S/109/62/007/011/005/012
D266/D306

Theory of transverse ...

shown to be in good agreement with Jahn's and Herman's experimental results. The author thanks V.L. Ivanov for advice. There are 6 figures.

SUBMITTED: November 13, 1961

Card 2/2

S/109/62/007/011/006/012
D256/D308

9.4230

AUTHOR: Petin, G.P.

TITLE: Investigation of a transverse current tube employing a flat helix

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 11, 1962, 1948 - 1952

TEXT: The purpose of the paper is to analyze theoretically the behavior of a transverse current tube first described by D.A. Dunn et al. (Proc. IRE, 1956, v. 44, no. 7, 879). The electron beam passes over the surface of a flat helix. The circuit is skewed, i.e. there is an angle α between the axis (direction of the beam) and the turns. The analysis is based partly on the known properties of the propagation of slow waves over a developed tape helix and partly on the equations of a companion paper by the same author (Radiotekhnika i elektronika, v. 7, no. 11, 1962, 1941). Both magnetic and electrostatic focusing are treated (the latter is solved only in the approximation

Card 1/2

without space charge fields) and it is shown that the interaction is of the same type in both cases but appreciably larger for electrostatic focusing. It is also shown that oscillation on the forward wave is possible. Since the dispersion of the fundamental forward wave of a helix is much less than that of the backward space harmonics the frequency of oscillation is less dependent on the d.c. voltage. The output power can also be expected to be a slowly varying function of frequency on account of the smaller change in voltage and of the saturation properties of the tube. The stability of the transverse current backward wave amplifier is better than that of the conventional one but care must be exercised to prevent spurious oscillations on the forward wave. The author claims that his method could be successfully applied to the analysis of other slow wave - transverse current interactions provided that the role of the non-synchronous space harmonics can be neglected. There are 5 figures.

SUBMITTED: December 14, 1961

PETIN, G.P.

Analysis of a self-matched solution for a transverse-current tube. Radiotekh. i elektron. 9 no.6:1086-1087 Je '64.
(MIRA 17:7)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

L 36501-65 EPA(w)-2/EWT(l)/EEC(t) Pab-10

ACCESSION NR: AP5007017 S/0109/65/010/003/0429/0434

AUTHOR: Petin, G. P.

32
B

TITLE: Synchronous waves of an electron beam 21

SOURCE: Radiotekhnika i elektronika, v. 10, no. 3, 1965, 429-434

TOPIC TAGS: electron beam, synchronous wave

ABSTRACT: Synchronous waves of velocity, displacement, and space charge which propagate in a homogeneous electron beam along a certain direction with or without a permanent directed magnetic field are theoretically considered. The magnetic field gives rise to cyclotron waves polarized in the plane perpendicular to the direction of the field; in this case, the velocity synchronous waves can be polarized only along the magnetic field. The introduction of free-running waves (their mathematical formula) enabled the author to use Euler variables in solving the problem in an approximation of the specified field method and the small signal

Card 1/2

L 36501-65

ACCESSION NR: AP5007087

neglecting the electrostatic interaction between electrons. Two examples -- a TW tube and a transverse-field klystron -- are given to illustrate the applications of the method. Orig. art. has: 28 formulas.

ASSOCIATION: none

SUBMITTED: 14Jan64 ENCL: 00 SUB CODE: EC

NO REF SOV: 004 OTHER: 004

Card 2/2

BOCHEK, Aleksandr Pavlovich; GRIGOR'YEV, Vissarion Vissarionovich; DUBININ, Aleksandr Iosifovich; MEDVEDEV, Vasiliy Fedorovich; PETROV, Mikhail Kliment'yevich [deceased]; YANKOVICH, Vladimir Nikolayevich; PETIN, M.I., red.; TIKHONOVA, Ye.A., tekhn.red.

[Marine practice] Morskaia praktika. Pod obshchei red.V.N. IAnkovicha. Moskva, Izd-vo "Morskoi transport." Pt.2. 1959. 418 p. (MIRA 13:1)

(Navigation)

GOLOSEYEV, Anatoliy Dmitriyevich; PETROV, Aleksey Ivanovich; PETIN, M.I., red.; TIKHONOVA, Ye.A., tekhn.red.

[Handbook for pilots] Spravochnik lotsmana. Moskva, Izd-vo "Morskoi transport," 1960. 163 p. (MIRA 14:1)
(Pilots and pilotage)

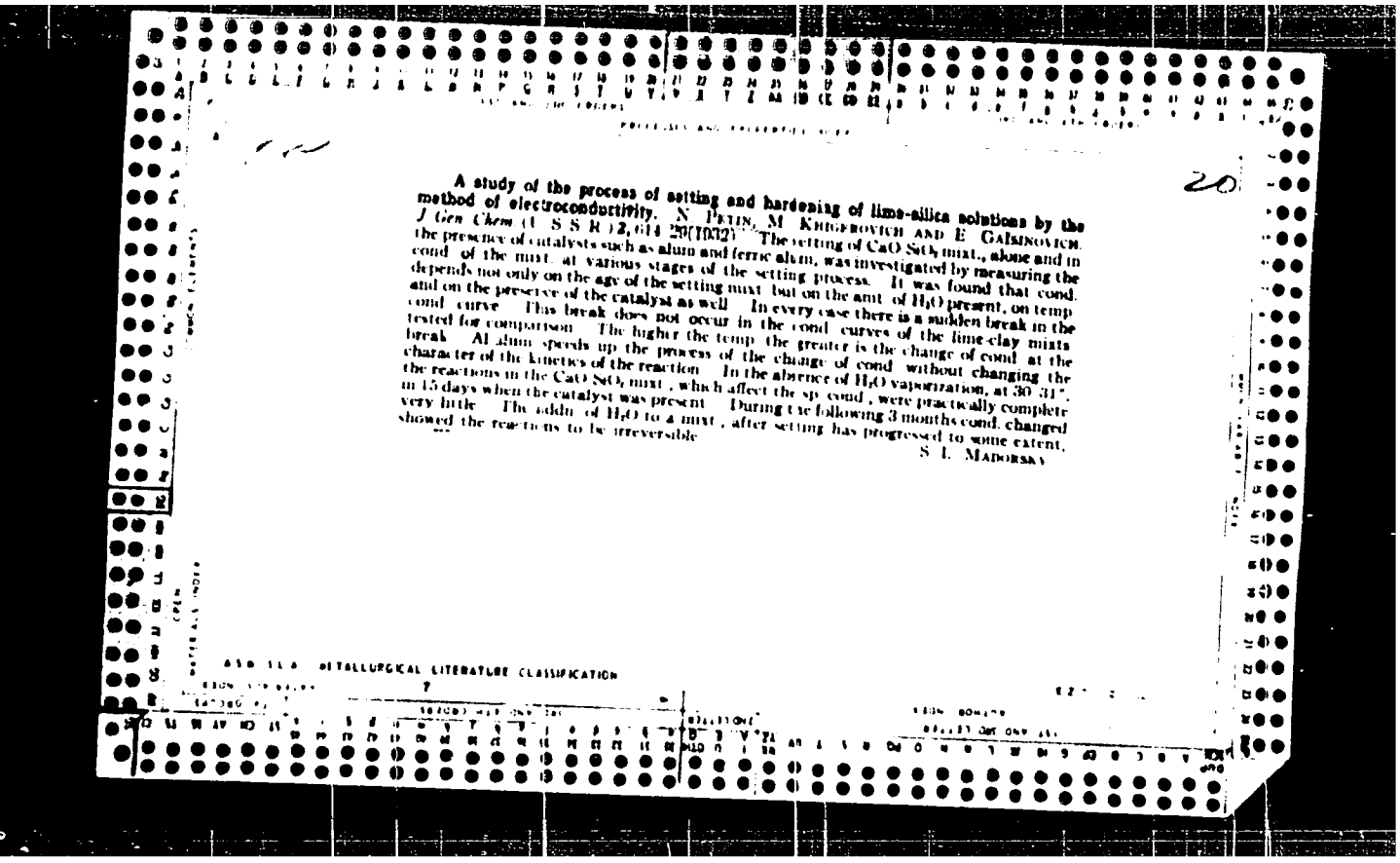
GAMOV, Anatoliy Grigor'yevich; AVERBAKH, Nikolay Vladimirovich; MATSYUTO, A.F., spetsred.; PETIN, M.I., red.; LAVRENOVA, N.B., tekhn.red.

[Location by radar in navigation] Ispol'zovanie radiolokatsii v sudovozhdenii. Moskva, Izd-vo "Morskoi transport," 1960. 232 p. (MIRA 14:2)
(Radar in navigation)

GRIGOR'YEV, Nikolay Leonidovich; PETIN, M.I., red.; TIKHONOVA, Ye.A., tekhn.red.

[Hydraulics] Gidravlika. Moskva, Izd-vo "Morskoi transport," 1958. 319 p. (MIRA 12:2)

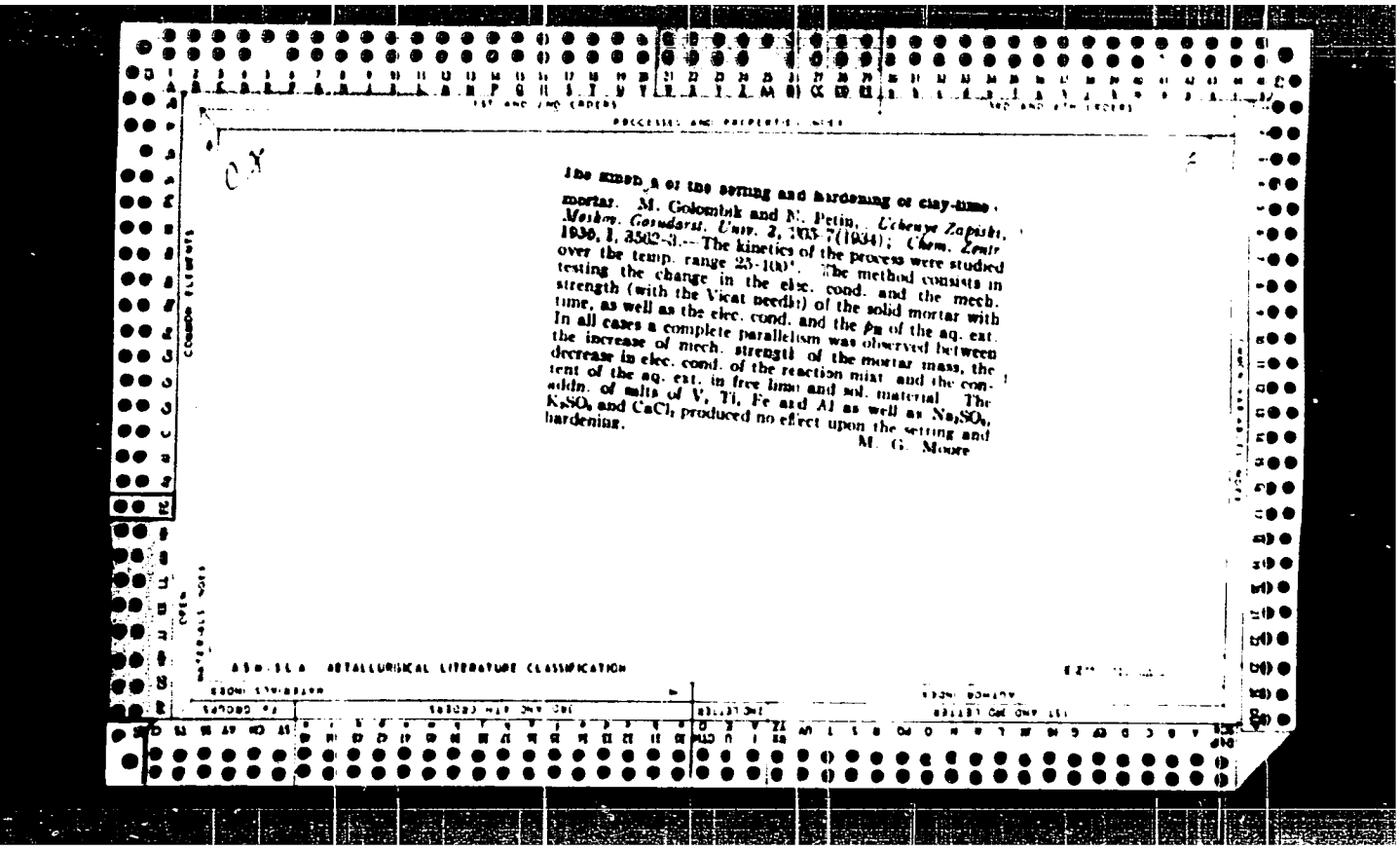
(Hydraulics)



A study of the process of setting and hardening of lime-silica solutions by the method of electroconductivity. N. PETIN, M. KHIGEROVICH AND E. GALSINOVICH. *J. Gen. Chem.* (U.S.S.R.) 2, 614-29(1932). The setting of CaO-SiO$_2$ mixt., alone and in the presence of catalysts such as alum and ferric alum, was investigated by measuring the cond. of the mixt. at various stages of the setting process. It was found that cond. depends not only on the age of the setting mixt. but on the amt. of H_2O present, on temp. and on the presence of the catalyst as well. In every case there is a sudden break in the cond. curve. This break does not occur in the cond. curves of the lime-clay mixts. tested for comparison. The higher the temp. the greater is the change of cond. at the break. Alum speeds up the process of the change of cond. without changing the character of the kinetics of the reaction. In the absence of H_2O vaporization, at 30-31°, the reactions in the CaO-SiO$_2$ mixt., which affect the sp. cond., were practically complete in 15 days when the catalyst was present. During the following 3 months cond. changed very little. The addn. of H_2O to a mixt., after setting has progressed to some extent, showed the reactions to be irreversible.

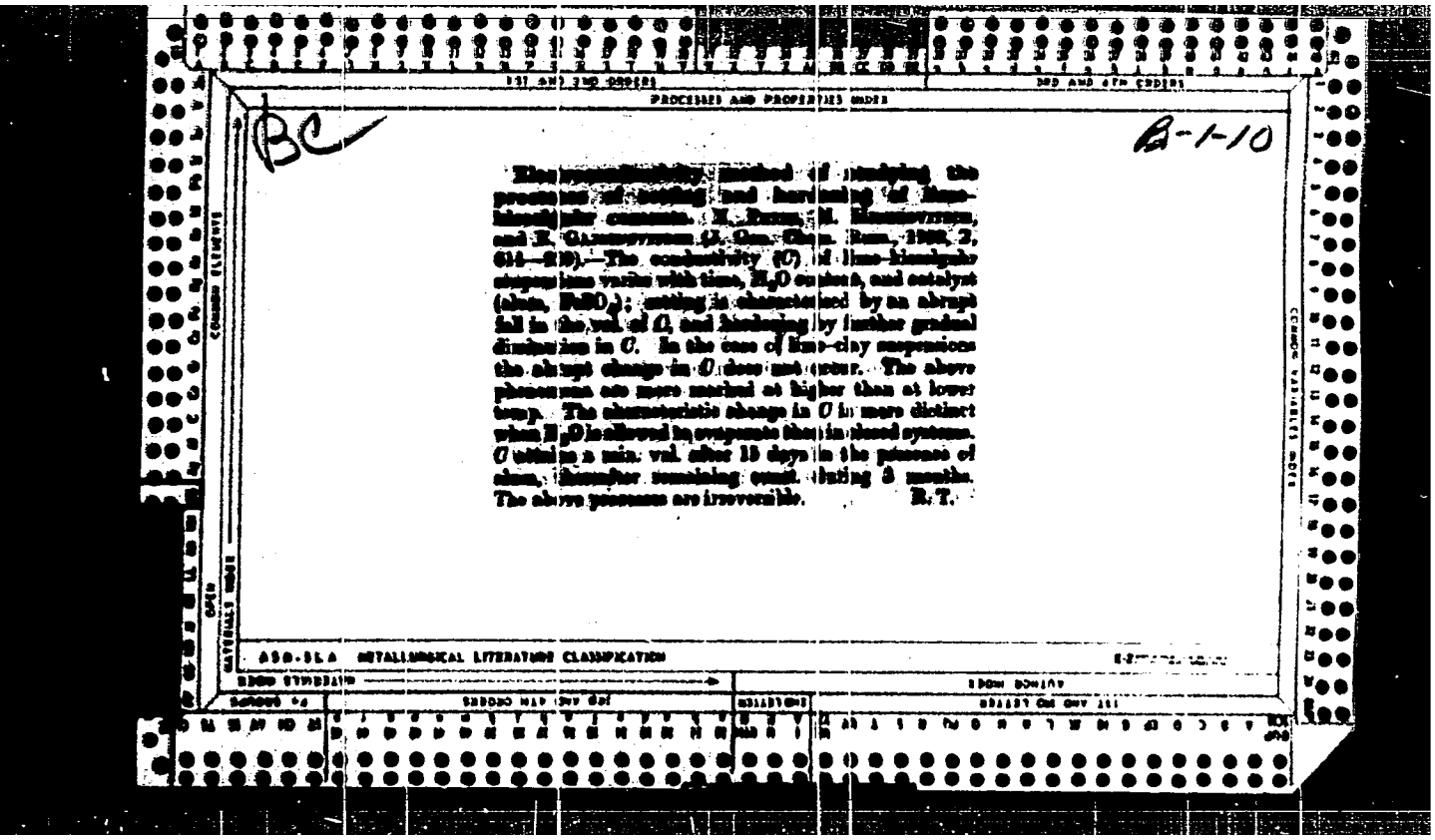
S. L. MADORSKY

A50 11-A METALLURGICAL LITERATURE CLASSIFICATION



The speed of the setting and hardening of clay-lime mortar. M. Golomšik and N. Petin. *Učenye Zapiski, Moskov. Gosudarst. Univ.* 2, 303-7(1934); *Chem. Zentr.* 1936, I, 3502-3.—The kinetics of the process were studied over the temp. range 25-100°. The method consists in testing the change in the elec. cond. and the mech. strength (with the Vicat needle) of the solid mortar with time, as well as the elec. cond. and the *p*H of the aq. ext. In all cases a complete parallelism was observed between the increase of mech. strength of the mortar mass, the decrease in elec. cond. of the reaction mixt. and the content of the aq. ext. in free lime and sol. material. The addn. of salts of V, Ti, Fe and Al as well as Na_2SO_4, K_2SO_4 and $CaCl_2$ produced no effect upon the setting and hardening.

M. G. Moore



BC

B-1-10

PROCESSES AND PROPERTIES INDEX

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

PETIN, N.F.

AUTHOR: None given 84-58-1-32/32

TITLE: New Books (Novyye knigi)

PERIODICAL: Grazhdanskaya aviatsiya, 1958, Nr 1, p 40 (USSR)

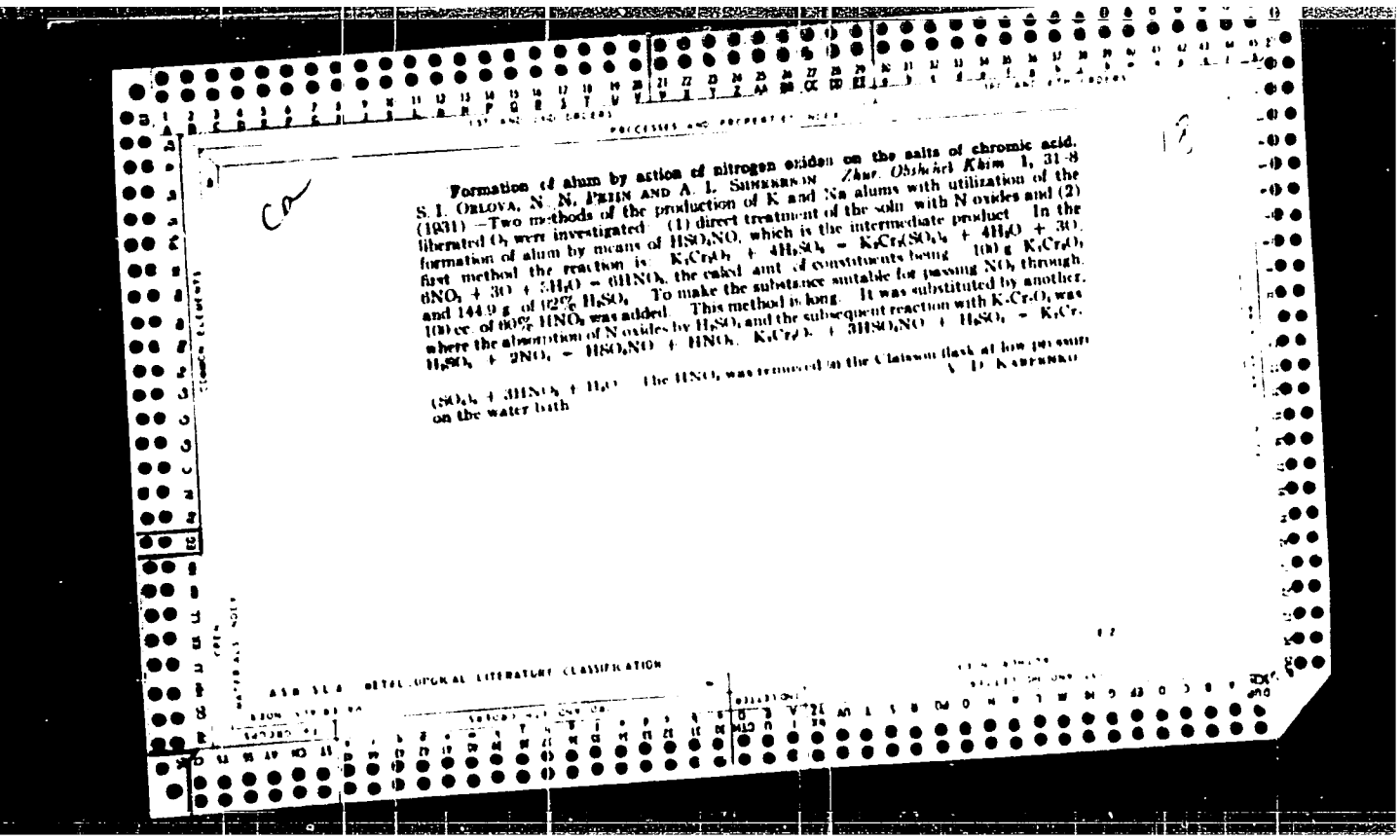
ABSTRACT: Five short reviews of the following books:
Gil'yardi, N., Nad morem studenym (Over Icy Seas). A story about pilot Safonov. Voyenizdat, 1957, 304 pp.
Gorin, B. Sh., Indikatory dal'nosti (Range Indicators) (from the series "Radar Engineering"). Voyenizdat, 1957, 87 pp.
Molokanov, G. F., Uchet vetra v dal'nikh poletakh (Wind Computation in long-Distance Flights). Voyenizdat, 1957, 174 pp.
Pavskiy, A. G., Radiodeviatsiya (Radio Deviation). A manual for navigators. Voyenizdat, 1957, 74 pp.
Pasha, P. S.; Petin, N. F.; Shcheglov, I. V., Ispol'zovaniye aerosnimkov (Utilization of Aerial Photographs). A textbook. Voyenizdat, 1957, 254 pp.

AVAILABLE: Library of Congress

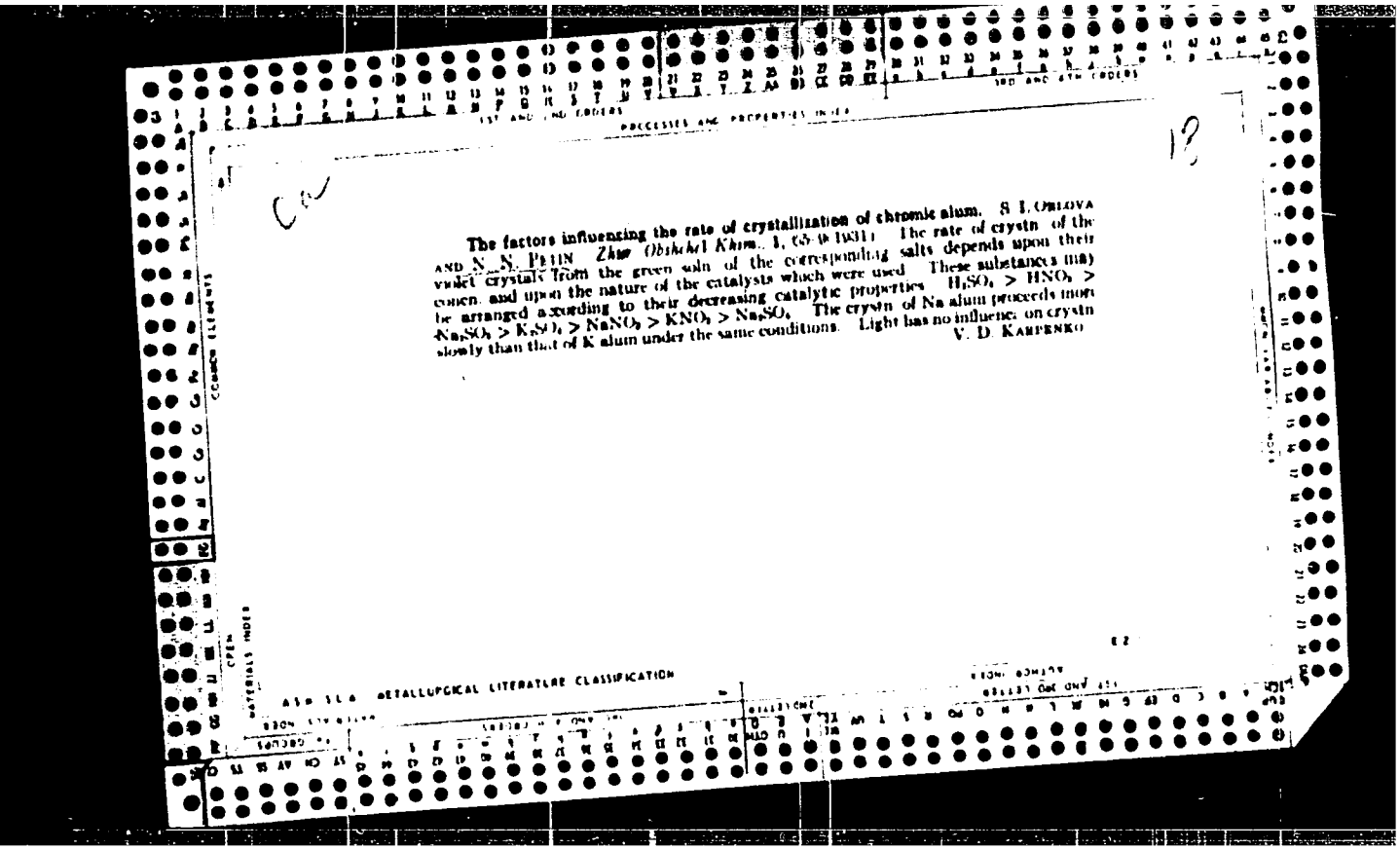
Card 1/1 1. Literature - USSR 2. Aeronautics bibliography - USSR

PASHA, P.S., polkovnik; PETIN, N.F., podpolkovnik; SHCHEGLOV, I.V., polkovnik; KUDRYAVTSEV, M.K., general-leytenant tekhnicheskikh voysk, red.; DUNACHEV, M.P., podpolkovnik, red.; SOLOMONIK, R.L., tekhn.red.

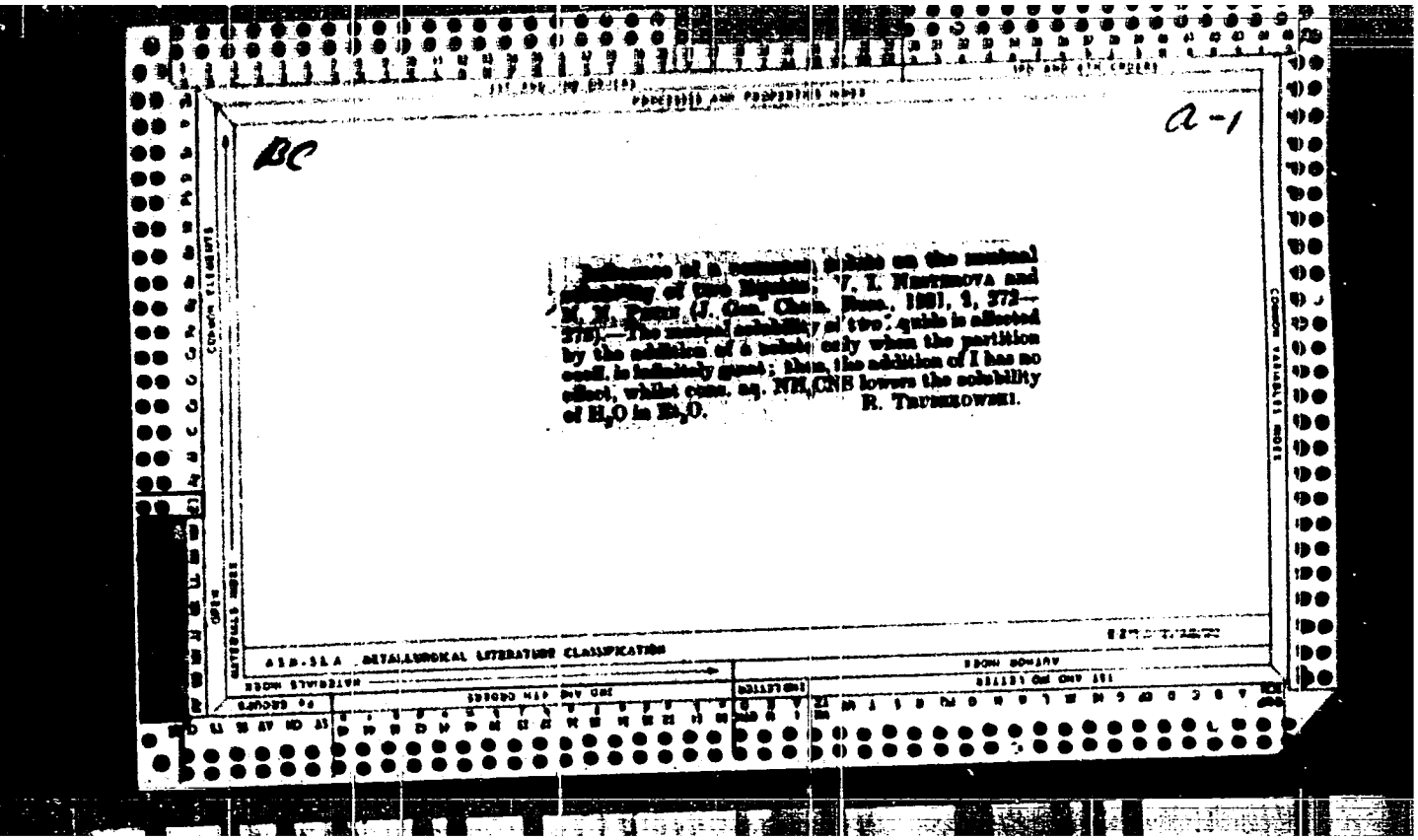
[Use of aerial photographs for military purposes, a textbook] Ispol'zovanie aerosnimkov v voiskakh; uchebnoe posobie. Moskva, Voen.izd-vo M-va obor.SSSR, 1957. 253 p. (MIRA 10:12)
(Photography, Aerial) (Photographic interpretation (Military science))



Formation of alum by action of nitrogen oxides on the salts of chromic acid. S. I. ORLOVA, N. N. PRIIN AND A. L. SHMERLING *Zhur. Obshchei Khim.* 1, 31-8 (1931).—Two methods of the production of K and Na alums with utilization of the liberated O_2 were investigated. (1) direct treatment of the soln. with N oxides and (2) formation of alum by means of HSO_3NO_2, which is the intermediate product. In the first method the reaction is: $K_2Cr_2O_7 + 4H_2SO_4 = K_2Cr(SO_4)_2 + 4H_2O + 3O$, $6NO_2 + 3O + 3H_2O = 6HNO_3$, the calcd. amt. of constituents being 100 g. $K_2Cr_2O_7$ and 144.9 g. of 92% H_2SO_4. To make the substance suitable for passing NO_2 through, 100 cc. of 80% HNO_3 was added. This method is long. It was substituted by another, where the absorption of N oxides by H_2SO_4 and the subsequent reaction with $K_2Cr_2O_7$ was: $H_2SO_4 + 2NO_2 = HSO_3NO + HNO_3$. $K_2Cr_2O_7 + 3HSO_3NO + H_2SO_4 = K_2Cr_2(SO_4)_4 + 3HNO_3 + H_2O$. The HNO_3 was removed in the Claisen flask at low pressure on the water bath. L. D. KAMENSKII



The factors influencing the rate of crystallization of chromic alum. S. I. Orlova and N. N. Petin. *Zhur. Obshchei Khim.*, 1, 65-9 (1931). The rate of crystn. of the violet crystals from the green soln. of the corresponding salts depends upon their concn. and upon the nature of the catalysts which were used. These substances may be arranged according to their decreasing catalytic properties $H_2SO_4 > HNO_3 > NaHSO_4 > K_2SO_4 > NaNO_3 > KNO_3 > Na_2SO_4$. The crystn. of Na alum proceeds more slowly than that of K alum under the same conditions. Light has no influence on crystn. V. D. Kamenko

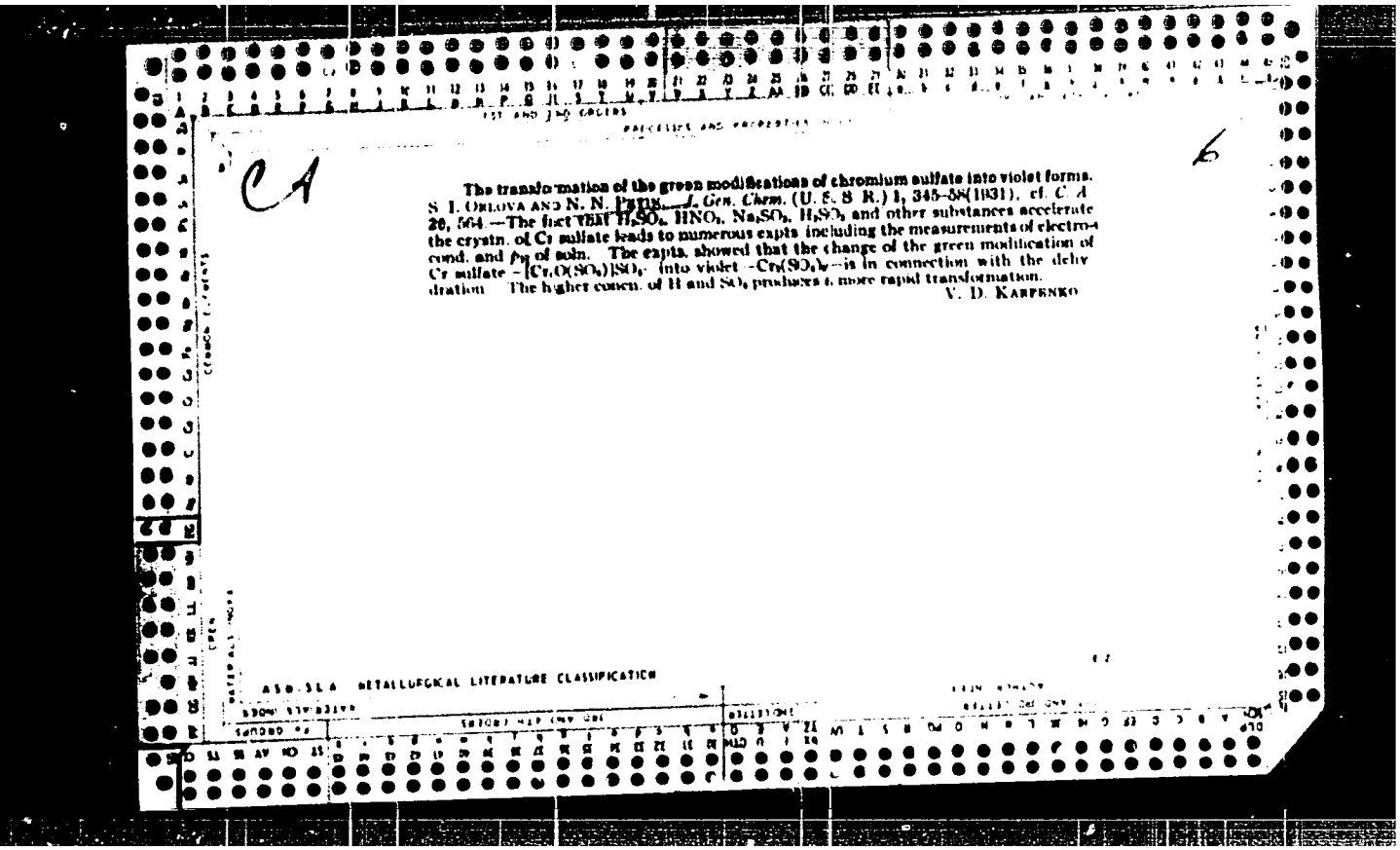


BC

a-1

[redacted] on the mutual solubility of two liquids. I. I. NIKITINOVA and K. M. POPOV (J. Gen. Chem. Russ., 1931, 1, 272—278).—The mutual solubility of two liquids is affected by the addition of a substance only when the partition coeff. is sufficiently great; thus, the addition of I has no effect, whilst cases, eg., NH_4CNS lowers the solubility of H_2O in Et_2O.

R. TRUSZKOWSKI.



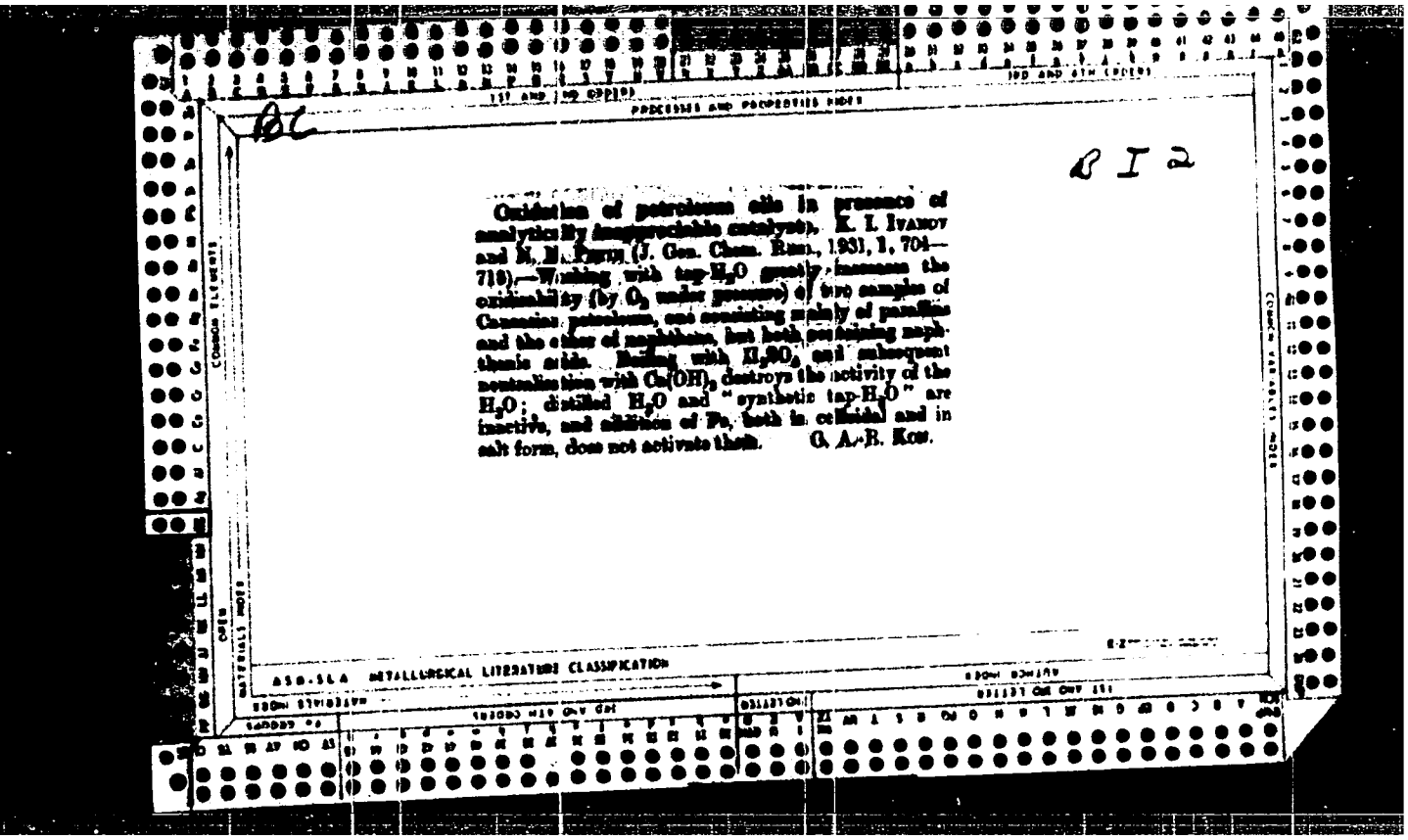
CA

6

The transformation of the green modifications of chromium sulfate into violet forms. S. I. ORLOVA AND N. N. PAUS. *J. Gen. Chem.* (U. S. S. R.) 1, 345–58(1931). cf. *C. A.* 26, 564.—The fact that H_2SO_4, HNO_3, Na_2SO_3, H_2SO_3 and other substances accelerate the crystn. of Cr sulfate leads to numerous expts including the measurements of electro-cond. and p_H of soln. The expts. showed that the change of the green modification of Cr sulfate – $[Cr_2O(SO_4)]SO_4$ – into violet – $Cr_2(SO_4)_3$ – is in connection with the dehydration. The higher concn. of H and SO_4 produces a more rapid transformation.

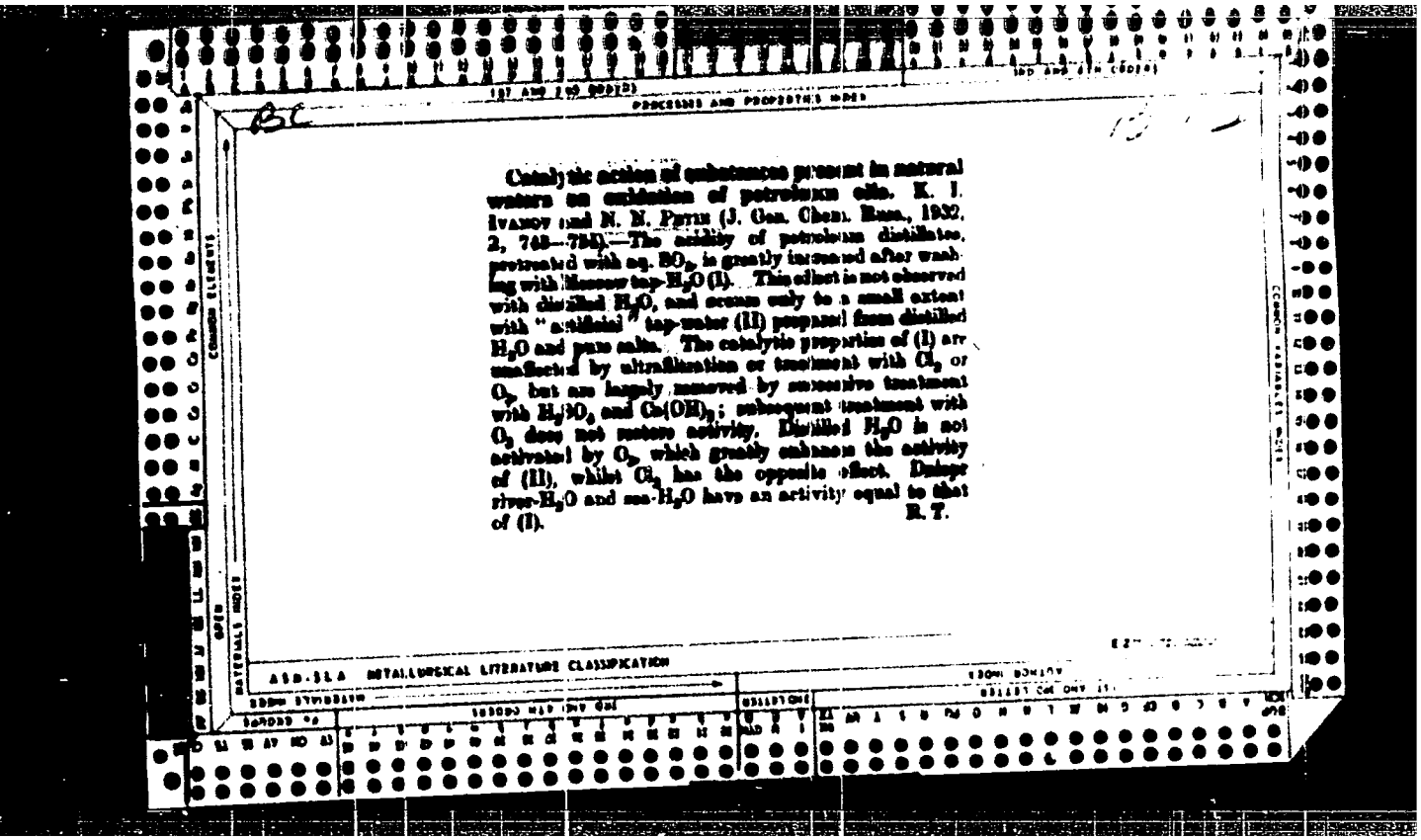
V. D. KARPENKO

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



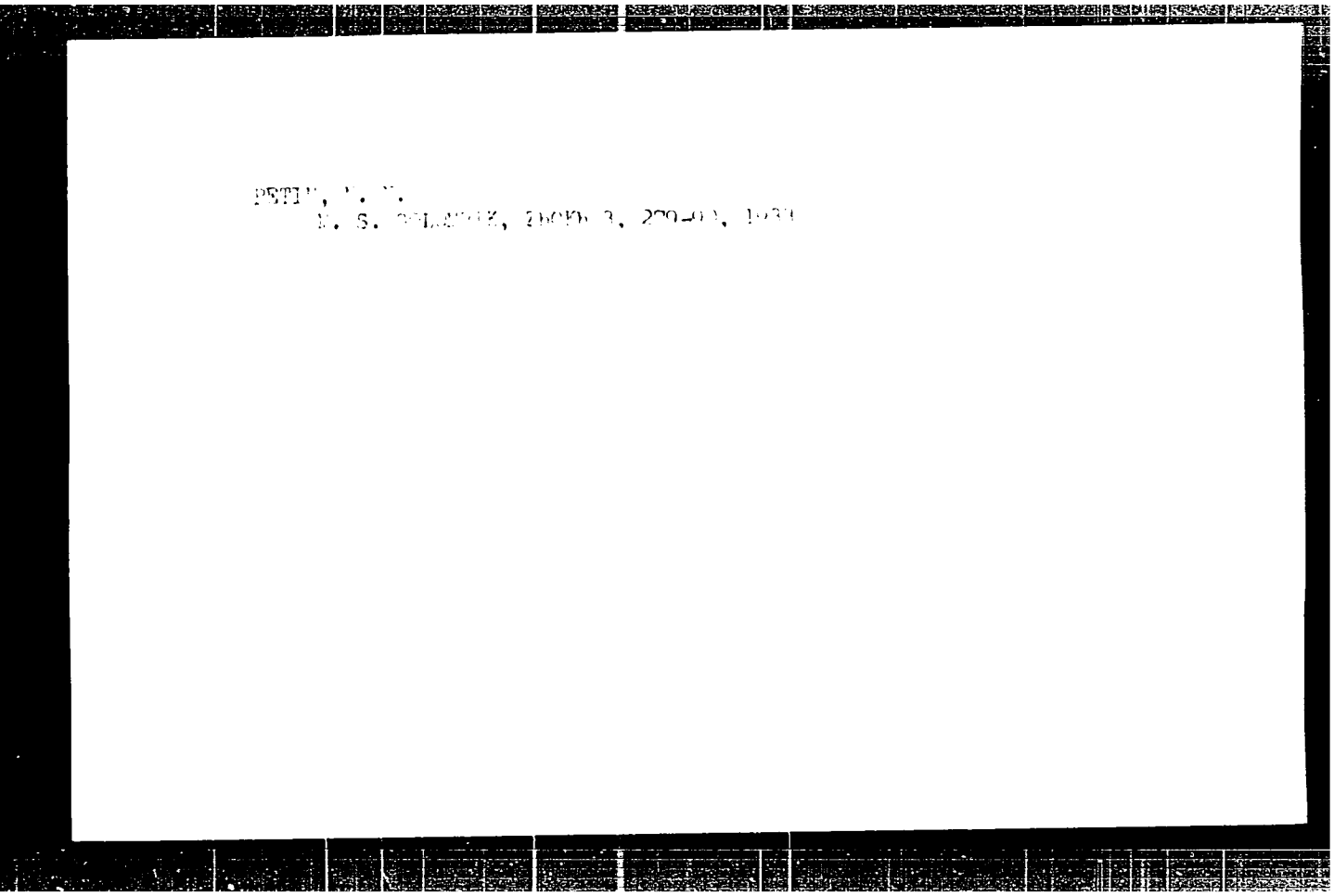
B I 2

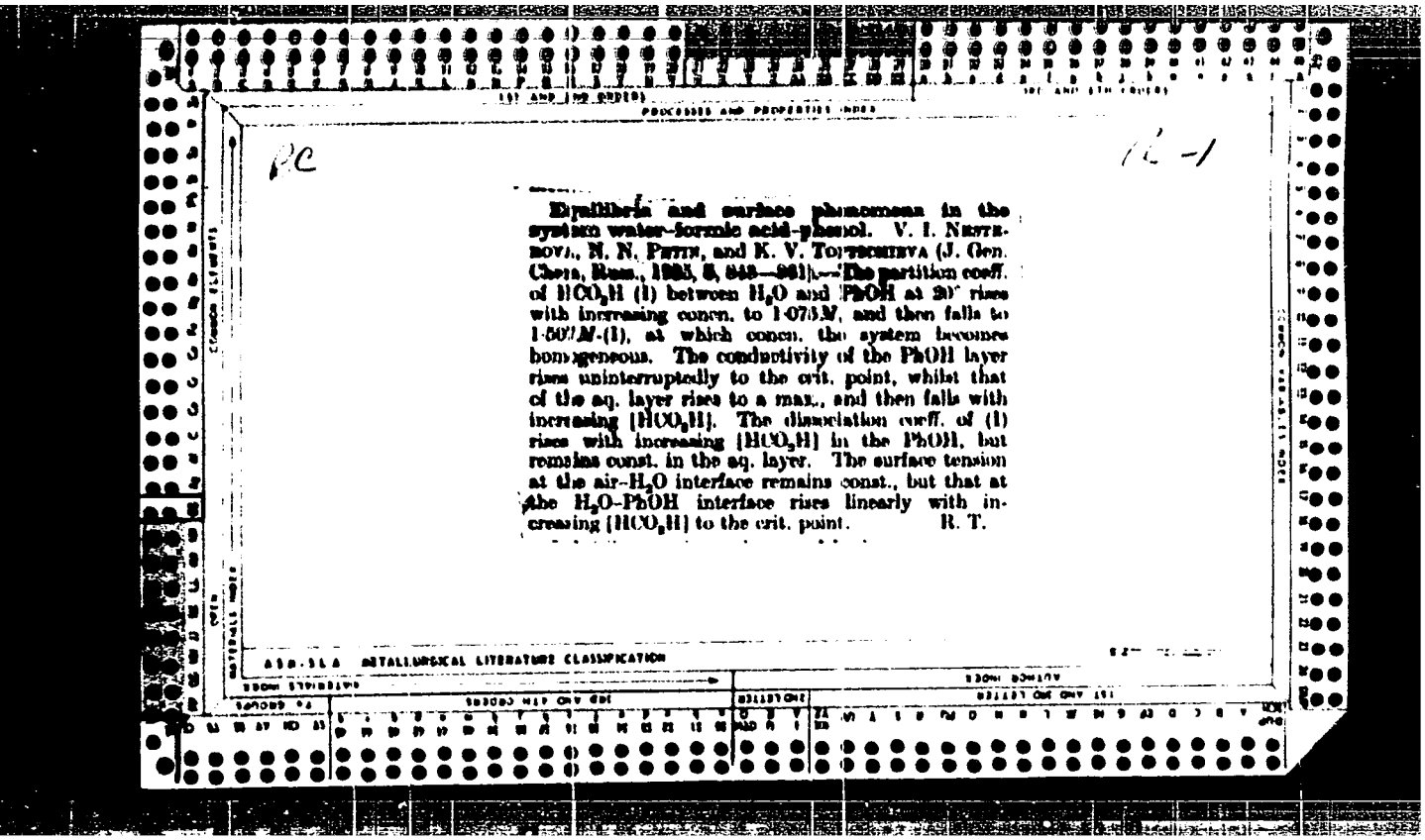
Oxidation of petroleum oils in presence of analytical Mg perchlorate catalysts. K. I. Ivanov and N. N. Tunitskii (J. Gen. Chem. Russ., 1931, 1, 704–718).—Washing with tap-H_2O greatly increases the oxidisability (by O_2 under pressure) of two samples of Caucasian petroleum, one consisting mainly of paraffins and the other of naphthenes, but both containing naphthenic acids. Boiling with H_2SO_4 and subsequent neutralisation with $Ca(OH)_2$ destroys the activity of the H_2O; distilled H_2O and "synthetic tap-H_2O" are inactive, and addition of Fe, both in colloidal and in salt form, does not activate them. G. A.-R. Kon.



Catalytic action of substances present in natural waters on oxidation of petroleum oils. K. I. IVANOV and N. N. PERTII (J. Gen. Chem. Russ., 1932, 2, 748—754).—The acidity of petroleum distillates, pretreated with aq. SO_3, is greatly increased after washing with Moscow tap-H_2O (I). This effect is not observed with distilled H_2O, and occurs only to a small extent with "artificial" tap-water (II) prepared from distilled H_2O and pure salts. The catalytic properties of (I) are unaffected by ultrafiltration or treatment with Cl_2 or O_3, but are largely removed by successive treatment with H_2SO_4 and $Ca(OH)_2$; subsequent treatment with O_3 does not restore activity. Distilled H_2O is not activated by O_3, which greatly enhances the activity of (II), whilst Cl_2 has the opposite effect. Dnieper river-H_2O and sea-H_2O have an activity equal to that of (I). R. T.

PETIN, N. N.
M. S. GOLOMBIK, ZhOKh, 193[illegible], [illegible], 880-888

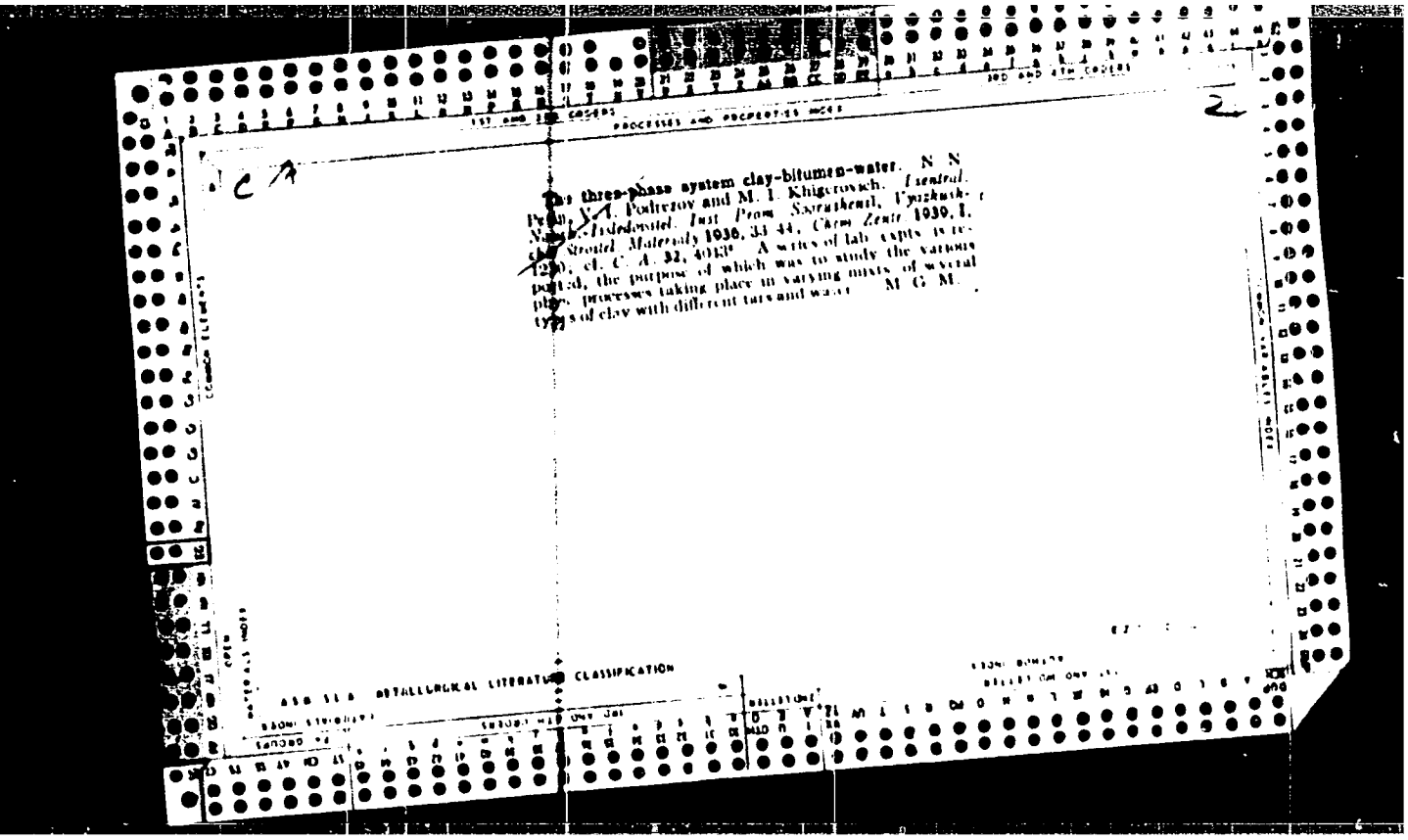




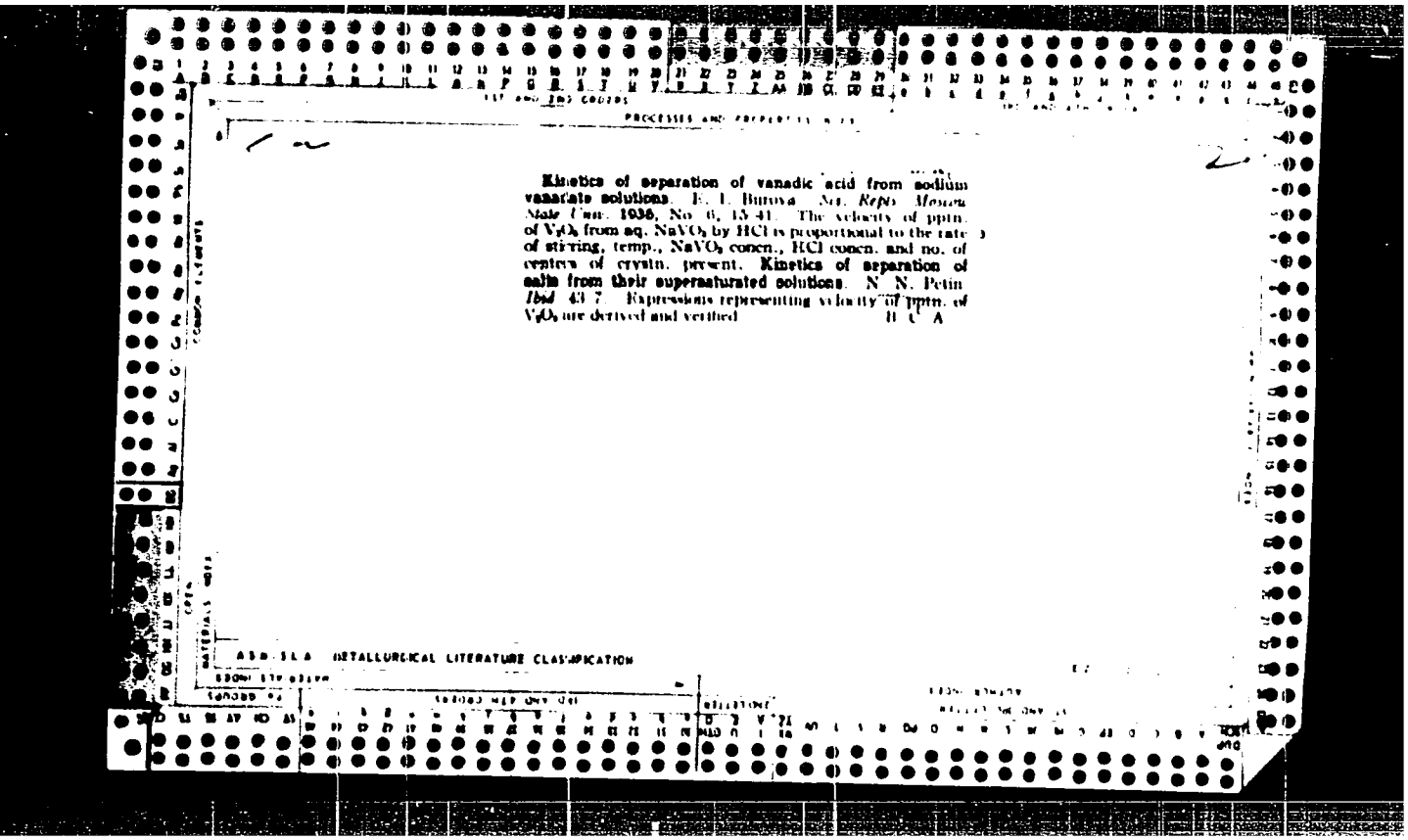
PC

12-1

Equilibria and surface phenomena in the system water–formic acid–phenol. V. I. Nesterova, N. N. Pertii, and K. V. Tolmacheva (J. Gen. Chem., Russ., 1935, 5, 848—861).—The partition coeff. of HCO_2H (I) between H_2O and PhOH at 20° rises with increasing concn. to 1·075*M*, and then falls to 1·50*M*-(I), at which concn. the system becomes homogeneous. The conductivity of the PhOH layer rises uninterruptedly to the crit. point, whilst that of the aq. layer rises to a max., and then falls with increasing $[HCO_2H]$. The dissociation coeff. of (I) rises with increasing $[HCO_2H]$ in the PhOH, but remains const. in the aq. layer. The surface tension at the air–H_2O interface remains const., but that at the H_2O–PhOH interface rises linearly with increasing $[HCO_2H]$ to the crit. point. R. T.

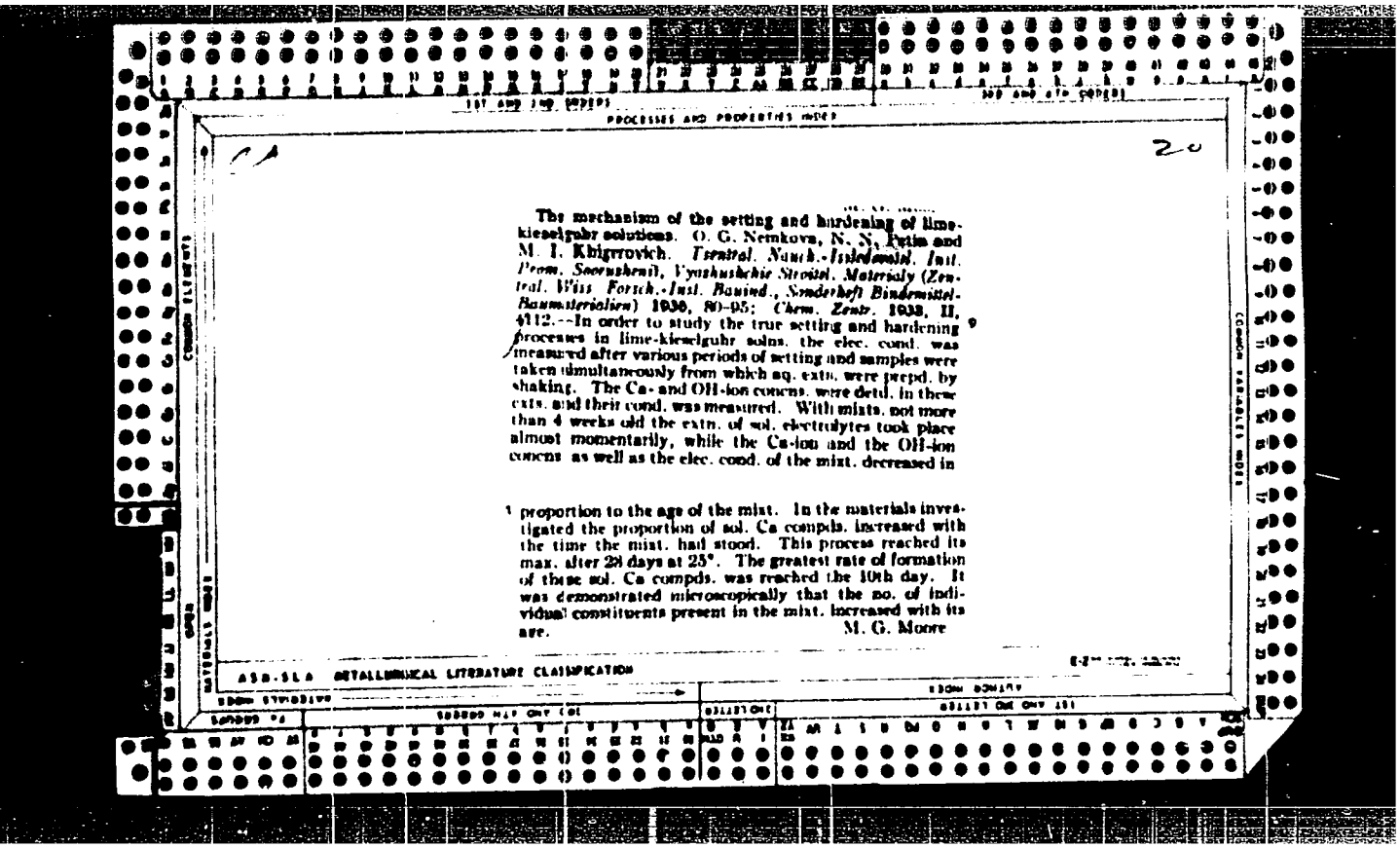


three-phase system clay-bitumen-water. N N
V. I. Podkrezov and M. I. Khigerovich. *Izvestiya Vsesoyuz. Nauch.-Issledovatel. Inst. Prom. Sanitarnoi, Tyazkoi i Stroitel. Materialy* 1936, 33-44; *Chem. Zentr.* 1939, I, 1220; cf. *C. A.* 32, 4033⁸. A series of lab. expts. is reported, the purpose of which was to study the various physicochem. processes taking place in varying mixts. of several types of clay with different tars and water. M. G. M.



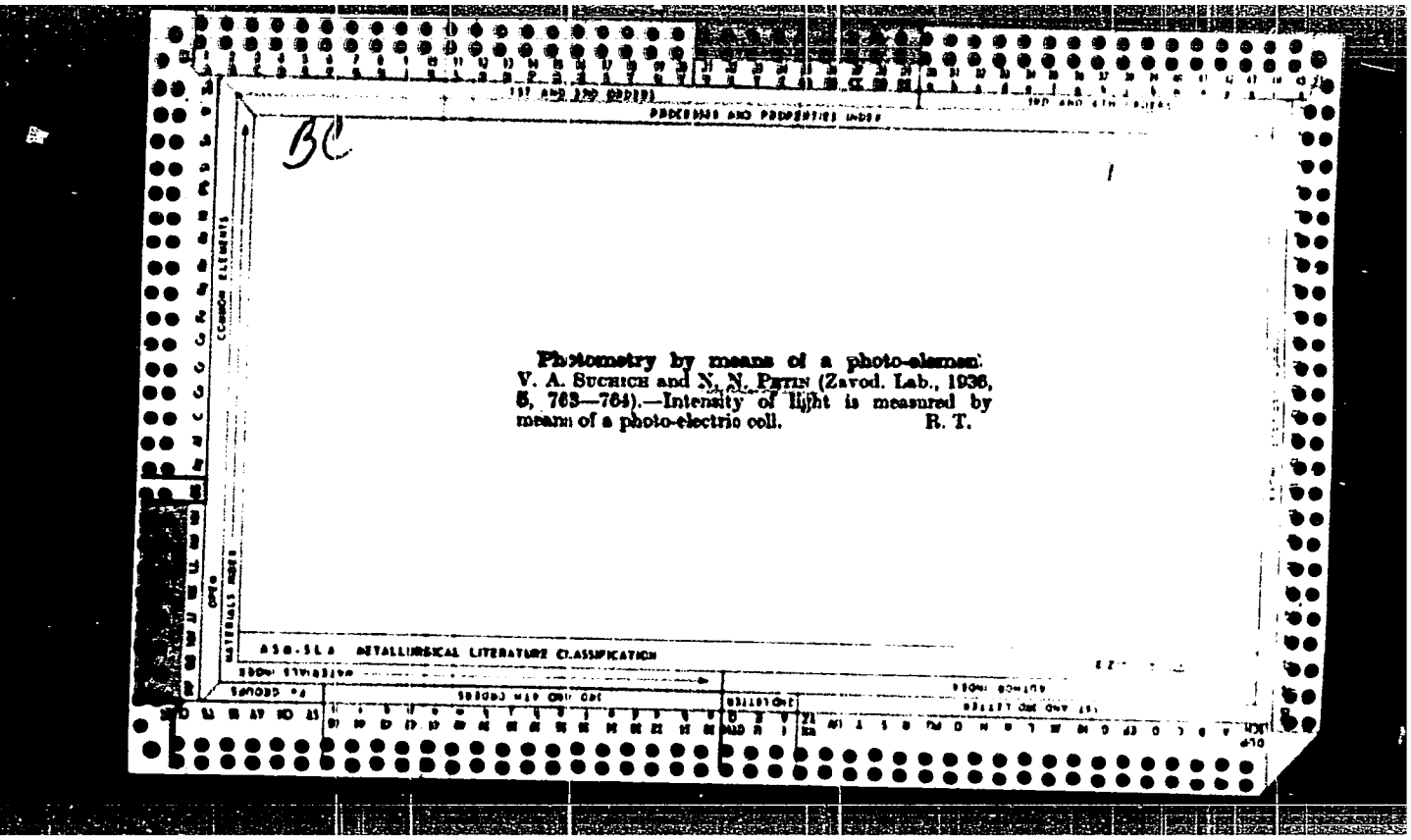
Kinetics of separation of vanadic acid from sodium vanadate solutions. E. I. Burova. *Nat. Repts. Moscow State Univ.* 1936, No. 6, 15-41. The velocity of pptn. of V_2O_5 from aq. $NaVO_3$ by HCl is proportional to the rate of stirring, temp., $NaVO_3$ concn., HCl concn. and no. of centers of crystn. present. **Kinetics of separation of salts from their supersaturated solutions.** N. N. Petin. *Ibid* 43-7. Expressions representing velocity of pptn. of V_2O_5 are derived and verified. H. C. A.

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

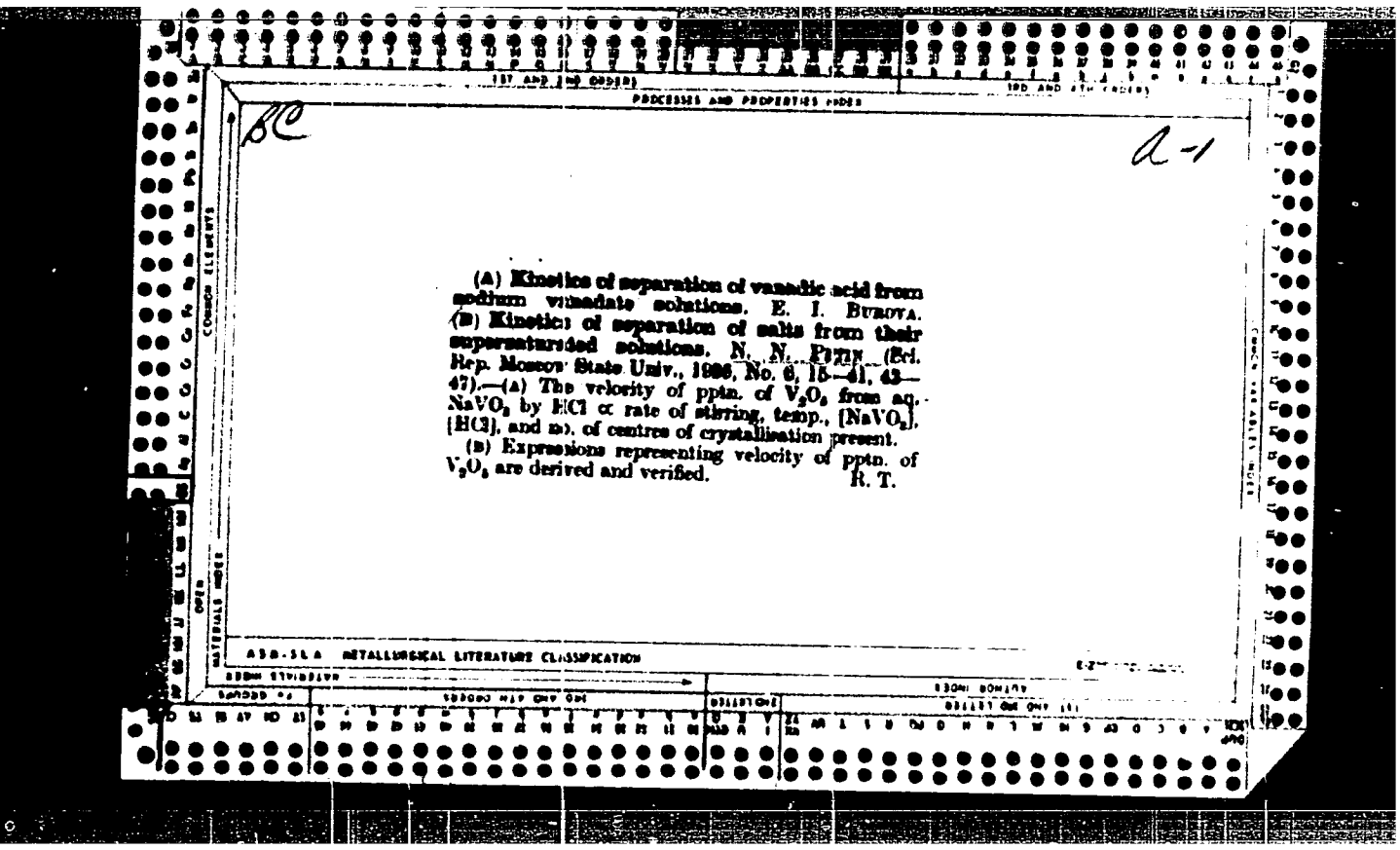


The mechanism of the setting and hardening of lime-kieselguhr solutions. O. G. Nemkova, N. N. Petin and M. I. Khigrovich. *Tsentral. Nauch.-Issledovatel. Inst. Prom. Sooruzhenii, Vyzshushchie Stroitel. Materialy (Zentral. Wiss. Forsch.-Inst. Bauind., Sonderheft Bindemittel-Baumaterialien)* 1930, 80–95; *Chem. Zentr.* 1930, II, 4112.—In order to study the true setting and hardening processes in lime-kieselguhr solns. the elec. cond. was measured after various periods of setting and samples were taken simultaneously from which aq. extn. were prepd. by shaking. The Ca- and OH-ion concns. were detd. in these extn. and their cond. was measured. With mixts. not more than 4 weeks old the extn. of sol. electrolytes took place almost momentarily, while the Ca-ion and the OH-ion concns as well as the elec. cond. of the mixt. decreased in proportion to the age of the mixt. In the materials investigated the proportion of sol. Ca compds. increased with the time the mixt. had stood. This process reached its max. after 28 days at 25°. The greatest rate of formation of these sol. Ca compds. was reached the 10th day. It was demonstrated microscopically that the no. of individual constituents present in the mixt. increased with its age.

M. G. Moore

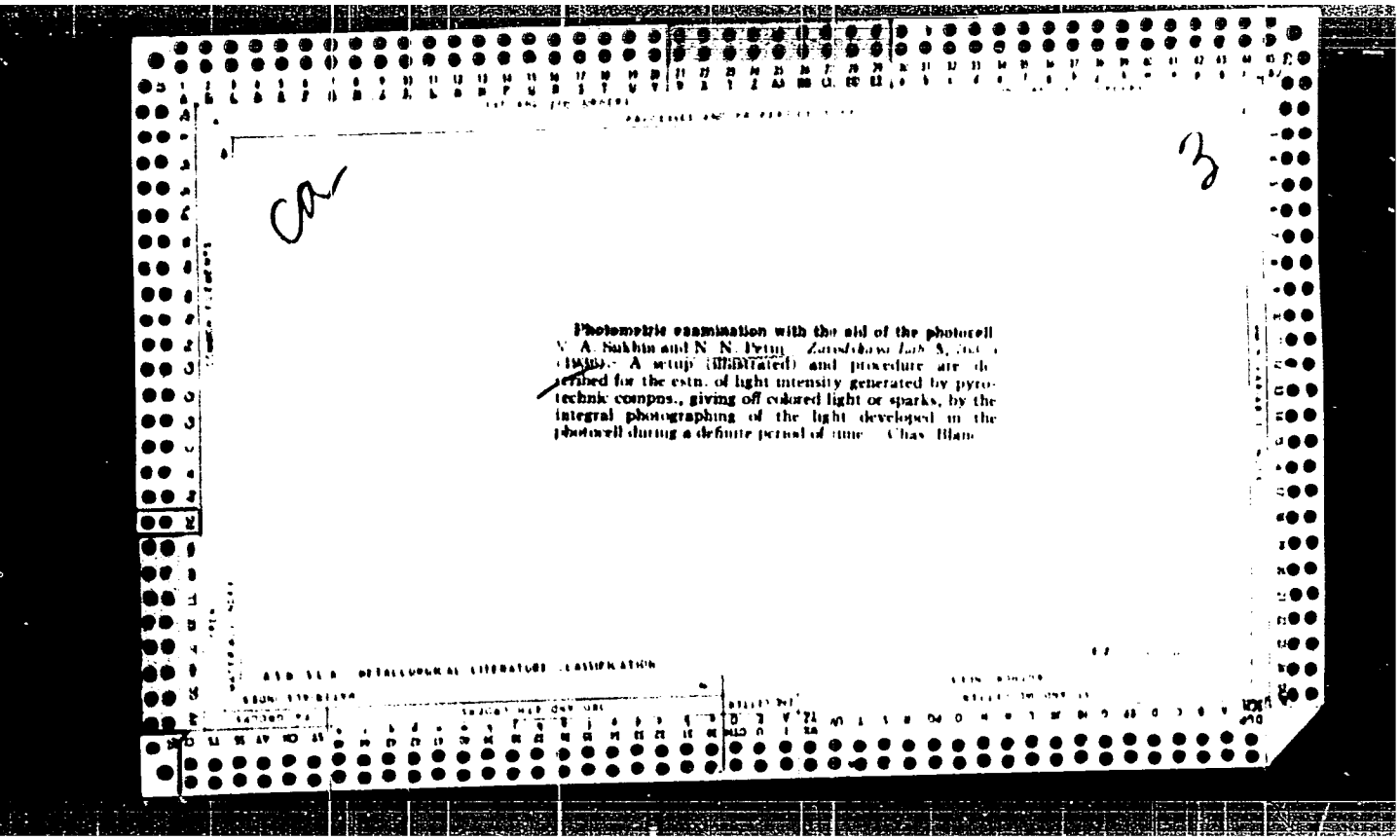


Photometry by means of a photo-element. V. A. Suchich and N. N. Petin (Zavod. Lab., 1936, 5, 763—764).—Intensity of light is measured by means of a photo-electric cell. R. T.

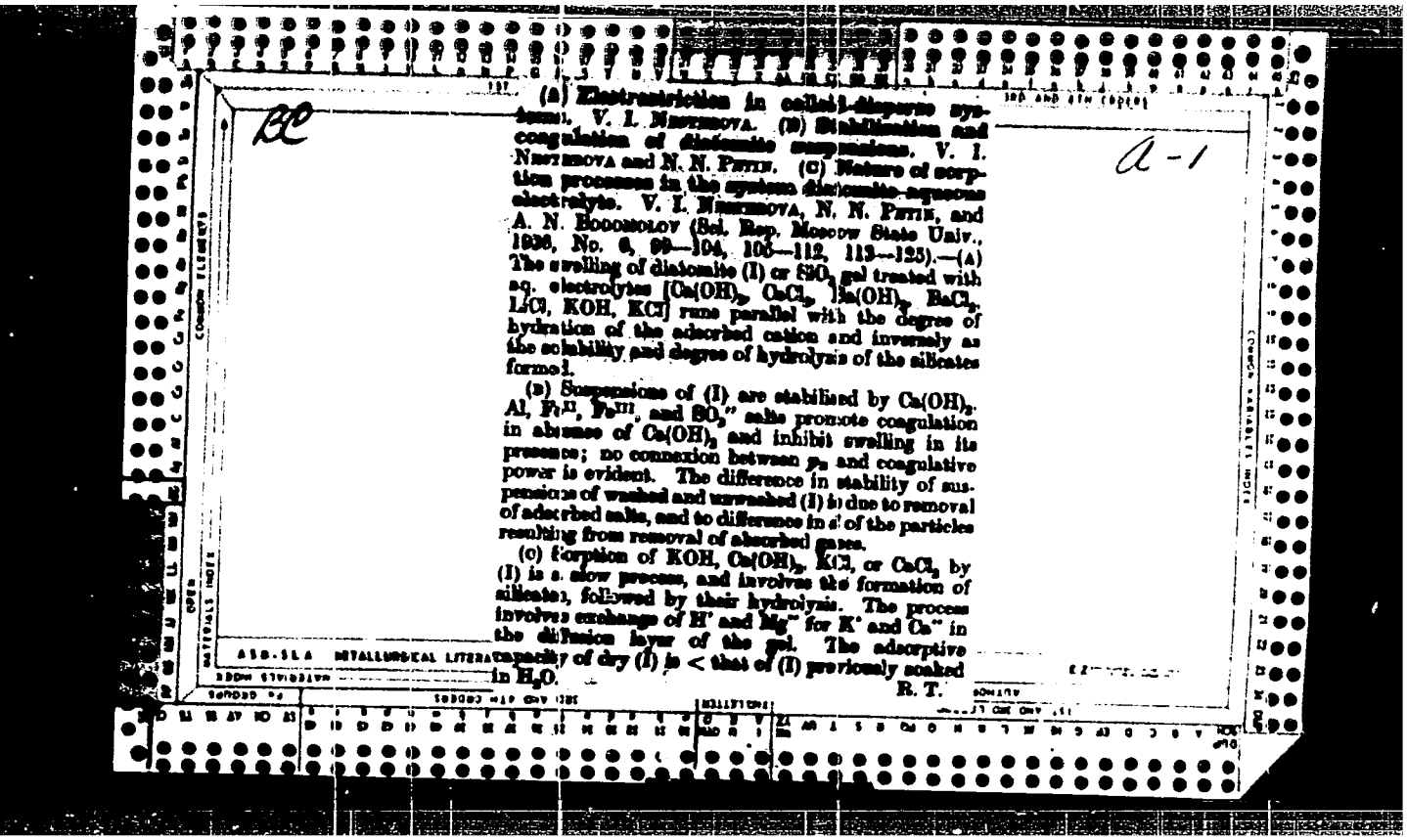


(A) Kinetics of separation of vanadic acid from sodium vanadate solutions. E. I. Burova. (B) Kinetics of separation of salts from their supersaturated solutions. N. N. Putin. (Sci. Rep. Moscow State Univ., 1956, No. 6, 15–41, 43–47).—(A) The velocity of pptn. of V_2O_5 from aq. $NaVO_3$ by HCl ∝ rate of stirring, temp., $[NaVO_3]$, [HCl], and n_1, of centres of crystallisation present. (B) Expressions representing velocity of pptn. of V_2O_5 are derived and verified.

R. T.



Photometric examination with the aid of the photorell V. A. Sukhin and N. N. Petin. *Zavodskaya Lab.* 8, [illegible] (1939).— A setup (illustrated) and procedure are described for the estn. of light intensity generated by pyrotechnic compns., giving off colored light or sparks, by the integral photographing of the light developed in the photorell during a definite period of time. Chas. Blanc

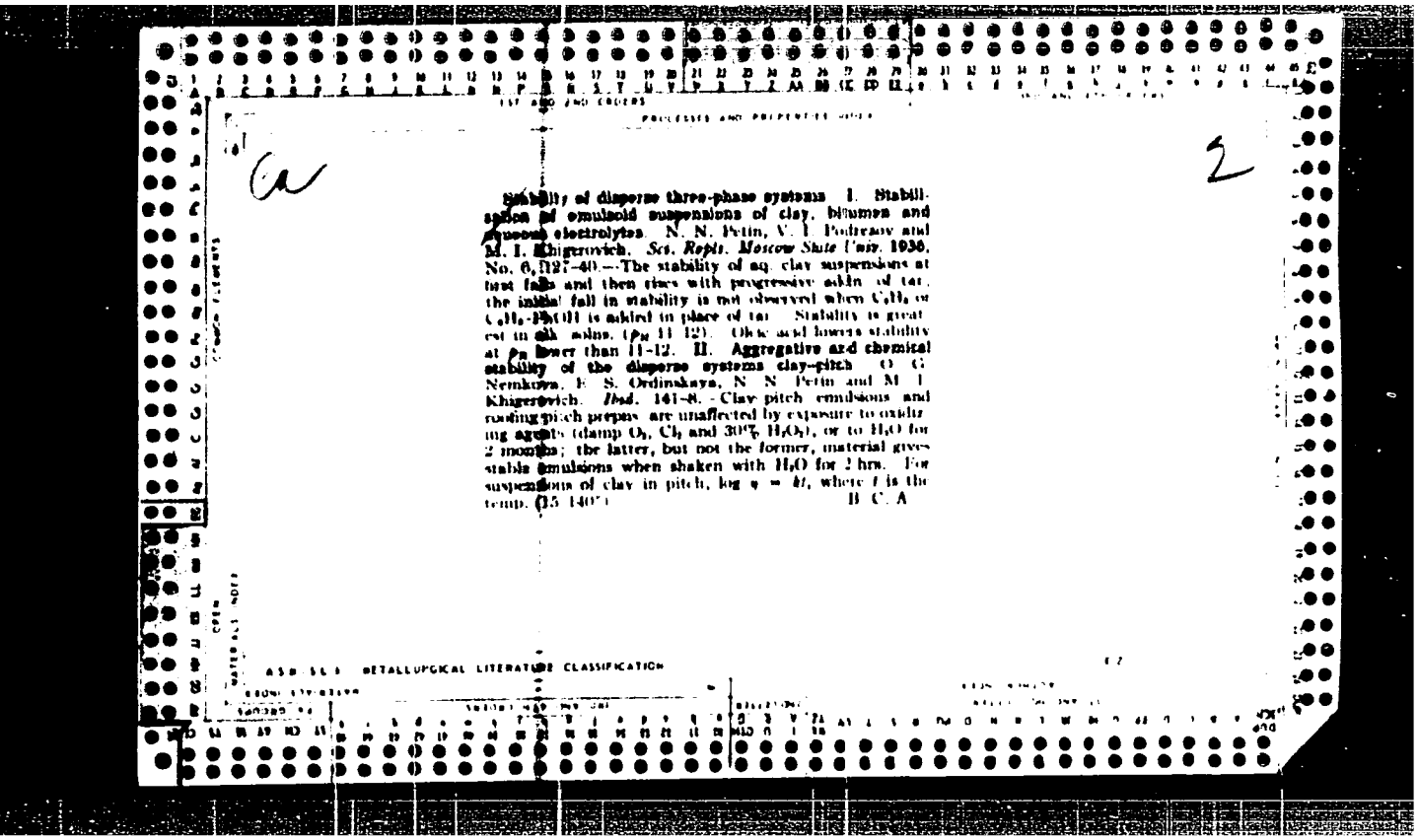


(A) Electrorestriction in colloid-disperse systems. V. I. NIKITINOVA. (B) Stabilisation and coagulation of diatomite suspensions. V. I. NIKITINOVA and N. N. PEPEK. (C) Nature of sorption processes in the system diatomite–aqueous electrolyte. V. I. NIKITINOVA, N. N. PEPEK, and A. N. BOGOSLOV (Sci. Rep. Moscow State Univ., 1936, No. 6, 99—104, 105—112, 113—125).—(A) The swelling of diatomite (I) or SiO_2 gel treated with aq. electrolytes [$Ca(OH)_2$, $CaCl_2$, $Ba(OH)_2$, $BaCl_2$, LiCl, KOH, KCl] runs parallel with the degree of hydration of the adsorbed cation and inversely as the solubility and degree of hydrolysis of the silicates formed.

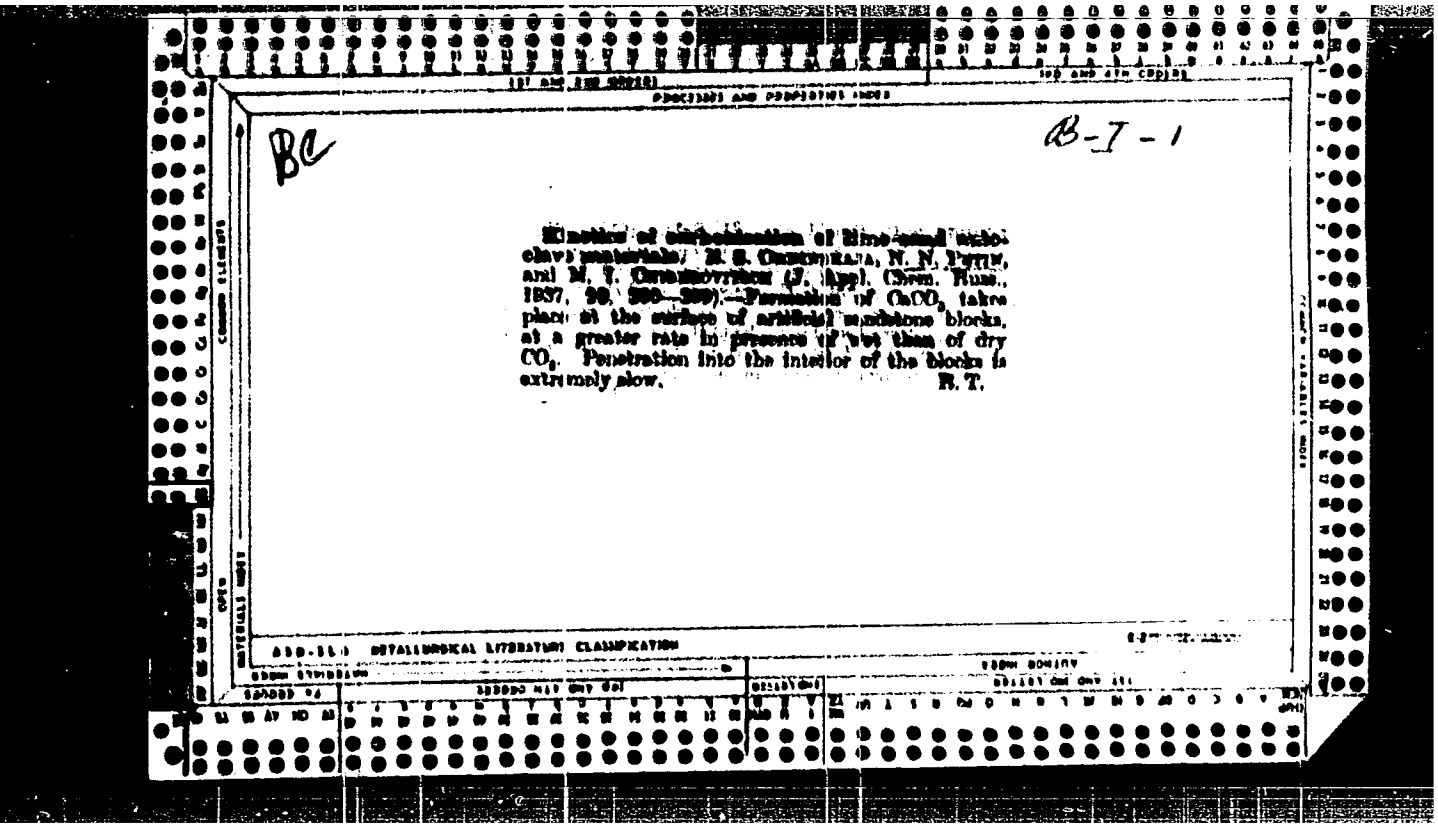
(B) Suspensions of (I) are stabilised by $Ca(OH)_2$. Al, Fe^{II}, Fe^{III}, and SO_4'' salts promote coagulation in absence of $Ca(OH)_2$ and inhibit swelling in its presence; no connexion between p_H and coagulative power is evident. The difference in stability of suspensions of washed and unwashed (I) is due to removal of adsorbed salts, and to difference in d of the particles resulting from removal of absorbed gases.

(C) Sorption of KOH, $Ca(OH)_2$, KCl, or $CaCl_2$ by (I) is a slow process, and involves the formation of silicates, followed by their hydrolysis. The process involves exchange of $H^·$ and $Mg^{··}$ for $K^·$ and $Ca^{··}$ in the diffusion layer of the gel. The adsorptive capacity of dry (I) is < that of (I) previously soaked in H_2O.

R. T.



Stability of disperse three-phase systems. I. Stabilization of emulsoid suspensions of clay, bitumen and aqueous electrolytes. N. N. Petin, V. I. Podkrasov and M. I. Khigerovich. *Sci. Repts. Moscow State Univ.* 1936, No. 6, 127–40.—The stability of aq. clay suspensions at first falls and then rises with progressive addn. of tar, the initial fall in stability is not observed when C_6H_6 or C_6H_5-$PhCH_3$ is added in place of tar. Stability is greatest in alk. solns. (p_H 11–12). Oleic acid lowers stability at p_H lower than 11–12. **II. Aggregative and chemical stability of the disperse systems clay–pitch.** O. G. Nemkova, E. S. Ordinskaya, N. N. Petin and M. I. Khigerovich. *Ibid.* 141–8.—Clay-pitch emulsions and roofing-pitch preps. are unaffected by exposure to oxidizing agents (damp O_2, Cl_2 and 30% H_2O_2), or to H_2O for 2 months; the latter, but not the former, material gives stable emulsions when shaken with H_2O for 2 hrs. For suspensions of clay in pitch, $\log \eta = kt$, where t is the temp. (15–140°). B. C. A.



B-I-1

Kinetics of carbonization of lime-sand autoclave materials. M. S. Chernyakova, N. N. Pyrin, and M. T. Chernobrovkina (J. Appl. Chem. Russ., 1937, 10, 905—909).—Formation of $CaCO_3$ takes place at the surface of artificial sandstone blocks, at a greater rate in presence of wet than of dry CO_2. Penetration into the interior of the blocks is extremely slow. R. T.

9.4300 (3005, 1155, 1145, 1136)

S/139/61/000/002/014/018
E032/E414

AUTHOR: Petin, G.P.

TITLE: On the Theory of Ferroelectrics of the Barium Titanate Type

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1961, No.2, pp.125-131

TEXT: The present author discusses the properties of ferroelectrics of the barium titanate type using a model in which it is assumed that the number of covalent bonds between the titanium ion and the oxygen ions may vary from zero to 2 and the number of covalent coordinational bonds may vary between zero and 6. Each elementary cell is assumed to be cubic and independent of its neighbours and all the dipoles are looked upon as rigid. The energy of a dipole in the internal field is taken in the form

$$U = -\underline{p}\underline{F} \qquad (1)$$

and the internal field is assumed to be of the form

$$\underline{F} = \beta\underline{P} + \gamma\underline{E} \qquad (2)$$

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where $\underline{P}$ is the dipole polarization due to the preferred orientation of covalent bonds, $\underline{E}$ is the average macroscopic field, and β and γ are constants. Table 1 shows the various possible states of the lattice. The symbols used in this table are defined by

$$\xi = \frac{pF_x}{\kappa T}; \tag{3}$$

$$\eta = \frac{pF_y}{\kappa T}; \tag{4}$$

$$\zeta = \frac{pF_z}{\kappa T}; \tag{5}$$

$$\Phi = \frac{\varphi}{\kappa T}. \tag{6}$$

where φ is the energy necessary to change the ionic bonding into covalent bonding. Assuming that the distribution over the

states is described by the Boltzmann law, it is found that

$$P_x = Np\,\frac{2e^{\Phi}\operatorname{sh}\xi + (4\operatorname{ch}\eta + \operatorname{ch}\zeta)\operatorname{sh}\xi}{3 + e^{2\Phi} + (\operatorname{ch}\xi + \operatorname{ch}\eta + \operatorname{ch}\zeta)e^{\Phi} + 4(\operatorname{ch}\xi\operatorname{ch}\eta + \operatorname{ch}\xi\operatorname{ch}\zeta + \operatorname{ch}\eta\operatorname{ch}\zeta)}\,; \qquad (7)$$

$$P_y = Np\,\frac{2e^{\Phi}\operatorname{sh}\eta + 4(\operatorname{ch}\xi + \operatorname{ch}\zeta)\operatorname{sh}\eta}{3 + e^{2\Phi} + (\operatorname{ch}\xi + \operatorname{ch}\eta + \operatorname{ch}\zeta)e^{\Phi} + 4(\operatorname{ch}\xi\operatorname{ch}\eta + \operatorname{ch}\xi\operatorname{ch}\zeta + \operatorname{ch}\eta\operatorname{ch}\zeta)}\,; \qquad (8)$$

$$P_z = Np\,\frac{2e^{\Phi}\operatorname{sh}\zeta + 4(\operatorname{ch}\xi + \operatorname{ch}\eta)\operatorname{sh}\zeta}{3 + e^{2\Phi} + (\operatorname{ch}\xi + \operatorname{ch}\eta + \operatorname{ch}\zeta)e^{\Phi} + 4(\operatorname{ch}\xi\operatorname{ch}\eta + \operatorname{ch}\xi\operatorname{ch}\zeta + \operatorname{ch}\eta\operatorname{ch}\zeta)}\,, \qquad (9)$$

where N is the number of elementary cells per unit volume.
It follows from Eq.(2) - (9) that

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E032/E414

$$\frac{\kappa T}{Np^2\beta}\xi - \frac{\gamma}{Np\beta}E_x =$$

$$= \frac{2e^{\Phi}\operatorname{sh}\xi + 4(\operatorname{ch}\eta + \operatorname{ch}\zeta)\operatorname{sh}\xi}{3 + e^{2\Phi} + (\operatorname{ch}\xi + \operatorname{ch}\eta + \operatorname{ch}\zeta)e^{\Phi} + 4(\operatorname{ch}\xi\operatorname{ch}\eta + \operatorname{ch}\xi\operatorname{ch}\zeta + \operatorname{ch}\eta\operatorname{ch}\zeta)}; \quad (10)$$

$$\frac{\kappa T}{Np^2\beta}\eta - \frac{\gamma}{Np\beta}E_y =$$

$$= \frac{2e^{\Phi}\operatorname{sh}\eta + 4(\operatorname{ch}\xi + \operatorname{ch}\zeta)\operatorname{sh}\eta}{3 + e^{2\Phi} + 2(\operatorname{ch}\xi + \operatorname{ch}\eta + \operatorname{ch}\zeta)e^{\Phi} + 4(\operatorname{ch}\xi\operatorname{ch}\eta + \operatorname{ch}\xi\operatorname{ch}\zeta + \operatorname{ch}\eta\operatorname{ch}\zeta)}; \quad (11)$$

$$\frac{\kappa T}{Np^2\beta}\zeta - \frac{\gamma}{Np\beta}E_z =$$

$$= \frac{2e^{\Phi}\operatorname{sh}\zeta + 4(\operatorname{ch}\xi + \operatorname{ch}\eta)\operatorname{sh}\zeta}{3 + e^{2\Phi} + 2(\operatorname{ch}\xi + \operatorname{ch}\eta + \operatorname{ch}\zeta)e^{\Phi} + 4(\operatorname{ch}\xi\operatorname{ch}\eta + \operatorname{ch}\xi\operatorname{ch}\zeta + \operatorname{ch}\eta\operatorname{ch}\zeta)}. \quad (12)$$

Eq. (12) is on page 127

where N is the number of elementary cells per unit volume. Eq.(7) - (12) determine all the dielectric properties of the ferroelectric. They can be used to obtain the spontaneous polarization and the dielectric constant in the case of a ferroelectric spontaneously polarized along three, two or one axes. They can also be used to determine the dielectric constant above the Curie point. Consider the last two cases in greater detail. On substituting $\eta = 0$, $\xi \approx \mathrm{sh}\,\xi$, $\mathrm{ch}\,\xi = 1$, we have ($\zeta \neq 0$)

$$\frac{\kappa T}{Np^2\beta}\zeta - \frac{\gamma}{Np\beta}E_z = \frac{\mathrm{sh}\zeta}{A+\mathrm{ch}\zeta}; \quad (13)$$

$$\frac{\kappa T}{Np^2\beta}\xi - \frac{\gamma}{Np\beta}E_x = \frac{2e^{\Phi}+4(1+\mathrm{ch}\zeta)}{(2e^{\Phi}+8)(A+\mathrm{ch}\zeta)}\xi; \quad (14)$$

$$P_z = Np\frac{\mathrm{sh}\zeta}{A+\mathrm{ch}\zeta}; \quad (15)$$

$$P_x = Np\frac{2e^{\Phi}+4(1+\mathrm{ch}\zeta)}{(2e^{\Phi}+8)(A+\mathrm{ch}\zeta)}\xi; \quad (16)$$

$$A = \frac{3+(e^{\Phi}+2)^2}{2e^{\Phi}+8}. \quad (17)$$

From these equations one can obtain the spontaneous polarization P_z as a function of temperature by putting $E_z = 0$. To obtain the dielectric constant one uses Eq.(2) and Eq.(13) - (16) and also

$$\varepsilon = 1 + 4\pi \frac{dP_u}{dE}, \tag{20}$$

$$P_u = P_0 + P, \tag{21}$$

$$P_0 = \alpha F \tag{22}$$

from which

$$\varepsilon_x = \varepsilon_1 + \frac{\varepsilon_0 - 1 + 4\pi\frac{\gamma}{\beta}}{\frac{\kappa T}{Np^2\beta}\,\frac{(A+\operatorname{ch}\zeta)(2e^{\Phi}+8)}{2e^{\Phi}+4(1+\operatorname{ch}\zeta)} - 1} \tag{23}$$

$$\varepsilon_z = \varepsilon_0 + \frac{\varepsilon_0 - 1 + 4\pi\frac{\gamma}{\beta}}{\frac{\kappa T}{Np^2\beta}\,\frac{(A+\operatorname{ch}\zeta)^2}{1+A\operatorname{ch}\zeta}} - 1. \tag{24}$$

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where P_0 is the "nondipole" polarization and $\varepsilon_0 = 1 + 4\pi a\gamma$ is the dielectric constant at absolute zero. Fig.2 and 3 show the spontaneous polarization and dielectric constants as functions of temperature for barium titanate. The points are experimental and the curves theoretical. As can be seen, reasonable agreement is obtained. Similar agreement is found to obtain in the case of the coercive force and the infrared absorption spectra. The properties of other ferroelectrics of this type can be described by choosing different values of β, γ, η and φ. There are 3 figures, 1 table and 5 references: 3 Soviet and 2 non-Soviet.

ASSOCIATION: Rostovskiy-na-Donu gosuniversitet
(Rostov-on-Don State University)

SUBMITTED: April 11, 1960

PETIN, G.P.

Measuring counting-rate ratio. Prib.i tekh.eksp. no.1:48-50 Ja-F '60. (MIRA 13:6)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.
(Nuclear counters)

9.2570

83153

S/108/60/015/009/005/008
B002/B067

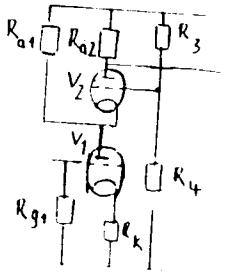
AUTHOR: Petin, G. P., Member of the Society

TITLE: Cascade Amplifier With an Increased Amplification

PERIODICAL: Radiotekhnika, 1960, Vol. 15, No. 9, pp. 54-56

TEXT: The author demonstrates that the amplification coefficient of a cascade amplifier can be increased by 2-4 times by applying an additional anode load (R_{a1}) to V_1 provided the anode load of V_2 is much higher than its internal resistance. Theoretically, the following amplification coefficients were obtained:

$$K = \frac{\mu_1(1+\mu_2)}{\left(1+\frac{R_{i1}}{R_{a1}}\right)\left(1+\frac{R_{i2}}{R_{a2}}\right)+(1+\mu_2)\frac{R_{i1}}{R_{a2}}+(1+\mu_1)\left(\frac{1+\frac{R_{i2}}{R_{a2}}}{R_{a1}}+\frac{1+\mu_2}{R_{a2}}\right)R_K}$$



Here, μ_1, μ_2, R_{i1} and R_{i2} are the static amplification coefficients and the internal resistances of

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the first and the second triode. The band-width may be calculated from the following expression:

$$f = \frac{1}{2\pi C}\left[\frac{1}{R_{a2}} + \frac{1+\frac{R_{i1}}{R_{a1}}+(1+\mu_1)\frac{R_K}{R_{a1}}}{\left(1+\frac{R_{i1}}{R_{a1}}\right)R_{i2}+(1+\mu_2)R_{i1}+(1+\mu_1)\left(1+\mu_2+\frac{R_{i2}}{R_{a1}}\right)R_K}\right]$$

Here, C denotes the total shunting capacitance at the V_2 anode. In order to obtain a maximum amplification, the following conditions hold for a given band-width: 1) R_{a2} should be as large as possible. 2) R_{a1} should be large; however, it should not considerably increase R_{i1} in order to avoid a decrease in the anode current. This may be attained by applying the operating point at the beginning of the decrease in the anode characteristics of the triode and by using a small grid bias in V_1 (u_g = -0.5-1.0 v) 3) R_{i2} should be as small as possible to keep the grid bias small for a given R_{a2}. 4) R_K must be as small as possible. Figs. 4 and 5 show the results of measurements in an ordinary cascade amplifier, a pentode amplifier, and a two-cascade amplifier with a double triode. It was experimentally observed that, compared with an ordinary cascade amplifier,

Cascade Amplifier With an Increased Amplification

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B002/B067

the set noise level decreased by about 2 decibels, whereas the amplification coefficient rose by 7.2 decibels (by about 2-3 times). The fundamental shortcoming of cascade amplifier with an increased amplification coefficient is that the undistorted output voltage is only low: For the circuit diagram shown on Fig. 3, which was used for the measurements, it is 10-20 v. There are 5 figures and 3 references: 2 Soviet and 1 US.

SUBMITTED: January 20, 1958 (initially)
April 1, 1959 (after revision)

Card 3/3

AUTHOR: Petin, G.P., Member of the Association SOV/108-13-7-5/14

TITLE: Relaxation Generators and Relaxation Relays When Using the Circuit of a Pilot Relay (Relaksatsionnyye generatory i relaksatsionnyye rele s ispol'zovaniyem skhemy sledyashchego rele)

PERIODICAL: Radiotekhnika, 1958, Vol. 13, Nr 7, pp. 43-46 (USSR)

ABSTRACT: The particular features of the circuit of a pilot relay are well described (Refs 1 and 2). The circuit-state is a function of the voltage U at the grid of the first tube. In the concrete circuit of a pilot relay there are two threshold values of this voltage U_1 and U_2; in the case of $U > U_1$ the first tube conducts and the second is barred. With $U < U_2$ the first tube is barred and the second conducts. With $U_2 < U < U_1$ the circuit has two stable states: either the first tube conducts and the second is barred, or vice versa. If the latter condition is satisfied, the given state of the circuit is retained. The circuit can be conveyed from one state to another by an external impulse from the tube L_1 to the anode. - The relaxation generators with rectangular and linear sawtooth-like voltage are investigated. By varying the

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Relaxation Generators and Relaxation Relays When Using the Circuit of a Pilot Relay

SOV/108-13-7-5/14

amount of one of the circuit resistances these generators assume the properties of a relaxation relay with stable state and generate rectangular pulses and/or pulses of the linearly decreasing voltage. There are 12 figures, and 2 references which are Soviet.

SUBMITTED: October 4, 1956

ASSOCIATION: Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (All-Union Scientific-technical Association for Radio Engineering and Electrical Communications im. A.S. Popov)

1. Relays--Circuits 2. Relays--Performance 3. Waveform generators--Performance

Card 2/2

PETIN, G.P.

Relaxation oscillators and relaxation relays utilizing the circuit of follow-up relays. Radiotekhnika 13 no. 7:43-46 Jl '58.
(MIRA 11:7)

1. Deystvitel'nyy chlen Vsesoyuznogo nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi im. A.S.Popova.
(Oscillators, Electron-tube)

AUTHOR: Petin, G.P. 120-4-31/35

TITLE: A Stable Electronic Time Relay (Stabil'noye elektronnoye rele vremeni)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.4, p.100 (USSR).

ABSTRACT: Electronic time relays described in literature (Ref.1) have an instability of the same order as the changes in the supply voltage. Improvement of their working by stabilising the charging voltage leads to complicated circuits. The search for a simpler solution to this problem led to the design of a new circuit using the properties of a Schmidt trigger (Refs. 2, 3). The operational threshold voltage V_c of the Schmidt trigger is, to the first approximation, proportional to the supply voltage $V_c = kV_o$, and therefore the circuit of the electronic relay designed from the Schmidt trigger (Fig.1) will mark off time intervals which are practically independent of the supply voltage V_o, since $T = RC \ln V_o/V_o - V_c = RC \ln(1 - k)^{-1}$ (1)

Approximate calculation shows that:

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A Stable Electronic Time Relay 120-4-31/35

$$k = \frac{R_2}{R_1 + R_2} - \frac{1}{\mu} \frac{R_1}{R_1 + R_2} \qquad (2)$$

where μ is the amplification factor of the valve. This expression can be used for calculation of the value of RC which is necessary for obtaining a given time interval T. Eqs. (1) and (2) give a result differing from the experimental by not more than 10 - 15%.
For normal working of the Schmidt trigger, it is usually sufficient to put $R_1 = 2R_2$, $R_3 = R_4$, $R_1 \gg R_3$. The values of the resistors R_3, R_4, R_5 were chosen depending on the operating current of the electromagnetic relay. It can be shown that the current flowing through the winding of the relay is, with sufficient accuracy, determined by:

$$I = \frac{V_o}{R_5} \cdot \frac{R_2}{R_1 + R_2} \qquad (3)$$

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A Stable Electronic Time Relay. 120-4-31/35

The value of the resistor R_4 must be such that for a given anode current, the anode voltage of the valve Π_2 ensures that the valve will work with a small grid bias. Arising from these premises, its value can be chosen by using the valve anode characteristic.
The time interval change relative to the change of the supply voltage (Fig.2) was used for checking the stability of the described electronic time relay: when the supply voltage changes by ± 20%, the time interval changes by ± 4%. The circuit gives time intervals in the range from 0.5 sec. to several minutes.
This is a complete translation.
There are 2 figures and 3 Slavic references.

ASSOCIATION: Rostov-on-Don State University imeni V.M. Molotov. (Rostovskiy-na-Donu gosudarstvennyy universitet im. V.M. Molotova)

SUBMITTED: February 27, 1957.

AVAILABLE: Library of Congress

Card 3/3

69076

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E192/E382

21.5300

AUTHOR: Petin, G.P.

TITLE: Measurement of the Ratio of the Counting Rates /9

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 1, pp 48 - 50 (USSR)

ABSTRACT: The following device is proposed. A circuit with two stable states is actuated by the pulses from two sources and has the property that it can be returned from the second stable state to the first one only by means of a pulse from the first source; on the other hand, only a pulse from the second source can throw over the circuit from the first to the second state. Consequently, whenever a pulse from one of the sources is followed by a pulse from the other source, the circuit will change over from one stable state to the second one. If a pulse from the first source has thrown the circuit over into the first stable state, the circuit will persist in this state until a pulse appears from the second source. The average value of this time interval is τ_1. The

average value of the time during which the circuit is

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Measurement of the Ratio of the Counting Rates

in the second state of equilibrium is τ_2 . The probability of the circuit being in the first stable state is expressed by:

$$P_1 = \tau_1/(\tau_1 + \tau_2) \quad (1)$$

while its probability of being in the second state is:

$$P_2 = \tau_2/(\tau_1 + \tau_2) \quad (2) .$$

Now if the anode current of the first tube of the circuit in the stable state is I_{01} and the anode current of the second tube in the second stable state is I_{02} , the average anode currents can be expressed by:

$$I_1 = P_1 I_{01} \quad (3)$$

$$I_2 = P_2 I_{02} \quad (4) .$$

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Measurement of the Ratio of the Counting Rates

If the pulses are statistically distributed, the average currents can be expressed by Eqs (5) and (6), from which it is seen that they are dependent on the ratio of the counting rates of the first and the second source. Since it is more convenient to measure the voltages rather than currents, Eqs (5) and (6) can be written as:

$$U_1 = U_{01}/(1 + n_2/n_1) \quad (7)$$

$$U_2 = U_{02}/(1 + n_1/n_2) \quad (8) .$$

A simple circuit based on the above theoretical considerations was constructed. This consists of three Schmitt trigger circuits and two germanium diodes. The circuit is illustrated in Figure 1. The first two Schmitt triggers are connected to the pulse sources (n_1 and n_2) and act as pulse shapers. Sharp rectangular pulses are obtained at their outputs. The third trigger

Measurement of the Ratio of the Counting Rates

circuit behaves as a system with two stable states. The above circuit was tested experimentally and its results were compared with those obtained with two different computing circuits. The pulse sources in this investigation were obtained from two Geiger-Müller counters operating at the rate of 12-240 pulses/sec. The results are shown in the table on p 50. It is seen that the accuracy of the device of Figure 1 is of the order of 1 to 2%. There are 1 figure, 1 table and 2 Soviet references, one of which is translated from English.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-on-Don State University)

SUBMITTED: November 21, 1958

Card 4/4

S/109/62/007/003/014/029
D266/D302

9.3130 (1140,1163,1032,1037)

AUTHOR: Petin, G.P.

TITLE: Waves in electron flow

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 3, 1962, 468 - 474

TEXT: The purpose of the paper is to give a general formulation of small signal solutions in electron beams. A non-relativistic beam of finite transverse dimensions is considered moving with a d.c. velocity v_o in free space under the influence of electric and magnetic fields. Employing the usual small signal assumptions and denoting the a.c. quantities by the subscript 1, the following differential equation is derived

$$\frac{d^2 v_1}{dt^2} + \frac{e}{4\pi\varepsilon_0 m} \cdot \frac{\rho_0 \vec{R}}{R^3} \operatorname{div} \vec{v}_1 = \frac{e}{m} \frac{d}{dt} (\vec{v}_1 \vec{B}_1) = \frac{e}{m} \frac{d\vec{H}_1}{dt} \quad (5)$$

where e - electron charge, m - electron mass, ε_0 - dielectric con-

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Waves in electron flow

stant of free space, ρ_0 - d.c. space-charge density, dV - volume element, $\vec{B}$ - applied magnetic field, t - time, $\vec{R}$ - vector drawn from an arbitrary point to the point of observation. Assuming a solution in the form

$$\vec{v}_{n} = \vec{v}_{n} e^{j(\omega t - \vec{k}_n \vec{r})} \qquad (7)$$

and substituting it into Eq. (5), the following characteristic equation is obtained

$$(\omega - \vec{k}_n \vec{v}_0)^2 [(\omega - \vec{k}_n \vec{v}_0)^4 - (\omega_{en}^2 + \omega_m^2)(\omega - \vec{k}_n \vec{v}_0)^2 + \omega_{en}^2 \omega_m^2 (\frac{\vec{k}_n \vec{B}}{k_n B})^2] = 0 \qquad (13)$$

where ω_{en} - reduced plasma frequency given by the formula, ω_m - cyclotron frequency. The trivial solution $\omega - \vec{k}_n \vec{v}_0 = 0$ determining the synchronous waves occurs only when $\vec{v}_n$ is perpendicular to $\vec{k}_n$. In general, Eq. (13) can be solved by numerical methods. In the special cases $\vec{k}_n \parallel \vec{B}$, $\vec{k}_n \perp \vec{B}$, $\vec{B} = 0$, however, analytical solutions

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can be obtained. The parameter s_n (plasma frequency reduction factor) is determined with the aid of electrostatics giving for a sheet beam in free space

$$s_n^2 = 1 - e^{-k_n b}, \qquad (1?)$$

(2b is the width of the beam), for a sheet beam between parallel conductors.

$$s_n^2 = 1 - e^{-k_n b} - \frac{\mathrm{sh}\, k_n b}{\mathrm{ch}\, k_n a} e^{-k_n a}, \qquad (22)$$

(2a - distance between plates), for a beam of radius b,

$$s_n^2 = 1 - k_n b K_1(k_n b) \qquad (23)$$

(K_1 - Bessel function). If in first approximation $k_n = \omega/v_0$ is taken and substituted into (23), the expression obtained agrees with that of P. Parzen. There are 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications

Card 3/4

Waves in electron flow

S/109/62/007/003/014/028
D266/D302

read as follows: D.A. Dunn et al., Proc. I.R.E., 1956, 44, 7, 5[illegible]; A.E. Siegman, J. Appl. Phys., 1960, 31, 1, 17; P. Parzen, J. Appl. Phys., 1952, 23, 2, 215.

SUBMITTED: June 14, 1961

Card 4/4

VEYDNER-DUBROVIN, L.A.; KUZNETSOV, F.M.; PEKIN, I.M.; TIKHOMIROV, A.P.; GULEVICH, I.D., red.; CHAPAYEVA, R.I., tekhn. red.

[Military sports contests in units and subunits] Voenno-sportivnye sostiazaniia v podrazdeleniiakh i chasti; metodicheskoe posobie. [By] L.A.Veidner-Dubrovin i dr. Moskva, Voenizdat, 1963. 133 p. (MIRA 17:2)

ZUBKOV, Aleksandr Yemel'yanovich.; PETIN, M.I., red.; LAVRENOVA, U.B., tekhn. red.

[Forecasting the weather at sea on the basis of local signs] Prog-skazanie pogody na more po mestnym priznakam. Moskva, Izd-vo "Morskoi transport," 1958. 85 p. (MIRA 11:8)
(Weather forecasting)

1. GOLOMBIK, M. S.: LEVINA, M.M.: PETIN, N.N.

2. USSR (600)

"The Question of the Passiveness of Iron — I. The Kinetics of the Dissolution of Iron in Nitric Acid. Zhur. Fiz. Khim; 13, No. 3, 1939; Lab. of Chem. Kinetics, Moscow State Univ.; Rcd 10 July 1938

9. [redacted] Report U-1613, 3 Jan. 1952

1. Al'TSHULER, O.V.: KONOVALOVA, B.A.: PETIN N.N.

2. USSR (600)

"The Heterogenous Catalysis of H202 by Means of Compounds of Manganes," Zhur.Fiz.Khim., 13, No. 7, 1939. MGU, Lab of Kinetics and Catalysis. Received 2 November 1938.

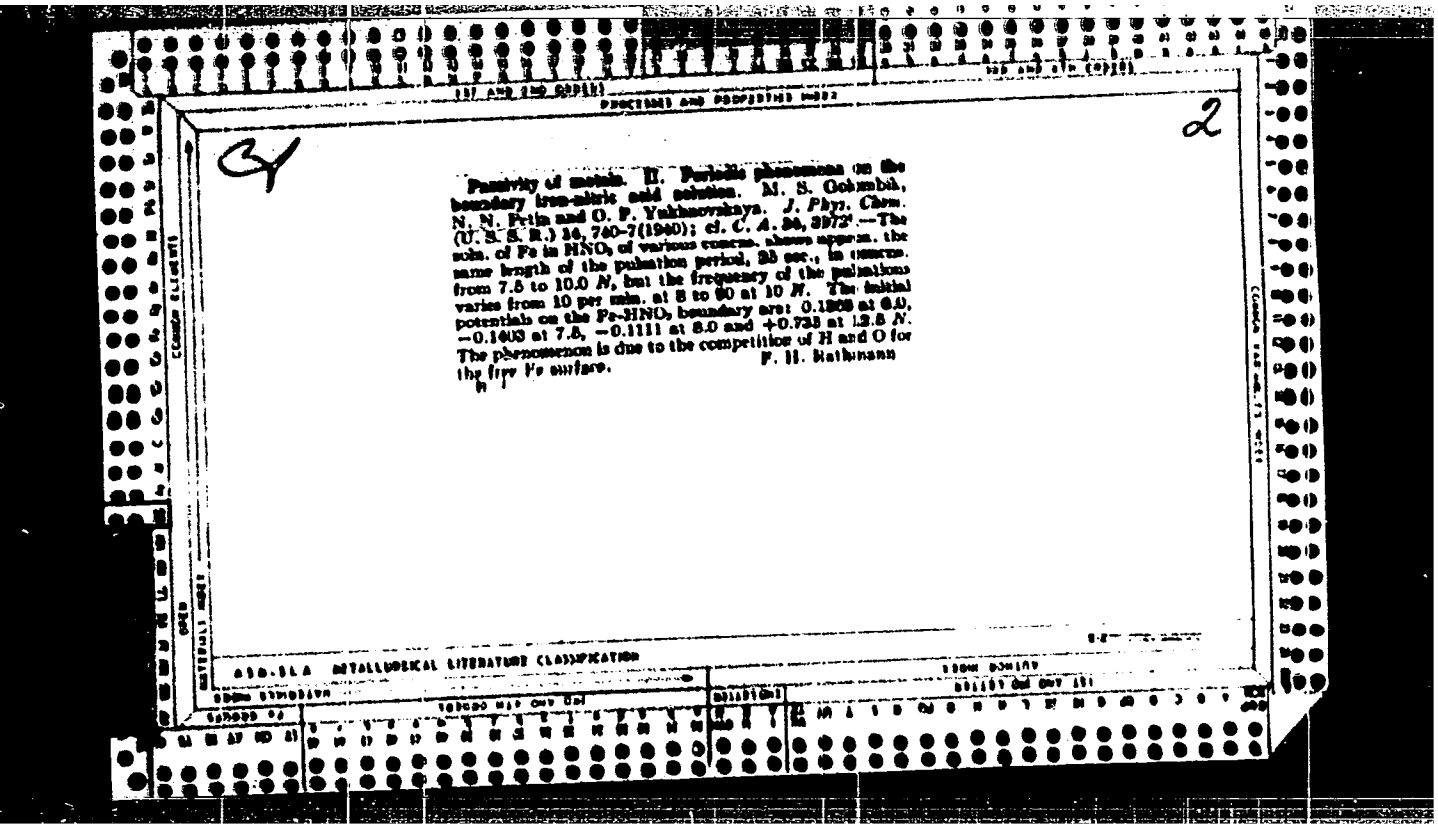
9. [redacted] Report U-1615, 3 Jan. 1952

GOLCIEK, M. S.; [illegible]; [illegible]

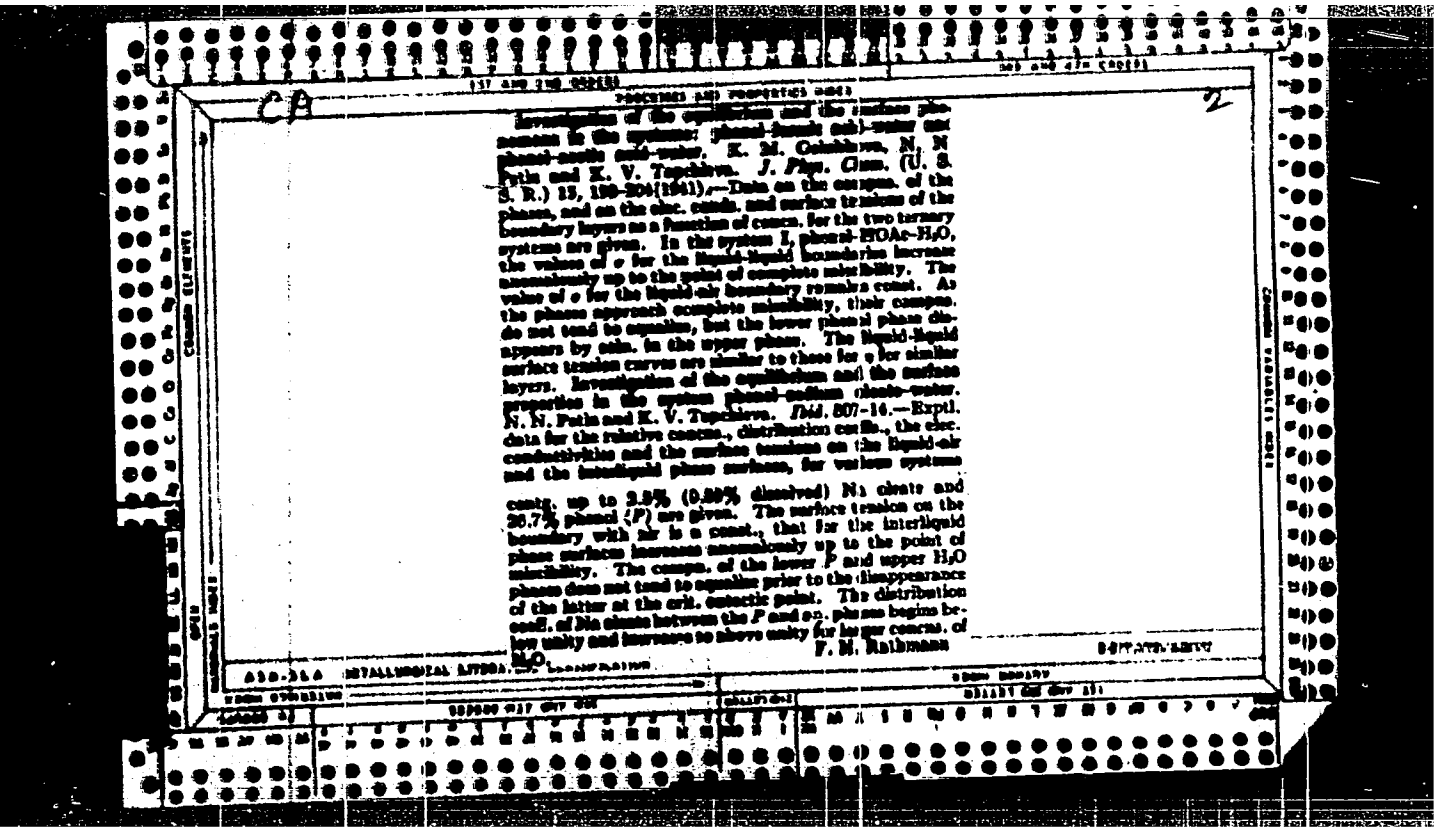
Moscow State [illegible] (-1940-)

"The Question of the Inertness of Metals. " Part II. "Periodic Phenomena on the Boundary (granitse) of Iron -- Nitric Acid Solutions."

Zhur. Fiz. Khim., Vol. 14, No. 5-6, 1940.



Passivity of metals. II. Periodic phenomena at the boundary iron-nitric acid solution. M. S. Gobumbih, N. N. Petin and O. P. Yakhnovskaya. *J. Phys. Chem. (U. S. S. R.)* 14, 760-7(1940); cf. *C. A.* 34, 3972⁸.—The soln. of Fe in HNO_3 of various concns. shows approx. the same length of the pulsation period, 23 sec., in concns. from 7.5 to 10.0 *N*, but the frequency of the pulsations varies from 10 per min. at 8 to 60 at 10 *N*. The initial potentials on the Fe-HNO_3 boundary are: 0.1808 at 8.0, −0.1403 at 7.8, −0.1111 at 8.0 and +0.733 at 12.8 *N*. The phenomenon is due to the competition of H and O for the free Fe surface.
F. H. Rathmann



CA

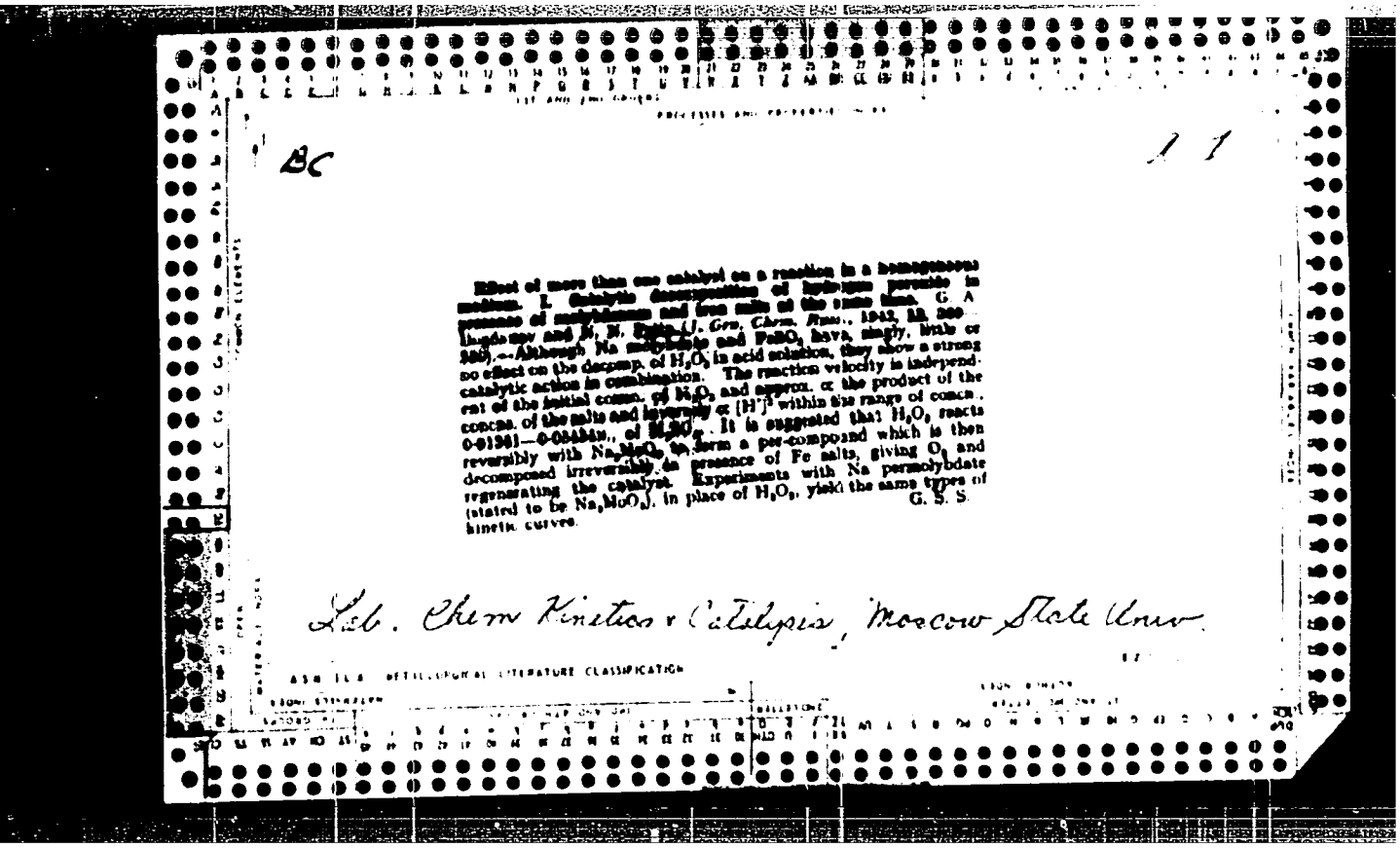
2

Investigation of the equilibrium and the surface phenomena in the systems: phenol-benzoic acid-water and phenol-anisic acid-water. K. M. Gorbunova, N. N. Pelin and K. V. Topchieva. *J. Phys. Chem.* (U. S. S. R.) 15, 199-204(1941).—Data on the compns. of the phases, and on the elec. conds. and surface tensions of the boundary layers as a function of concn. for the two ternary systems are given. In the system I, phenol-HOAc-H_2O, the values of σ for the liquid-liquid boundaries increase simultaneously up to the point of complete miscibility. The value of σ for the liquid-air boundary remains const. As the phases approach complete miscibility, their compns. do not tend to equalize, but the lower phenol phase disappears by soln. in the upper phase. The liquid-liquid surface tension curves are similar to those for σ for similar layers. Investigation of the equilibrium and the surface properties in the system phenol-sodium chloro-water. N. N. Pelin and K. V. Topchieva. *Ibid.* 207-16.—Expt. data for the relative concns., distribution coeffs., the elec. conductivities and the surface tensions on the liquid-air and the interliquid phase surfaces, for various systems

conts. up to 2.5% (0.89% dissolved) Na chloro and 20.7% phenol (P) are given. The surface tension on the boundary with air is a const., that for the interliquid phase surfaces increases simultaneously up to the point of miscibility. The compns. of the lower P and upper H_2O phases does not tend to equalize prior to the disappearance of the latter at the crit. eutectic point. The distribution coeff. of Na chloro between the P and aq. phases begins below unity and increases to above unity for larger concns. of H_2O.

F. M. Rahmann

Equilibrium and surface phenomena in the system phenol sodium oleate-water. III. N. N. Tyrin and K. V. Toptscheva (*J. Phys. Chem. Russ.*, 1941, **15**, 507—514).—Distribution of Na oleate between PhOH and H_2O, and the electric conductivity of the co-existing layers, are measured. The interfacial tension between the layers increases with the concn. of Na oleate although the miscibility increases as well. J. J. B.



BC

A 1

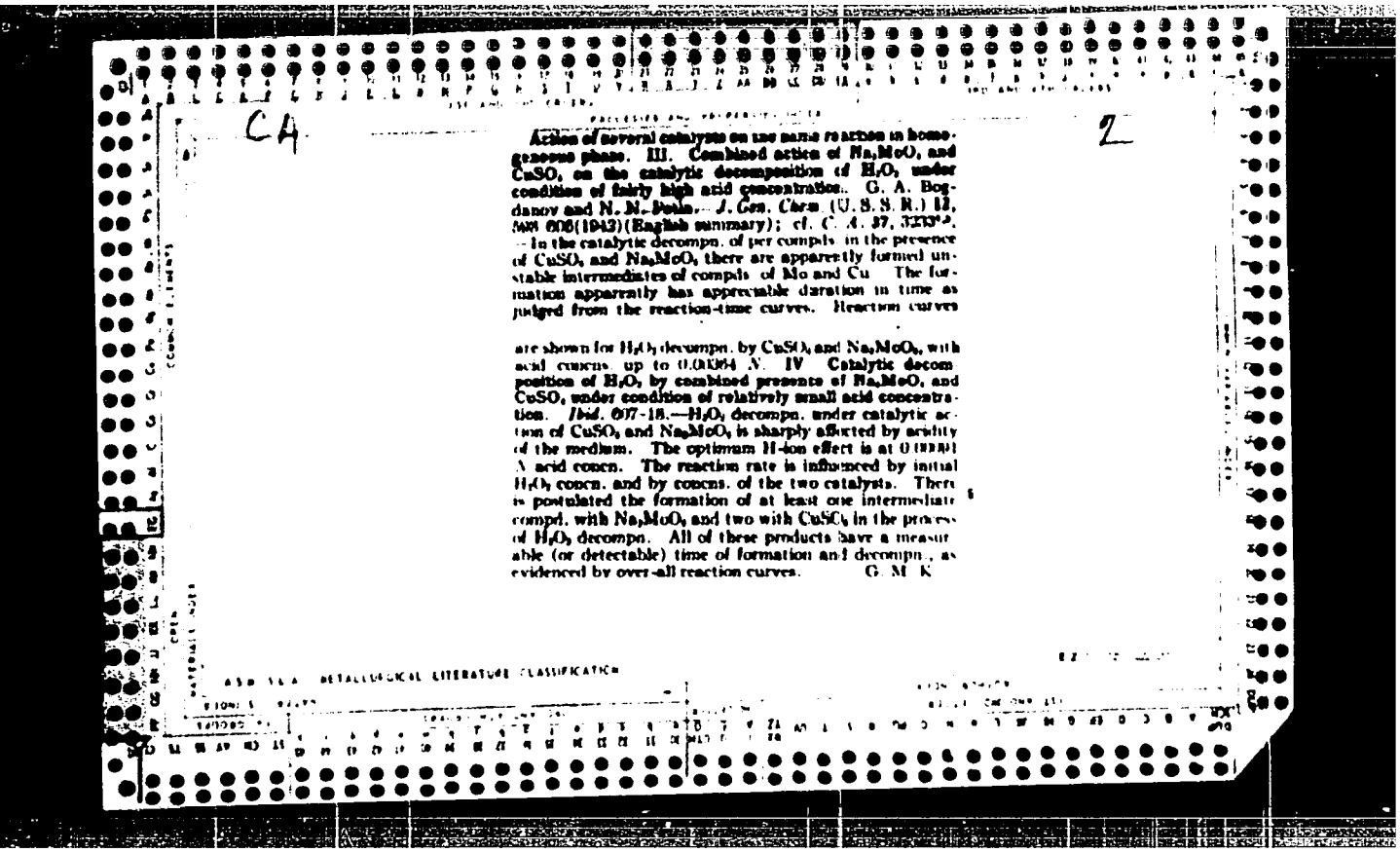
Effect of more than one catalyst on a reaction in a homogeneous medium. I. Catalytic decomposition of hydrogen peroxide in presence of molybdenum and iron salts at the same time. G. A. Hadzeeva and M. M. Sushin. *J. Gen. Chem. Russ.*, 1942, 12, 300-305).—Although Na molybdate and $FeSO_4$ have, singly, little or no effect on the decomp. of H_2O_2 in acid solution, they show a strong catalytic action in combination. The reaction velocity is independent of the initial concn. of H_2O_2 and approx. ∝ the product of the concns. of the salts and inversely ∝ $[H^+]^3$ within the range of concn. 0·01361—0·0848N., of H_2SO_4. It is suggested that H_2O_2 reacts reversibly with Na_2MoO_4 to form a per-compound which is then decomposed irreversibly, in presence of Fe salts, giving O_2 and regenerating the catalyst. Experiments with Na permolybdate (stated to be Na_2MoO_5), in place of H_2O_2, yield the same types of kinetic curves. G. S. S.

Lab. Chem Kinetics & Catalysis, Moscow State Univ

PETIN, N. N.

"A contribution to the problem of the effect of several catalysts upon the same reaction in homogeneous medium. II. Catalysis of hydrogen peroxide in the simultaneous presence of sodium molybdate and wolframate." Bogdanow, G. A., and Petin, N. N. (p. 390)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1942, Vol 12, No 7-8.



CA 2

Action of several catalysts on the same reaction in homogeneous phase. III. Combined action of Na_2MoO_4 and $CuSO_4$ on the catalytic decomposition of H_2O_2 under condition of fairly high acid concentration. G. A. Bogdanov and N. N. Bobin. *J. Gen. Chem.* (U. S. S. R.) 13, 600-606(1943)(English summary); cf. C. A. 37, 3213⁹. —In the catalytic decompn. of per compds. in the presence of $CuSO_4$ and Na_2MoO_4 there are apparently formed unstable intermediates of compds. of Mo and Cu. The formation apparently has appreciable duration in time as judged from the reaction-time curves. Reaction curves are shown for H_2O_2 decompn. by $CuSO_4$ and Na_2MoO_4 with acid concns. up to 0.0004 N. IV. Catalytic decomposition of H_2O_2 by combined presence of Na_2MoO_4 and $CuSO_4$ under condition of relatively small acid concentration. *Ibid.* 607-18.—H_2O_2 decompn. under catalytic action of $CuSO_4$ and Na_2MoO_4 is sharply affected by acidity of the medium. The optimum H-ion effect is at 0.0004 N acid concn. The reaction rate is influenced by initial H_2O_2 concn. and by concns. of the two catalysts. There is postulated the formation of at least one intermediate compd. with Na_2MoO_4 and two with $CuSO_4$ in the process of H_2O_2 decompn. All of these products have a measurable (or detectable) time of formation and decompn., as evidenced by over-all reaction curves. G. M. K.

ASM-WADC METALLURGICAL LITERATURE CLASSIFICATION

PLIN, M. M.

"On the action of several catalysts upon one and the same reaction in a homogeneous medium. IV. Catalytic decomposition of hydrogen peroxyde in the presence both of Na_2MoO_4 and $CuSO_4$ under conditions of a relatively low concentration of the acid." Bogdanow, G. A., and Plin, M. M. (p. 617)

SO: Journal of General Chemistry (Zhurnal obshchei Khimii) 1942, Vol 12, No 11-12.

PETIN, N. P.

Decomposition of hydrogen peroxide under the simultaneous action of two catalysts. III. Decomposition of H_2O_2 by salts of tungsten and copper. B. A. Konovalova, Z. D. Monakhova, M. N. Angarskaya and N. P. Petin. *J. Phys. Chem.* (U. S. S. R.) 10, 313-21(1937); cf. *C. A.* 31, 271.—While neither Cu nor W salts alone exert catalytic effects on the decompn. of H_2O_2, their mixts. have a strong effect, but only when one salt is first acted upon by the H_2O_2 before the other is added. The reaction velocity is a linear function of acidity. Since the Cu salt shows a max. effect at 0.12 mole/l. for both the H_2O_2 decompn. as well as the decompn. of pertungstate, it is suggested that the mechanism of reaction is represented by the equations for a catalytic reaction: $2Na_2WO_4 + H_2O_2 \rightarrow Na_2W_2O_8 + 2NaOH$, $2Na_2W_2O_8 + 2H_2O + (CuSO_4) \rightarrow 2Na_2WO_4 + 2H_2WO_4 + O_2 + (CuSO_4)$ and $CuSO_4 + H_2O_2 \rightarrow CuSO_4.H_2O_2$, $2CuSO_4.H_2O_2 + (Na_2WO_4) \rightarrow 2CuSO_4 + 2H_2O + O_2 + (Na_2WO_4)$. P. H. R.

PETIN, V.

Electric forge. MTS 18 no.8:45-46 Ag '58
(Solder and soldering) (MIRA 11:9)

PERGAMENSHCHIKOV, M.B.; PETIN, V.A.

A pair of laminating linear surfaces. Trudy TGU 160:58-64 '63.
(MIRA 17:1)

L 12986-63 EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD GG/JD
ACCESSION NR: AT3002991 S/2927/62/000/000/0118/0121 63
61

AUTHOR: Gerasimenko, S. I.; Markova, V. N.; Petin, Yu. A.

TITLE: Diffusion of aluminum from thin films into evaporating silicon [Report of the All-Union Conference on Semiconductor Devices held in Tashkent from 2 to 7 October 1961]

SOURCE: Elektronno-dy*rochny*ye perekhody* v poluprovodnikakh. Tashkent, Izd-vo AN UzSSR, 1962, 118-121

TOPIC TAGS: silicon p-n junctions, silicon aluminum-diffusion

ABSTRACT: Producing p-n junctions in silicon by the diffusion method has been technologically difficult because both acceptors and donors have low diffusion coefficients. An investigation is described of a new method of diffusion of Al into n-type Si evaporating in vacuum. Al-sprayed Si samples were heated in a graphite chamber up to a diffusion temperature. It was found that the surface concentration of Al was from 1.5 x 10 sup 17 to 1.0 x 10 sup 18 per cubic cm and the rate of Si evaporation was 0.55 Angstrom per sec at 1220C. The diffusion-annealed Si samples had a specular clean surface. It is claimed that the diffusion-process parameters can be easily estimated and that the process is readily controllable.

Card 1/2/ Assn: Inst. of Automation, Academy of Sciences SSSR
Academy of Sciences UzSSR, Tashkent St. Un.

ORZHESHKOVSKIY, V.V.; PETINA, L.A.

Combination of rheumatoid arthritis with silicosis (Colinet-Caplan syndrome). Sov.med. 26 no.6:126-127 Je '62. (MIRA 15:11)

1. Iz Sochinskogo nauchno-issledovatel'skogo instituta kurortologii (dir. - zasluzhennyy deyatel' nauki prof. M.M.Shikhov).
(ARTHRITIS, RHEUMATOID)
(LUNGS--DUST DISEASES)

AKHMETZYANOV, Yunus Akhmetzyanovich; PETINA, L.V., red.; SOKOLOVA, A.V., red.; RAFIKOV, M., red.; VLADIMIRTSEV, V., red.; TROFIMOVA, A., tekhn. red.

[Tatar cookery]Tatarskie bliuda. Kazan', Tatarskoe knizhnoe izd-vo, 1961. 127 p. (MIRA 15:12)

1. Chlen TSentral'nogo kulinarnogo soveta pri Ministerstve torgovli RSFSR (for Akhmetzyanov).
(Cookery, Tatar)

PARRA, I.K.; PETINA, N.V.

Automated cathodic protection station. Gaz. prom. 7 no.3:46-49 '62. (MIRA 17:8)

PETINA, N. V.

Method of calculating a saturable reactor for the annealing process controller on a drawing mill. Avtomatyka no.4:32-36 '60. (MIRA 13:11)

1. Institut elektrotekhniki AN USSR.
(Magnetic amplifiers) (Wire drawing) (Automatic control)

PETINA, N.V.

Automatic current regulator for a copper wire annealing plant [with summary in English]. Avtomatyka no.4:13-20 '57. (MIRA 11:1)

1. Institut elektrotekhniki AN URSR.
(Electric controllers) (Copper industry)

PETINA, N V

8(2) PHASE I BOOK EXPLOITATION SOV/1395

Ivakhnenko, Aleksey Grigor'yevich and Nina Vladimirovna Petina

Stabilizatory napryazheniya s kombinirovannym upravleniyem (Voltage Regulators With Complex Control) Kiyev, Izd-vo AN Ukrainskoy SSR, 1958. 243 p. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut elektrotekhniki.

Resp. Ed.: Chumakov, N.M., Candidate of Technical Sciences; Ed. of Publishing House: Kazantsev, B.A.; Tech. Ed.: Sivachenko, Ye.K.

PURPOSE: The book is intended for scientists, engineers and technicians, in particular for specialists in automatic regulation and those concerned with the applications of magnetic amplifiers.

COVERAGE: The book briefly describes the theory of automatic regulation in complex(multi-loop) systems (regulation being triggered not only by deviation of the controlled variable from its nominal value, but also by the primary disturbance and its derivatives).

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Voltage Regulators With Complex Control SOV/1395

The investigation of transient operating conditions made earlier by A.G. Ivakhnenko (taking into account nonlinearities of the amplifier) permitted the general conclusion that in complex systems activated by disturbances and their derivatives, the transient and steady-state errors may be entirely eliminated if the system accelerations do not exceed a certain value. Another prerequisite for the complete elimination of error consists in the recurrence of the same form of the transient. The system should be such that the same disturbance under the same initial conditions will always produce the same transient with respect to shape and amplitude. Otherwise, regulation with inputs consisting of disturbance functions and their derivatives will in one process diminish the error and in another increase it or even change its sign. Basic theoretical notions on steady-state conditions of complex systems were employed in the calculation of magnetic amplifier parameters. The authors describe various types of voltage regulators currently used by consumers of electric power. The advantages of complex automatic control systems are presented in the works of Academician V.S. Kulebakin, B.N. Petrov, G.M. Ulanov, and other specialists. Two books by A.G. Ivakhnenko are devoted to this subject. The present book covers the problems of practical application of these systems to a-c voltage regulation for maintaining a stabilized voltage at the point of delivery. According to N.M. Chumakov, editor of the book, the authors obtained new results both in the theory of complex systems as well as in the

Card 2/7

development and practical application of new types of voltage regulators. There are 68 references, of which 63 are Soviet and 5 English.

TABLE OF CONTENTS:

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PARRA, I.K. (Kiyev); PETINA, N.V. (Kiyev)

Automatic potential regulator for the protection of underground structures against corrosion. Avtomatyka no.2:76-78 '62. (MIRA 15:5)

(Pipelines--Corrosion) (Electric lines--Underground)

S/102/60/000/004/003/006
D251/D304

AUTHOR: Petina, N.V.

TITLE: Method of calculating a saturation coil for an annealing process controller on a drawing mill for copper wire

PERIODICAL: Avtomatyka, no. 4, 1960, 32 - 36

TEXT: The author describes an annealing process regulator in use at the "Ukrkabel" works, where its was developed in 1954. This is a contactless controller (Fig. 1), the sensitive element of which is a saturation coil. A method is given diagrammatically for calculating the saturation coil for minimum weight which leads to the solution of a system of 9 equations. There are 3 figures, 1 table and 2 Soviet-bloc references.

ASSOCIATION: Instytut elektrotekhniky AN URSR (Electrotechnical Institute AS UkrSSR)

Card 1/2

S/102/60/000/004/003/006
D251/D304

Method of calculating a ...

Fig. 1. Copper wire annealing controller.

Legend: 1 - Variable transformer СТЭ-24 (STE-24); 2 - annealed wire; 3 - saturation coil; 4 - autotransformer ЛАТР-2 (LATR-2); 5 - ferroresonant stabilizer; 6 - ferroresonant stabilizer

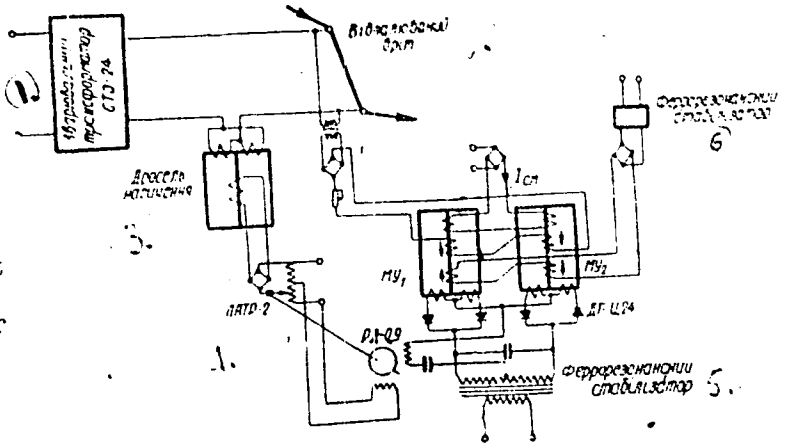


Рис 1. Регулятор відпалу мідного дроту

Card 2/2

PARRA, Irina Konstantinovna; PETINA, Nina Vladimirovna; IMAS, R.L., red.; TURBANOVA, N.A., tekhn. red.

[Automatic station for the cathode protection of underground metal pipelines from corrosion] Avtomaticheskaia stantsiia katodnoi zashchity podzemnykh metallicheskikh truboprovodov ot korrozii. Kiev, Izd-vo AN USSR, 1963. 49 p. (MIRA 17:1)

IVAKHNENKO, O.G.; PETINA, N.V.

New methods for calculating the parameters of an automatic control system containing magnetic amplifiers. Avtomatyka no.1: 45-61 '57. (MLRA 10:5)

1. Institut elektrotekhniki AN URSR.
(Automatic control)

VESELOV, I.Ya.; TIPOGRAF, D.Ya.; PETINA, T.A.

Aspergillus candidus as producer of abomasal enzyme. Prikl. biokhim. i mikrobiol. 1 no.1:52-56 Ja-F '65. (MIRA 18:5)

1. Tekhnologicheskiy institut pishchevoy promyshlennosti, Moskva.

PETINOV, I.A., inzh.

Conditions for the simulation of fuel injection in diesel engines. Izv. vys. ucheb. zav.; mashinostr. no.10:123-133 '63. (MIRA 17:3)

1. Saratovskiy sel'skokhozyaystvennyy institut.

PETINOV, N.D.; KHARANYAN, N.H.

Anatomicophysiological characteristics of branched wheat grown under irrigation. Fiziol.rast. 3 no.1:10-22 Ja-F '56.(MLRA 9:5)

1. Institut fiziologii rasteniy imeni K.A. Timiryazeva Akademii nauk SSSR, Moskva.
(Wheat)

PETINOV, N.S.; MOLOTKOVSKIY, Yu.G.; FEDOROV, P.S.

Effect of zinc on the increase in heat resistance of plants.
Dokl. AN SSSR 153 no.5:1210-1212 D '63. (MIRA 17:1)

1. Institut fiziologii rasteniy im. K.A. Timiryazeva AN SSSR.
Predstavleno akademikom A.L. Kursanovym.

PETINOV N. S.

COUNTRY : USSR
CATEGORY : Cultivated Plants. Cereals. M

ABS. JOUR. : RZhBiol., No.14, 1958, No. 63305

AUTHOR : Petinov, N. S., Volkov, I. A., Peshekhonova, N. F.
INST. : Academy of Sciences USSR
TITLE : Development of the Root System in Different Spring Wheat Varieties Under the Conditions of Irrigation and Application of Fertilizers.

ORIG. PUB. : V sb.: Orosheniye s.-kh. kul'tur v Tsentr.-chernozem. polose RSFSR. Vyp. 2. M., AN SSR, 1956, 262-295

ABSTRACT : The effect of irrigation and manuring of spring wheat (Lyutestsens 62, Gordeiforme 10, Moskovka, Wheat-couch grass hybrid 22850, Narodnaya, Otechestvennaya, Al'bidum 43, Bezenchukskaya 98, Flora 6) on the development of root system and productivity was studied during 1949-1952 at Kursk ZOMS. In dry years, it is necessary to carry out 1-2 irrigations with a norm of 400-500 and in severe drought 600-700 m^3/ha. Irrigation promoted an increase in the number of nodular roots by 1½ times and irrigation with manuring (NPK) - by more than 2½ times. K produced

Card: 1/2

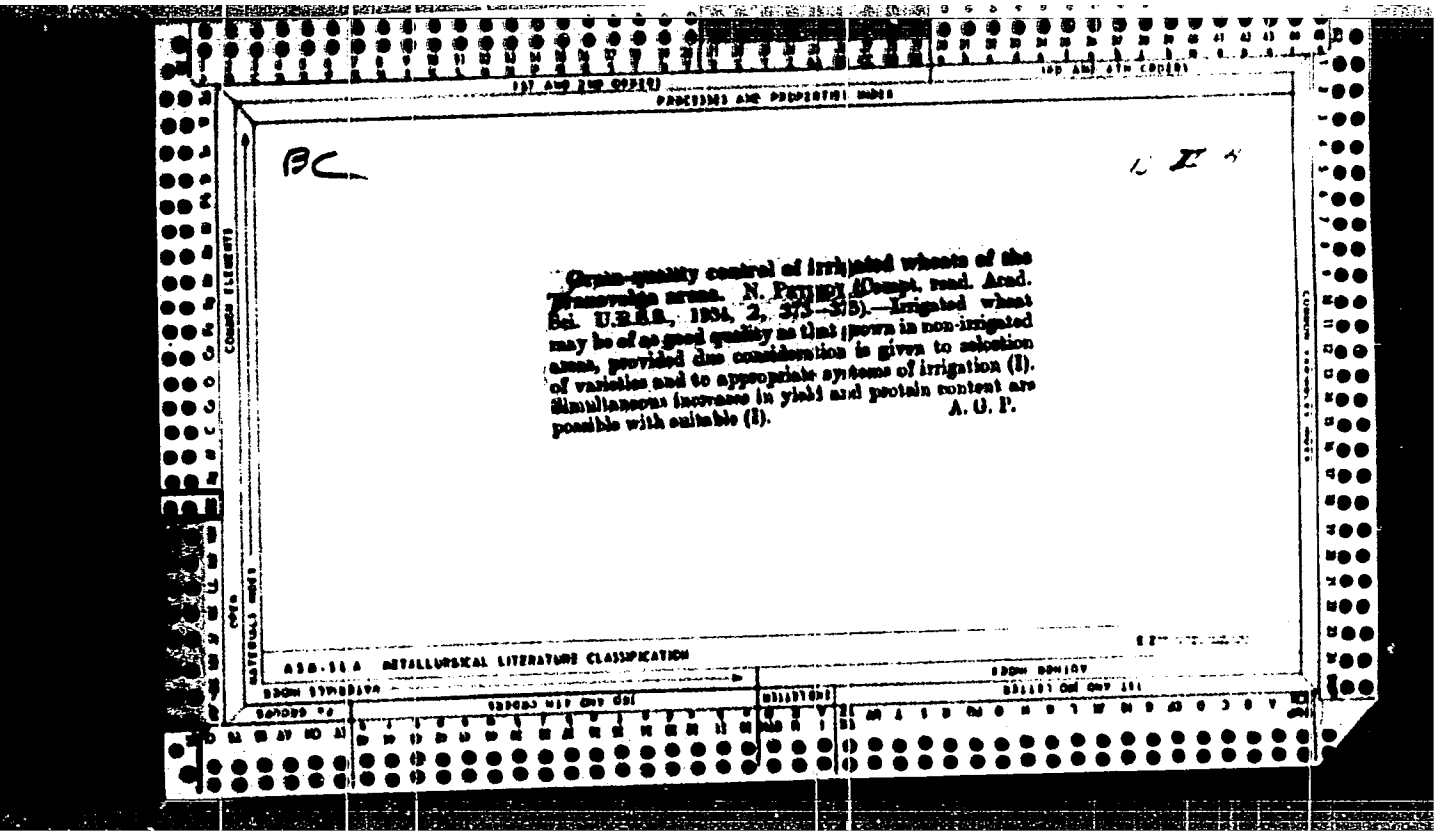
14

PETINOV, N.S., doktor biolog.nauk; PRUSAKOVA, L.D., kand.biolog.nauk

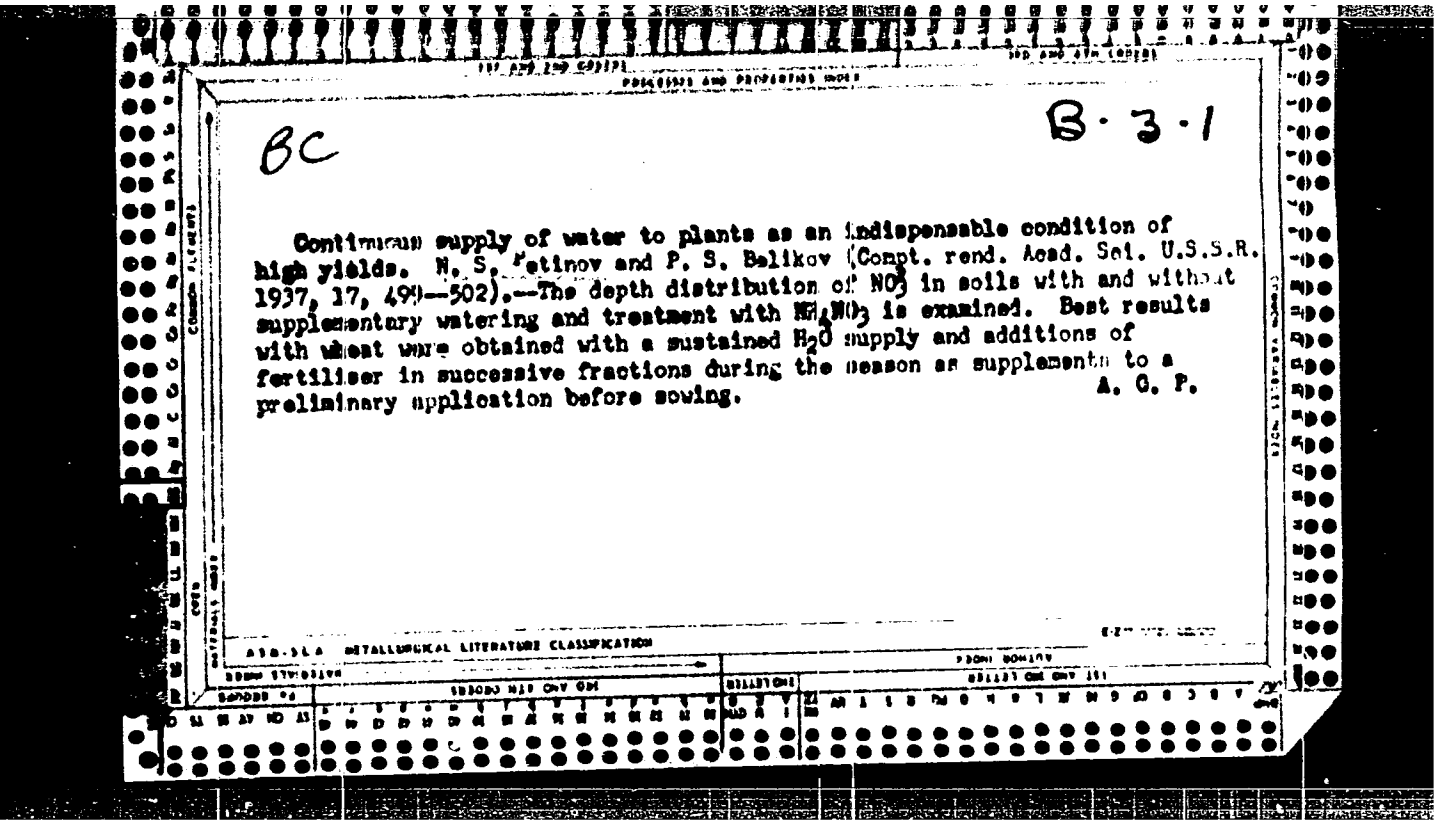
Study of the physiological and biochemical mechanism of lodging in crop plants. Vest.AN SSSR 35 no.6:80-84 Je '65.

(MIRA 18:8)

1. Institut fiziologii rasteniy im. K.A.Timiryazeva AN SSSR.



Grain-quality control of irrigated wheats of the Transvolga areas. N. Pavlov. C.R. Acad. Sci. U.R.S.S., 1934, 2, 373–375).—Irrigated wheat may be of as good quality as that grown in non-irrigated areas, provided due consideration is given to selection of varieties and to appropriate systems of irrigation (I). Simultaneous increase in yield and protein content are possible with suitable (I). A. G. P.



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B-3-1

Continuous supply of water to plants as an indispensable condition of high yields. N. S. Petinov and P. S. Belikov (Compt. rend. Acad. Sci. U.S.S.R. 1937, 17, 499—502).—The depth distribution of NO_3 in soils with and without supplementary watering and treatment with NH_4NO_3 is examined. Best results with wheat were obtained with a sustained H_2O supply and additions of fertiliser in successive fractions during the season as supplements to a preliminary application before sowing. A. G. P.