-Union Scientific Research Institute for Shale Processing). Two tables are included.

There are no references. The only personality mentioned is N. V. Karkhov (GIAP). The facilities listed are the Stalinogorskiy khimkombinat

(Stalinogorsk Chemical Combine), GIAP (Gosudarstvennyy institut azotnoy promyshlennosti—State Institute of Nitrogen Industry), and Vsesoyuznyy nauch-issledovatel'skiy institut iskusstvennogo zhidkogo topliva i gaza (All-Union Scientific Research Institute of Synthetic Liquid Fuel and Gas). One table and five drawings are included.

Lebedev, V. V. (IGI AN SSSR). Continuous Metal-Vapor Process for Manufacturing Hydrogen 320

One table and 13 drawings are included, and there is one Soviet reference. No personalities or facilities are mentioned.

Kashirskiy, V. G. (Saratovskiy gosudarstvennyy universitet im. N. G. Chernyshevskiy). Investigation of the Thermal Decomposition of "Obshchiy Syrt" Pulverized Shale in Vapor Flow 333

There are seven references, of which 5 are Soviet and 2 are English. Personalities mentioned include V. S. Petelina, N. B. Lobacheva, and V. D. Tsarev, who participated in the experimental part of the research, and V. S. Vasil'yev, Z. F. Chukhanov, M. D. Zalesskiy, and I. P.Nikhamov. Two tables are included.

There are 9 references of which 5 are Soviet, 3 English, and one German. Two drawings are included. No personalities are mentioned.

Leybush, A. G. (GIAP). Catalytic Conversion of Methane with Water Vapor, Oxygen, and Carbon Dioxide 372

There are no references. The personalities mentioned, all co-workers at GIAP, are: B. P. Kornilov, M. A. Shpolyanskiy, O. V. Uvarov, M. A. Lyudkovskaya, Ye. D. Shorina, and I. V. Shulyatikov. Three tables and five drawings are included.

Poluboyarinov, G. N. (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvannogo zhidkogo topliva). The Gasification of Donets Anthracites for Manufacturing Water Gas 383

There are 4 Soviet references. The facilities mentioned are GIAP, VNIGI, and Stalinogorskiy khimkombinat (the Stalinogorsk Chemical Combine). One table and four drawings are included.

There are 31 Soviet references. The personalities mentioned include the following co-workers of the author: V. V. Kamzolkin, Yu. B. Kryukov, Yu. B. Kagan, V. S. Smirnov, S. M. Loktev, Ya. B. Chertkov, L. I. Zvezdkina, M. I. Khotimskaya, and B. N. Dolgov. Institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova (Institute of Fine Chemical Technology imeni M. V. Lomonosov) is mentioned.

There are 22 references of which 17 are Soviet, 4 German, and one English. Five tables are included. No personalities are mentioned.

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SOV/81-59-7-24813

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Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 7, p 464 (USSR)

AUTHORS: Lozovoy, A.V., Senyavin, S.A.

TITLE: On the Relative Rates of Hydrogenation and Decomposition of Hydrocarbons Under the Conditions of Destructive Hydrogenation in the Presence of Sulfide Catalysts

PERIODICAL: V sb.: Khim. pererabotka topliva. Moscow, AS USSR, 1957, pp 180 - 194

ABSTRACT: Investigations of the relative rates of the hydrogenation of hydrocarbons with various types of double bonds (benzene ring (BR), condensed aromatic ring and isolated ethylene bond in naphthylenes) were carried out in an autoclave at 380 - 475°C, a pressure of 150 - 220 atm, in the presence of Mo and W sulfides. It was established that an increase in the methyl radicals in BR to five and the lengthening of the side chain to C_2 practically does not change the hydrogenation rate of BR in the presence of MoS_2. The appearance of a condensed naphthene cycle at BR (the formation of tetralin) increases

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the hydrogenation rate of BR nearly three times. The methyl substitutes at the double bond exert an inhibiting influence in the hydrogenation of naphthylenes.1 A difference in the hydrogenation rate of hydrocarbons with various types of double bonds was noted: 1-methylcyclohexene-3 is hydrogenated 180 times and naphthalene 14 times more quickly than benzene (I). In the case of hydrogenation over WS_2 an increase in the number of methyl radicals in a one-ring aromatic nucleus to five leads to an increase in the hydrogenation rate of 1.3 times per each CH_3-group; the introduction of a sixth CH_3-group sharply decreases the hydrogenation rate. As to its effect on the transition from I to tetralin, WS_2 is equal to MoS_2. The addition of hydrogen to two- and three-ring aromatic hydrocarbons takes place tens of times more rapidly than to one-ring hydrocarbons; the transition to 4 rings (chrysene) sharply decreases the rate of hydrogenation. The kinetic order of the reaction of hydrogenation of I with hydrocarbon is the zero one and with hydrogen is the first (over MoS_2); over WS_2 it is 1.5 and 0.5, respectively. In an analogous

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order the temperature coefficients of the hydrogenation rate of I are 1.22 and 1.30; the apparent activation energy E_s = 19,250 and 25,370 cal/mole. The conclusion was drawn that MoS_2 is a more active hydrogenation catalyst, but WS_2 is more sensitive to a change in the temperature, concentration of reagents and the structure of hydrocarbons.

N. Kel'tsev

Card 3/3

LOZOVOY, A.V.; KRICHKO, A.A.; MIKHEYEVA, R.A.

Hydrogenation of enriched Baltic Sea region shales under low pressure. Khim.i tekh.topl.i masel no.5:32-40 My '57. (MIRA 10:7)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Baltic Sea region--Shales) (Hydrogenation)

LOZOVOY, A.V.

Safe operation of gas networks and installations. Bezop.truda v prom. 2 no.9:20 S '58. (MIRA 11:9)

1.Glavnyy inzhener kontory Odessgaz.
(Gas distribution--Safety measures)

BLONSKAYA, A.I.; LOZOVOY, A.V.; MUSELEVICH, D.L.; RAVIKOVICH, T.M.; TITOVA, T.A.

Two-stage layout for the hydrogenation manufacture of intermediate chemical products, motor fuels, and gases from tars of Cheremkhovo coals. Trudy IGI 9:5-14 '59. (MIRA 13:1)
(Fuel) (Coal tar)

BLONSKAYA, A.I.; LOZOVOY, A.V.

Lower phenols content of the liquid-phase tar hydrogenate of Cheremkhovo coals. Trudy IGI 9:15-25 '59. (MIRA 13:1)
(Phenols) (Coal tar)

KRICHKO, A.A.; LOZOVOY, A.V.; PCHELINA, D.P.

New technological layout for hydrogenation processing of semicoke coal tars under moderate pressure. Trudy IGI 9:37-49 '59. (MIRA 13:1)

(Coal tar) (Hydrogenation)

BLONSKAYA, A.I.; LOZOVOY, A.V.; GAVRILOVA, A.Ye.; GONIKBERG, M.G.; KAZANSKIY, B.A.

Investigating hydrogenation of lean coals and anthracites with a hydrogen pressure greater than 1000 atm. Trudy IGI 9: 50-61 '59. (MIRA 13:1)
(Coal liquefaction)

KRICHKO, A.A.; KONYASHINA, R.A.; LOZOVOY, A.V.

Hydrogenation under moderate pressure of cleaned Estonian oil shales. Trudy IGI 9:68-85 '59. (MIRA 13:1)
(Oil shales) (Hydrogenation)

ZAKHARENKO, V.A.; LOZOVOY, A.V.

Comparative activity of technical catalysts of the vapor-phase hydrogenation of fuel. Part 2. Trudy IGI 9:96-106 '59. (MIRA 13:1)

(Hydrogenation) (Catalysts)

LOZOVOY, A.V.; SENYAVIN, S.A.; SOVETOVA, L.S.

Transformations of some hydrocarbons during hydrogenation in the presence of aluminosilicate catalysts. Trudy IGI 9:122-128 '59. (MIRA 13:1)

(Hydrocarbons) (Hydrogenation)

LOZOVOY, A.V.

Relative rates of the reduction of alcohols under pressure of hydrogen. Trudy IGI 9:148-153 '59. (MIRA 13:1)
(Alcohols) (Reduction, Chemical)

KLIMENKO, A.A.; LOZOVOY, A.V.; PCHELINA, D.P.; SOVETOVA, L.S.; SHAGINA, L.N.

Chemical products from nonpyrolyzed tar obtained by continuous coking of Kuznetsk coal. Izv.Sib.otd.AN SSSR no.12:88-95 '60. (MIRA 14:2)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Coal-tar products)

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SOV/80-33-1-35/49

AUTHORS: Lozovoy, A. V., Tsirlina, R. N.

TITLE: Conversion of Some Hydrocarbons on Hydrogenation in the Presence of Alumina-Molybdena Catalyst

PERICODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 216-222 (USSR)

ABSTRACT: The chemistry of conversions of 2,2,4-trimethylpentane a mixture of C_{13}-C_{17} n-paraffins, ethylcyclohexane, ethylbenzene, tetralin, decalin, by destructive hydrogenation at 75-300 atm and at 510° in the presence of $MoO_3+Al_2O_3$ was investigated for the first time. The character of destruction in all cases depends on hydrogen concentration. The conversion of 2,2,4-trimethylpentane under above conditions is given by (A). (Hydrogen = 0.9-0.7 g/ml hour.) The conversion of ethylbenzene and ethylcyclohexane is shown in (B).

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Conversion of Some Hydrocarbons on Hydrogenation in the Presence of Alumina-Molybdena Catalyst

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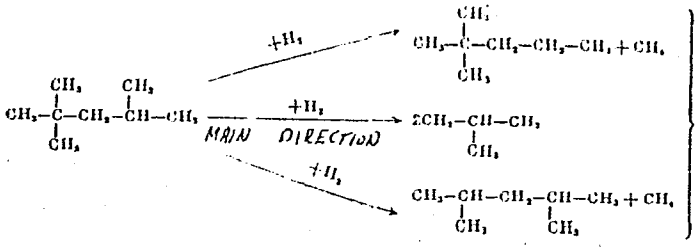

(Hydrogen = 0.9 g/ml hour.) The conversion of decalin and tetralin is shown in (C). (Hydrogen = 0.9 g/ml hour.) The degree of conversion at 300 atm is of the following order: tetralin > C_{13}-C_{17}-n-paraffins > Isooctane > ethylbenzene > ethylcyclohexane > decalin; at 75 atm: C_{13}-C_{17}-n-paraffins > isooctane > tetralin > ethylcyclohexane > decalin > ethylbenzene. There are 3 tables; and 10 references, 4 Soviet, 2 US, 2 UK, 1 Japanese, 1 French. The 4 U. S. and U. K. references are: Hall, Fuel, 12, 76-93 (1933); V. N. Ipat'yev, J. Am. Chem. Soc., 55, 3696 (1933); H. Slotboom,

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Conversion of Some Hydrocarbons on Hydrogenation in the Presence of Alumina-Molybdena Catalyst

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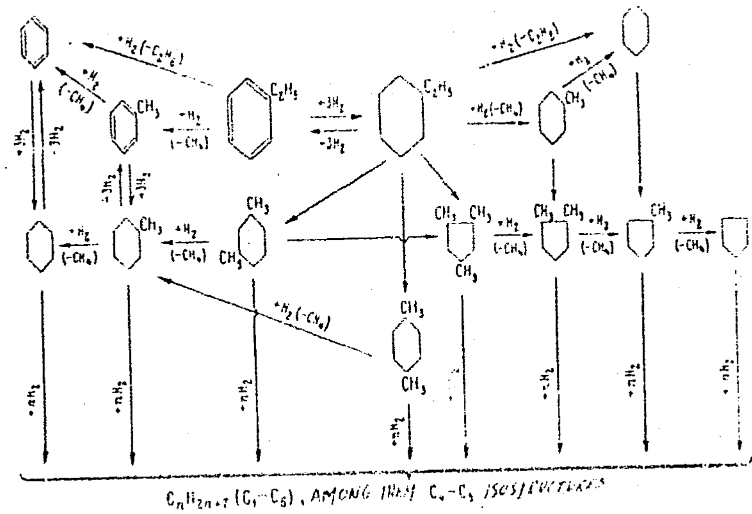

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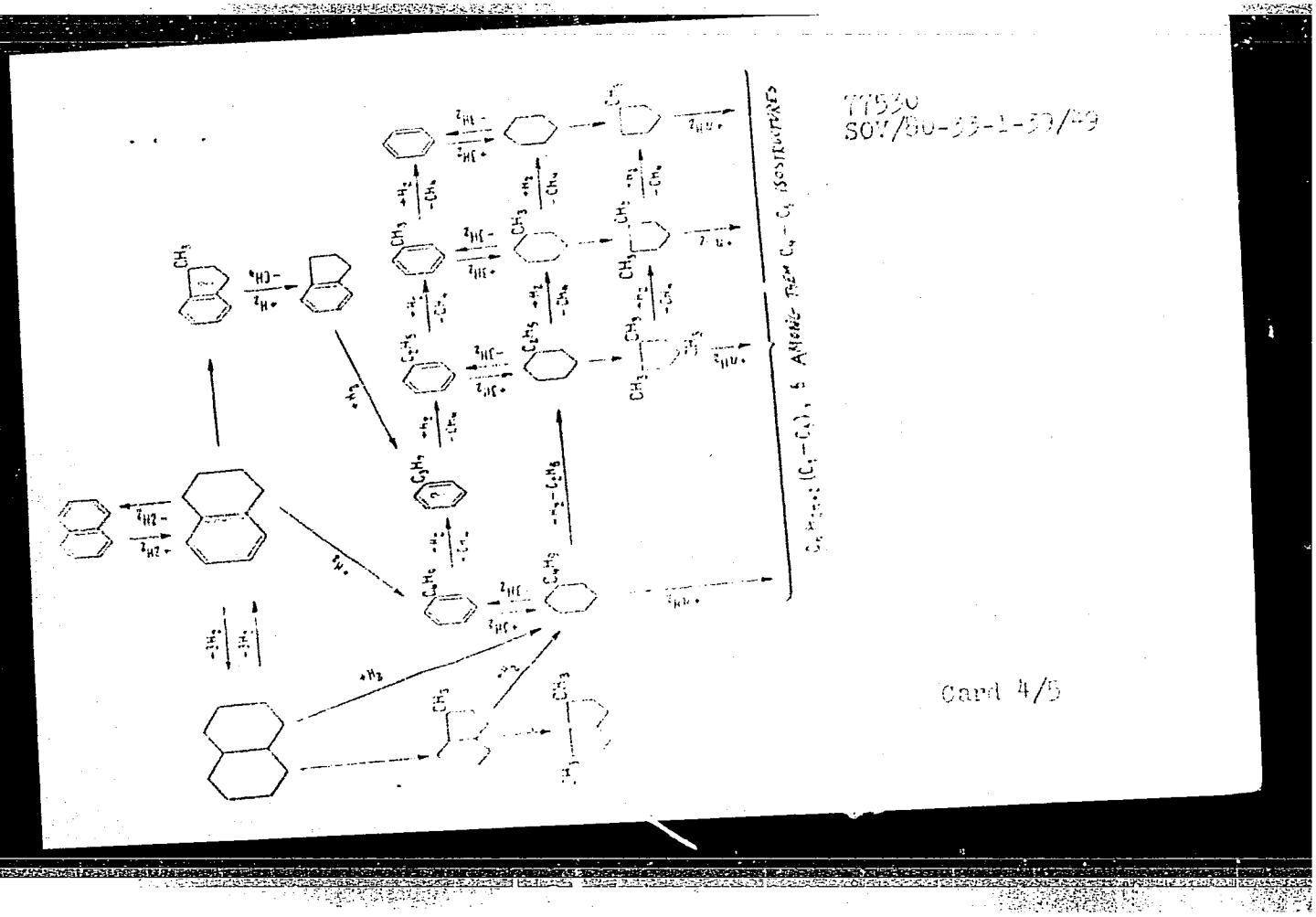

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Conversion of Some Hydrocarbons on Hydrogenation in the Presence of Alumina-Molybdena Catalyst

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Petroleum, 28, 37, 8 (1932); C. Cawley, Fuel, 11, 217 (1932); 12, 39 (1933).

ASSOCIATION: Institute of Fossil Fuels, Academy of Sciences, USSR (Institut goryuchikh iskopaemykh AN SSSR)

SUBMITTED: December 7, 1958

Card 5/5

S/080/60/033/04/33/045

AUTHORS: Lozovoy, A.V., Senyavin, S.A., Sovetova, L.S.

TITLE: On the Transformations of Benzene, Cyclohexane and Isooctane in the Case of Destructive Hydrogenation in the Presence of a Catalyst With Alumosilicate Base

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 4, pp 947 - 953

TEXT: This is an investigation of the chemism of destructive hydrogenation of benzene, cyclohexane and isooctance in the presence of a W-Cr-Zn-S-F-alumosilicate catalyst at 510°C and a pressure of 300 atm. It has been established that the transformation of benzene takes place by hydrogenation (about 37% of benzene reacted) with subsequent isomerization of cyclohexane to methylcyclopentane, the destruction of cyclohexane, methylcyclopentane and other saturated hydrocarbons with a number of carbon atoms in the molecule below six, and also in a small degree by alkylation of benzene by methyl and ethyl radicals. It was found that the destruction hydrogenation of cyclohexane (depth of transformation 48.4%) includes its isomerization into methylcyclopentane, the destruction of naphthene rings with the formation of paraffin C_1-C_6 hydrocarbons (in which case among the C_4-C_6 hydrocarbons the isoparaffin hydrocarbons prevail) and a weakly

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On the Transformations of Benzene, Cyclohexane and Isooctane in the Case of Destructive Hydrogenation in the Presence of a Catalyst With Alumosilicate Base

developed reaction of cyclohexane alkylation. The destructive hydrogenation of isooctane proceeds very intensively (73% transformed), the main product being isobutane (86 weight % of the isooctane transformed; 8.4% are propane and 4.4% n-butane). Under the conditions of destructive hydrogenation one of the C-C bonds of a quaternary carbon atom of isooctane is very weak. The hydrocarbons investigated are arranged in the following series according to the transformation rate: isooctane > cyclohexane > benzene. Under the conditions of high-temperature destructive hydrogenation at a pressure of 300 atm the catalyst investigated activates the reactions of destructive hydrogenation of isoparaffin hydrocarbons, the isomerization of the six-membered naphthene ring to a five-membered one and the decomposition of the naphthene rings. The reaction of hydrogenation of a benzene ring is activated moderately; the alkylation of benzene and cyclohexane weakly. The reactions of dehydrogenation, cyclization and aromatization of naphthenes and isonaphthenes are very weakly developed. There are: 3 tables and 10 references, 8 of which are Soviet and 2 English

ASSOCIATION: Institut goryuchikh iskopayemykh AN SSSR (Institute of Mineral Fuels of the AS USSR)

SUBMITTED: September 11, 1959

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