KURSHAKOV, N.A., prof.; KIREYEV, P.M., prof. (Moskva)

Myocardial hypoxia in acute and chronic radiation effects.
Kardiologiia 5 no.2:3-9 '63 (MIRA 17:2)

1. Chlen-korrespondent AMN SSSR (for Kurshakov).

KIREYEV, P. M.

Heart - Wounds and Injuries.

Heart diseases resulting from injuries. Novosti med. no. 20, 1950.

9. Monthly List of Russian Accessions, Library of Congress, April 1952. Unclassified.

KIRSYEV, P.M.

Disorders of renal filtration in various phases of hypertension. Ter. arkh., Moskva 23 no.5:61-67 Sept-Oct 1951. (CIML 21:1)

1. Docent. 2. Of the Hospital Therapeutic Clinic (Director -- Honored Worker in Science Prof. V. F. Zelenin, Active Member of the Academy of Medical Sciences USSR), Second Moscow Medical Institute imeni I. V. Stalin.

KIS[illegible]V, P. M.

Dissertation: "Disturbances of the Kidney Circulation in Hypertension." Cand Med Sci, Second Moscow Medical Inst imeni I. V. Stalin, Moscow, 24 May 54.
Meditsinskiy Rabotnik, Moscow, 7 May 54.

SO: SUM 284, 26 Nov 1954

KIREYEV, P.M.

(Petr Mikhaylovich)

"Disorders of Renal Blood Circulation in Hypertonic Disease," (Dissertaition) Academic Degree of Doctor in Medical Scinces, based on his defense, 24 May 1954, in the Council of the Second Moscow State Medical Inst. im. Stalin.

KIREYEV, P.M.

Disorders of renal circulation in early stages of hypertension.
Sov. med. 18 no.10:14-18 O '54. (MLRA 7:11)

1. Iz II Moskovskogo meditsinskogo instituta imeni I.V.Stalina.
(HYPERTENSION, physiology,
kidney circ. in early stages)
(KIDNEYS, blood supply,
disord. in hypertension)

'0

KIREYEV, P.'I.; doktor meditsinskikh nauk

Diodrast and its use in kidney function tests. Lab.delo no.2:13-16 Mr-Ap '55. (MLRA 8:8)

1. Iz kafedry fakul'tetskoy terapii (Zav.-prof. M.I. Zolotova-Kostomarova) pediatricheskogo fakul'teta II Moskovskogo meditsinskogo instituta imeni I.V. Stalina.
(KIDNEY FUNCTION TESTS,
diodrast tests)
(CONTRAST MEDIA,
diodrast kidney funct.test)

Kirsev P.M.

KIRSEV, P.M.

Clinical aspects and treatment of chronic radiation sickness. Med. rad. 2 no.5:72-79 S-O '57. (MIRA 11:2)
(RADIATIONS, injurious effects,
chronic radiation sickness, clin. aspects & ther.,
review (Rus))

GLAZUNOV, I.S., prof., KIRNYEV, P.M., prof. (Moskva)

Early manifestations of chronic radiation sickness and methods of diagnosis. Sov.med. 22 no.4:49-55 Ap '58 (MIRA 11:7)
(RADIATION, inj.eff.
chronic radiations sickness, early manifest. & diag. (Rus))

PHASE I BOOK EXPLOITATION SOV/6080

Kireyev, Petr Mikhaylovich

Luchevaya bolezn' klinika, diagnostika i lecheniye (Radiation Sickness; Clinic, Diagnostic, and Medical Treatment). Moscow, Medgiz, 1960. 49 p. (Series: Biblioteka prakticheskogo vracha). Errata slip inserted. 14,000 copies printed.

Ed.: Ye. F. Baranova; Tech. Ed.: N. K. Zuyeva.

PURPOSE: This book is intended for physicians and scientific workers concerned with radiation sickness. It may also be useful for personnel who are interested in the effects of nuclear weapons and treatment of radiation sickness.

COVERAGE: The booklet contains information on injuries from blast, thermal radiation and nuclear radiation, sustained by the population of Hiroshima and Nagasaki in 1945. Both acute and chronic radiation sickness are discussed. Suggestions for diagnosis and

Card 1/2

treatment of radiation injury, based on extensive practical material and theoretical studies, are presented.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

SUBJECT: Biology and Medicine

IS/dk/bc
1-14-63

KIREYEV, P. M., prof. (Moskva)

Therapeutic use of bone marrow in radiation sickness in man. Klin. med. no.11:30-33 '61. (MIRA 14:12)

(MARROW—TRANSPLANTATION)
(RADIATION SICKNESS)

KIREYEV, P.M.; LIFSHITS, G.I.; DIK, M.G.; BATRAKOV, V.I.; SLAVUTSKIY, N.I., inzh.; FRID, N.Ya.; SUDOPLATOV, G.A.; PAL'KOVICH, Ya.D., starshiy tekhnolog

Worthy welcome to the 22d Congress of the CPSU. Khol. tekh. 38 no.4:5-13 Jl-Ag '61. (MIRA 15:1)

1. Direktor Moskovskogo khladokombinata No.3 (for Kireyev). 2. Glavnyy inzh. Moskovskogo khladokombinata No.3 (for Lifshits). 3. Glavnyy inzh. Moskovskogo kholodil'nika No.9 (for Dik). 4. Glavnyy inzh. Moskovskogo kholodil'nika No.10 (for Batrakov). 5. Glavnyy inzh. Moskovskogo kholodil'nika No.12 (for Frid). 6. Direktor Kiyevskogo kholodil'nika No.1 (for Sudoplatov).
(Refrigeration and refrigerating machinery)

Kireyev, P.S

USSR/Optics - Spectroscopy K-6

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12993

Author : Kireyev, P.S.
Inst :
Title : Intensity of the Components of the Fine Structure of the He II Line $\lambda = 4868$ A.

Orig Pub : Optika i spektroskopiya, 1956, 1, No 7, 833-845

Abstract : Using a Fabry-Perot interferometer, the author measured the intensity of the components of the fine atructure of the line $\lambda = 4686$ A of ionized helium. The source of light was a hallow cathode. The author succeeded in reducing substantially the time of exposure compared with that known from the literature. It was found that at small pressures of gas (~0.5 mm mercury) the experimental values of the intensities for the majority of the components are in good agreement with the theoretical values, while for certain components, an increase in the

Card 1/2

Moscow State Univ im. M.V. Lomonosov

KIREYEV, P.S

KIREYEV, P.S.

Using Fabry-Perot's etalon for studying intensities of component lines with a complex structure. Vest.Mosk.un. Ser.mat.,mekh., astron.,fiz.,kim.11 no.1:103-110 '56. (MIRA 10:12)

1. Kafedra optiki Moskovskogo universiteta.
(Spectrum analysis) (Interferometer)

KIREYEV P.S.

K-6

Category : USSR/Optics - Spectroscopy

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 5020

Author : Kireyev, P.S.
Title : Relative Intensity of the Fine Structure Components of HeII at 4686 A.

Orig Pub : Dokl. AN SSSR, 1956, 106, No 4, 630-632

Abstract : To reslove the fine structure of the investigated 4686A line of HeII, a Fabry-Perot standard was used with a coefficient of reflection of 88% in the 4700A region. The instrument used for the preliminary dispersion was the ISP-51 spectrograph with a camera having F = 270 mm. The light source was a hollow-cathode tube, cooled with liquid nitrogen. The expansion of the contours was carried out graphically. The measurements of the intensities of the fine-structure components and complexes (complex -- group of unresolved components) is based on the measurement of the areas and of the maximum intensities. For some of the complexes and components the relative intensities are in good agreement with the theoretical values; certain considerable deviations of the experimental data from the theoretical are observed for others. In the author's

Card : 1/2

Category : USSR/Optics - Spectroscopy K-6

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 5020

opinion, the discrepancy with the theory is caused by the dependence of the intensities on the excitation conditions. The shifts of the following levels were determined: $\delta\nu_{3s} = 129.1 \times 10^{-3}$ cm^{-1}, $\delta\nu_{4s} = 57.9 \times 10^{-3}$ cm^{-1}.

Card : 2/2

KIREYEV, PS

USSR/Optics Spectroscopy. K-6

Abs Jour : Referat Zhur Fizika, No 3, 1957, 7797

Author : Kireyev, P.S.
Inst : Moscow State University, USSR.
Title : Fine Structure of the He^3II 4687A Line with Allowance for the Lamb Shift of the $nS_{1/2}$ Terms

Orig Pub : Dokl. AN SSSR, 1956, 108, No 2, 226-227

Abstract : Investigation of the fine structure of the lines of He^3II 4687A (transition $n = 4 \rightarrow n = 3$) was carried out with a ISP-51 spectrograph with a F-270 camera with a Fabry-Perot interferometer ahead of the spectrograph slit. The source of light was a sealed discharge tube with hollow cathode, cooled with liquid nitrogen. The line is resolved into four groups, each having several components, and sometimes the component $^3P_{1/2}$ -- $^4S_{1/2}$ component is sometimes also resolved.
The measurement results are in agreement with the theory

Card 1/2 - 71 -

USSR/Optics - Spectroscopy. K-6

Abs Jour : Referat Zhur - Fizika, No 3, 1957, 7797

of fine structure with allowance for the lamb shift of the terms.
The term $3S_{1/2}$ is shifted by $(116 \pm 15) \times 10^{-3}$ cm^{-1}, while the term $4S_{1/2}$ is approximately shifted by $(64 \pm 30) \times 10^{-3}$ cm^{-1}.

Card 2/2 - 72 -

KIREYEV, P.S.

AUTHOR: KIREEV, P.S. PA - 2055

TITLE: The Fine Structure and the LAMB Shift of the Level $2s_{1/2}$ of the Line T_α (λ = 6560 Å) of Tritium.

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 1, pp 41-44 (U.S.S.R.)

Received: 2 / 1957 Reviewed: 3 / 1957

ABSTRACT: The line mentioned in the heading is the first line of the BALMER series. This work investigates also the intensities of the components of the fine structure of the aforementioned line and the isotopic shift in the lines H_α - T_α. The structure of the line T_α determined from DIRAC'S theory is demonstrated in a table, where the LAMB shift of the terms $2s_{1/2}$ and $3s_{1/2}$ is taken into account. The intensities too are determined by means of DIRAC'S theory. As a light source a U-like discharge tube with a 3 mm diameter and a length of 120 mm, which was filled with pure tritium with a pressure of 2-3 torr, was used here. Luminescence of the tritium was excited by a current of from 2,5 to 10 ma of a high voltage transformer. The fine structure of the line T_α was resolved with a FABRI-PEROT spectrometer and the interference image was projected on the gap of a spectrograph. The spectrum was photographed, the spectrograms measured

Card 1/3

PA - 2055

The Fine Structure and the LAMB Shift of the Level $2s_{1/2}$ of the Line T_α (λ = 6560 Å) of Tritium.

with a comparator and the results exploited by the method of the rectangular tables (matrices).
The line T_α consists of three easily separable components. After a certain operation time of the tube traces of hydrogen were observed in the spectrum, a fact which was confirmed by a photograph of the hydrogen radiation in the hollow cathode. A small amount of hydrogen facilitated a more precise measurement of the distances between the components of the lines H_α and T_α. The mean values of the distances between the "complexes" (i.e. between the groups of not resolved components) a-e, e-g and a-g amount to 192,3; 129,0 and 321,3. The results thus obtained do not agree with the results of DIRAC'S theory for the fine structure, a fact which is explained by a shift of the levels $2s_{1/2}$ and $3s_{1/2}$ relatively to $2p_{1/2}$ and $3p_{1/2}$. The shift of the term $2s_{1/2}$ lies within the limits $0{,}033 < \delta E_{2s} < 0{,}039$ cm^{-1}. The author determined the distances between the components by spectrograms which were taken down

Card 2/3

9(4)

AUTHORS: Kireyev, P.S. and Yuzefovich, A.A. SOV/55-58-5-16/34

TITLE: Some Optical Investigations of a Strong Pulse Gas Discharge in Hydrogen (Nekotoryye opticheskiye issledovaniya moshchnogo impul'snogo gazovogo razryada v vodorode)

PERIODICAL: Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 5, pp 105 - 110 (USSR)

ABSTRACT: This paper reports on the results of an optical investigation of the plasma of a gas discharge in hydrogen for long duration of impulse (about 500 μsec). The spectral composition considerably depends on the initial pressure in the gas chamber. With increasing pressure the lines caused by the material of the wall and of the electrodes vanish, and the H - lines become more intensive. The half width of the H_α - line for $p \approx 5$mm Hg is 11.9 ± 0.1 Å, for $p \approx 10^{-2}$ mm Hg only 3.7 ± 0.1 Å.

The authors thank L.A. Artsimovich, Academician, for his assistance.

Card 1/2

Some Optical Investigations of a Strong Pulse Gas Discharge in Hydrogen SOV/55-58-5-16/34

There are 7 figures, and 4 references, 3 of which are Soviet, and 1 American.

ASSOCIATION: Kafedra atomnoy fiziki i elektronnykh yavleniy (Chair of Atomic Physics and Electronic Phenomena)

Card 2/2

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S/188/60/000/005/006/010
B019/B056

3.1250 (1062, 1163, 1168)

AUTHORS: Korolev, F. A., Kireyev, P. S.

TITLE: Fabry-Pérot Standard From Quartz Crystals

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, 1960, No. 5, pp. 53 - 59

TEXT: For the production of spectroscopes with a resolution of from $R = 5 \cdot 10^7$ to $5 \cdot 10^8$, the Fabry-Pérot standards with large interspacing between the mirrors and a high reflection capacity of the mirrors are necessary. For this purpose quartz crystals are especially well suited, but they have the disadvantage of birefringence. In a voluminous mathematical calculation, such conditions are endeavored to be found at which birefringence and the rotation of the polarization plane of light through the quartz have no influence. On the basis of the results obtained the authors find it possible to use quartz crystals in a spectroscope with high resolution; in this case the angle of inclination of the two quartz plates must be roughly 10^{-2}. According to the orientation of the plates

Card 1/2

86 277

Fabry-Pérot Standard From Quartz Crystals S/188/60/000/005/006/010
B019/B056

with respect to the optical axis of the crystal, $R \sim 10^6$ to 10^8 may be obtained. If the spectroscope consists of plane-parallel plates, birefringence and rotation of the polarization plane exert no influence upon the resolution. Standards in form of plane-parallel layers, which were covered on two sides with layers of mirror, permitted a resolution of $R = 10^4$. The testing of such standards in fine-structure investigations of spectral lines within the visible and ultraviolet spectral range showed very good results. There are 2 figures and 4 Soviet references.

ASSOCIATION: Kafedra optiki (Department of Optics)

SUBMITTED: February 26, 1960

Card 2/2

L 24371-66 EWT(1)/EWT(m)/ETC(f)/ENG(m)/T/EWP(t) IJP(c) RDW/JD/GG

ACC NR: AP6009704 SOURCE CODE: UR/0181/66/008/003/0980/0982

AUTHOR: Strel'tsov, L. N.; Kiseleva, N. M.; Kireyev, P. S. 49

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov) 43

TITLE: Anomalous shift of the intrinsic-absorption edge under the influence of an electric field in films and amorphous samples of selenium 18 27

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 980-982

TOPIC TAGS: selenium, absorption edge, line shift, electret, surface property

ABSTRACT: This is a continuation of earlier investigations (FTT v. 7, 2713, 1965) of the intrinsic absorption edge in GaAs, CdS, and CdTe. The present study is devoted to selenium, where instead of the theoretically predicted shift of the absorption edge toward the long-wave side, the shift is toward the shorter wavelength. The amorphous-selenium samples were prepared in the form of plates 200--400 μ thick, or films produced by thermal sputtering in vacuum, ranging in thickness from 1 to 50 μ. The spectra with and without field were obtained with an ISP-51 spectrograph. An incandescent lamp was used as a light source. The spectrograms were analyzed with the aid of a microphotometer (MF-4). The spectra were taken at room and nitrogen temperatures, and the field was 5 kv. To ascertain the cause of the anomalous shift of the intrinsic absorption edge, x-ray pictures were taken of the sample before and after the application of the field, to check on the structural changes brought about by the field. The hypothesis that the shift may be due to the fact that selenium exhibits

Card 1/2

L 24371-66
ACC NR: AP6009704

an electret state, whose structure becomes ordered when the field is applied, was rejected on the basis of the experimental data, since no ordering was observed. It is therefore proposed that the anomalous shift is due to the presence of surface states, although the manner in which this causes the shift remain unclear, and calls for additional research. Orig. art.has: 1 figure.

SUB CODE: 07 / SUBM DATE: 06Jul65/ ORIG REF: 002/ OTH REF: 003

Card 2/2

ACC NR: AP7005416 SOURCE CODE: UR/0072/66/000/011/0017/0018

AUTHORS: Fedoseyev, D. V. (Candidate of technical sciences); Ryabov, V. A. (Candidate of technical sciences); Kireyev, P. S. (Engineer)

ORG: [Fedoseyev, Ryabov] Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR); [Kireyev] State Scientific Research Institute for Glass (Gosudarstvennyy nauchno-issledovatel'skiy institut stekla)

TITLE: Dependence of the diameter of glass fibers on the manufacturing method

SOURCE: Steklo i keramika, no. 11, 1966, 17-18

TOPIC TAGS: glass, fiber glass, mathematic analysis, PRODUCTION ENGINEERING, GLASS FIBER

ABSTRACT: An equation, expressing the dependence of the diameter of glass fibers on the properties of the glass and on the manufacturing method was derived as

$$d = \frac{1}{4\sqrt{2}} \sqrt{\frac{(L+l)\,g\rho D^4}{l\eta\mu}}.$$

Here L is the level of the glass reservoir, l - length of die, g - acceleration of gravity, ρ - density of glass, D - diameter of die, η - viscosity of glass, and μ - rate of drawing. The derivation is based on the work of Ya. A. Shkol'nikov (Steklo i keramika, 1964, No. 7). The equation was tested on the experimental results of M. G. Chernyak et al. (Steklo i keramika, 1966, No. 1) and of V. A. Ryabov et al. (Steklo

Card 1/2 UDC: 661.189.211.212

ACC NR: AP7005416

(byulleten' GIS) 1961, No. 3), as well as on experimental data obtained by the present authors. The results of the tests are shown graphically (see Fig. 1).

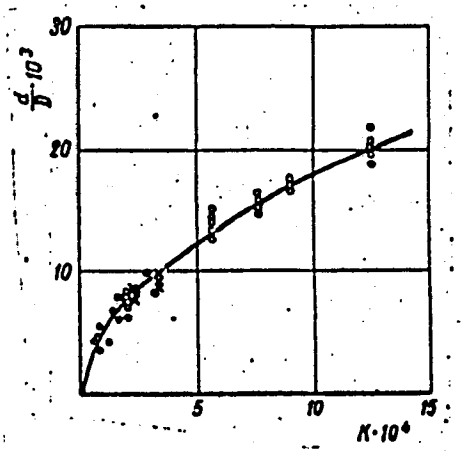


Fig. 1. Dependence of the ratio of glass fiber diameter to the die diameter on the dimensionless criterion $K=\frac{L\rho gD^2}{l\eta\mu}$; solid circles - data of Chernyak et al; open circles - data of Ryabov et al; crosses - data of present authors.

It was found that the experimental data were in good agreement with the proposed theoretical relationship. Orig. art. has: 1 graph, 1 table, and 4 equations.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 006

Card 2/2

KI[illegible], P. S.

KI[illegible], P. S. : "Investigation of the intensity of components of the fine structure of atoms and ions resembling hydrogen." Moscow State U imeni Lomonosov. Physics Faculty. Chair of Optics. Moscow, 1956. (Dissertation for the Degree of Candidate in Physicomathematical Science.)

Knizhnaya letopis', No. 30, 1956. Moscow.

KIREYEV, P.S.

AUTHORS: Ryabov, V. A., Barbarina, T. M., Steshenko, M. I., Kireyev, P. S., Sukhov, M. P. 72-58-3-14/15

TITLE: Rubberoid and Hydro-Insulating-Tapes Based on Glass Fiber (Ruberoyd i gidroizolyatsionnyye lenty na osnove steklovolokna)

PERIODICAL: Steklo i Keramika, 1958, . . . Nr 3, pp. 43-47 (USSR).

ABSTRACT: The increased chemical stability, as well as the greater mechanical strength of glass fiber in comparison with organic fiber, makes it possible to use the former successfully as reinforcement for a series of products as rubberoid and other special tissues. Glass-fiber can also partly be used in concrete constructions in lieu of metal reinforcements, as referred to in the works by V. A. Ryabov, T. M. Barbarina, N. A. Sheludyakov and A. K. Burov, G. D. Andriyevskaya (reference 1). The manufacture of rubberoid and hydro-insulating tapes based upon glass fiber is worth noting in Czechoslovakia. This manufacture

Card 1/3

is further fully described and explained by means of 4 figures. A matting which is used as semiproduct for the manufacture of rubberoid and other special, variously composed materials, is manufactured from agglutinated layers of oriented glass-fiber. The manufacture of layers of oriented glass-fibers with a movable glass-melting furnace (920 mm of length and 250 mm of diameter) is shown in figure 1, in which case the glass-raw-material is given, too. It is driven by an electric motor of 3 kW. The process of manufacturing a mat of glass-fibers is carried out in continuous production (figures 2 and 3) in which case the glass-fibers are both impregnated and dryed in a solution. The composition of the solution is given. The drying out is carried out in air at 100°. Impregnated mats of 115 to 125 m of length, 1 m of width and approximately 500 mm of diameter which are subsequently used for the manufacture of rubberoid and hydro-insulating-tapes, are manufactured. This operation is carried out in progressive manufacture (figure 4) and consists again of impregnation with asphalt, the composition and preparation of which is fully described. The length of rubberoid and other tapes amounts to 20 m. No complicated equipment is required for the manufacture of these articles which are a cheap material of high quality for

Rubberoid and Hydro-Insulating-Tapes Based on Glass Fiber 72-58-3-14/15

roofing and hydro-insulation. The authors recommend to introduce such a manufacture in the USSR.
There are 4 figures, and 2 references, 2 of which are Soviet.

1. Glass textiles--Applications 2. Insulation--Test results

Card 3/3

KIREYEV, Petr Semenovich; ZAGORYANSKAYA, Yelizaveta Vasil'yevna; STRIGANOV, A.R., red.; PERKOVSKAYA, T.Ye., red. izd-va; PAVLOVA, V.A., tekhn. red.

[Molecular spectrum analysis] Molekuliarnyi spektral'nyi analiz. Moskva, Gos. izd-vo "Vysshaia shkola," 1961. 142 p. (MIRA 15:1)
(Spectrum, Molecular)

ZAGORYANSKAYA, Ye.V.; KIREYEV, P.S.

Determining the optical constants of thin films from the interference figure. Izv.vys.ucheb.zav.; fiz. no.4:124-133 '61. (MIRA 14:10)

1. Moskovskiy energeticheskiy institut.
(Interferometry)

32227
S/139/61/000/004/022/023
E032/E314

26.2331

AUTHORS: Zagoryanskaya, Ye.V. and Kireyev, P.S.

TITLE: Application of the Doppler effect to the study of phenomena in gas-discharge plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Fizika, no. 4, 1961, 163 - 167

TEXT: The authors discuss the influence of the Doppler effect on the profiles of spectral lines emitted by gas-discharge plasma. Two special cases are considered, namely -
a) the case of a uniformly expanding or contracting plasma where the ion velocities at a distance r from the axis of the chamber are given by:

$$v_r = \frac{V_o}{R_o} r$$

where V_o and R_o are the maximum values of the velocity and the radius of the cylinder of plasma at a given instant of time,

Card 1/3

Application of the Doppler effect...

and b) the case where the discharge and the emission by the plasma occur in a narrow cylindrical region which contracts or expands under the action of electromagnetic forces. It is shown that by recording the emission at various angles to the axis of the chamber one can investigate, with the aid of the Doppler effect, the directed motion of plasma layers. On the other hand, by measuring the line profiles due to this directed motion one can determine the ion velocity distribution. The simultaneous measurement of the spectral-line profiles of neutral atoms and ions provides interesting information about the effect of the moving ions on the neutral atoms. The optical method appears to be the only possible method for studying the motion of the two types of particles separately. Determination of the temperature from the Doppler profile may lead to incorrect results if the directed motion is not taken into account. The success of these applications of the Doppler effect to the study of directed motion in plasma will depend on the

Card 2/3

KARYAKIN, Nikolay Ivanovich; MYSTROV, Konstantin Nikolayevich; KIREYEV, Petr Semenovich; STRAKHOVSKIY, G.M., red.; PERKOVSKAYA, G.Ye., red. izd-va; YEZHOVA, L.L., tekhn. red.

[Brief handbook on physics]Kratkii spravochnik po fizike. Moskva, Vysshaia shkola, 1962. 599 p. (MIRA 15:11)
(Physics)

ACCESSION NR: AP4036569

S/0139/64/000/002/0136/0141

AUTHORS: Zagoryanskaya, Ye. V.; Kireyev, P. S.

TITLE: The role of interference for electron transmission through a double potential barrier

SOURCE: IVUZ. Fizika, no. 2, 1964, 136-141

TOPIC TAGS: interference, electron transmission, double potential barrier, Fabry Perot etalon, transmission coefficient, reflection coefficient

ABSTRACT: The transmission coefficient for a double potential barrier is computed and compared with that obtained for the analogous problem in optics, the Fabry-Perot etalon. The Fabry-Perot etalon consists of two semitransparent mirrors, each having coefficients of reflection r and transmission τ, which are separated by a distance t. For zero incidence angle of light (wavelength λ) on the system the transmission coefficient is

$$T = \frac{I_r}{I_0} = \frac{\tau^2}{1 + r^2 - 2r\cos[2kt + 2\delta]}$$

Card 1/5

where $k = 2\pi/\lambda$ and δ is the phase shift of the light reflected from one of the mirrors. It is noted that the maximum value of the transmission coefficient is

$$T_{max} = \frac{\tau^2}{(1-r)^2} = \frac{(1-r)^2}{(1-r)^2} \equiv 1.$$

The double potential barrier is shown in Fig. 1 on the Enclosure, where the particle energy $E < U_0$. The transmission coefficient for the system is

$$T = \frac{\tau^2}{1 + r^2 - 2r^2\cos 2kl + r(1-r)(e^{2\alpha} + e^{-2\alpha})\cos 2kt} + \frac{\tau^2}{8\xi(1+\xi^2)r(1-r)(e^{2\alpha} - e^{-2\alpha})\cdot\sin 2kt},$$

which is expressed in terms of the reflection and transmission coefficients of the single potential barrier,

$$r = \frac{1}{1 + \frac{16\xi^2}{(1+\xi^2)^2(e^{\alpha} - e^{-\alpha})^2}},$$

Card 2/5

ACCESSION NR: AP4036569

$$\tau = \frac{1}{1 + \frac{(1+\xi^2)^2(e^{\varkappa a} - e^{-\varkappa a})^2}{16\xi^2}}$$

Here

$$k^2 = \frac{2mE}{\hbar^2},$$

$$\varkappa^2 = \frac{2m(U_0 - E)}{\hbar^2}$$

and

$$\xi = \frac{k}{\varkappa}.$$

The special case of infinitely high, thin barriers is considered where the quantity xa remains fixed. Then $r \to 1$ and

$$T = \frac{\tau^2}{1 + r^2 - 2r^2\cos 2kl_2}$$

Card 3/5

ACCESSION NR: AP4036569

ENCLOSURE: 01

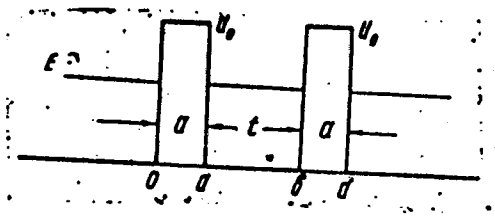


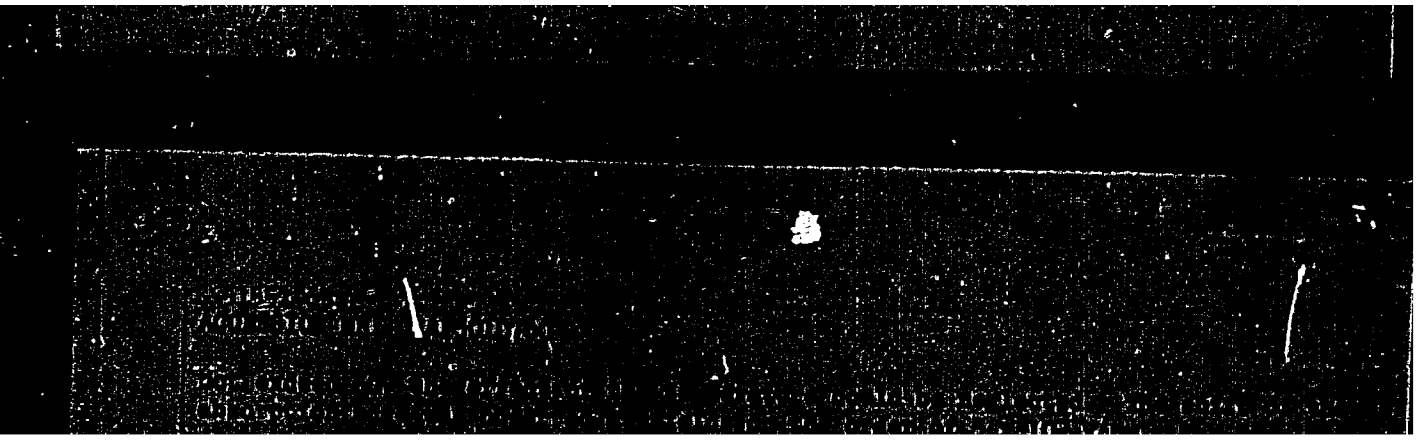
Fig. 1. Double potential barrier.

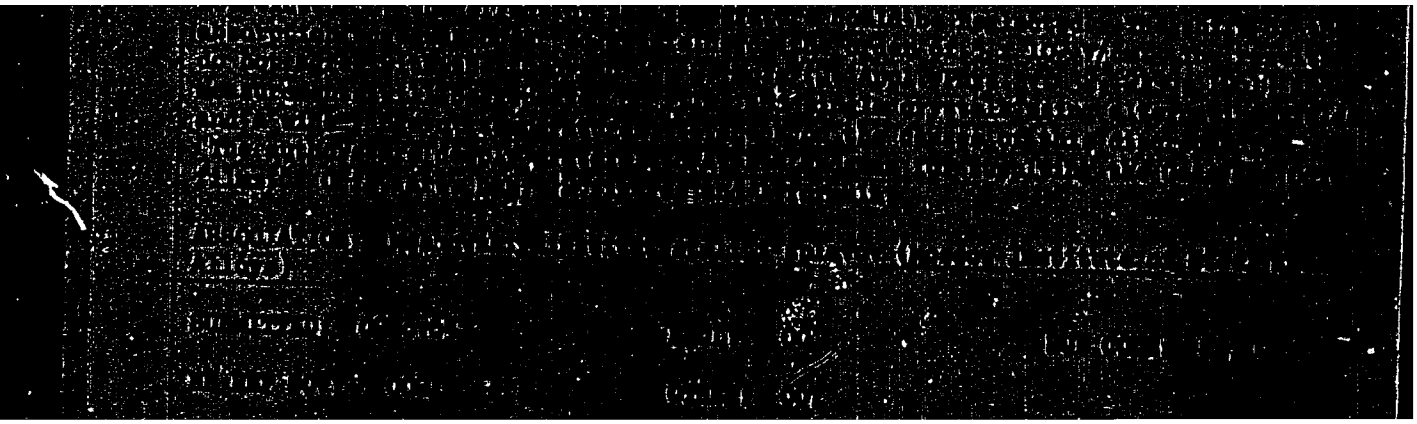
Card 5/5

ZAGORYANSKAYA, Ye. V.; KIREYEV, P.S.

Potential of a linear alternating charge. Izv. vys. ucheb. zav.; fiz. no. 3:12-16 '64. (MIRA 17:9)

1. Moskovskiy institut stali i splavov Voyenno-inzhenernaya artilleriyskaya akademiya.





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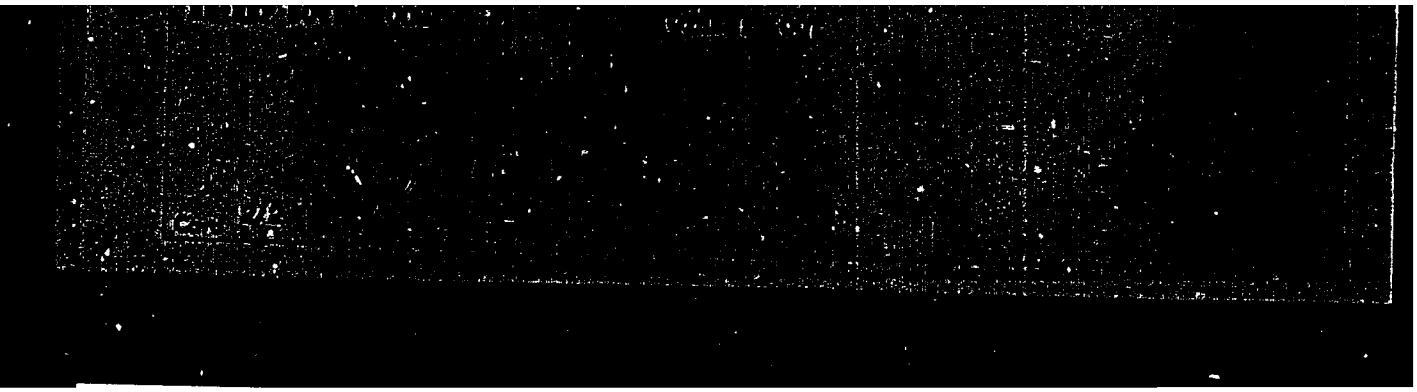

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KIREYEV, P.S., inzh.

Model experimental enterprises in the building materials industry.
Stroi. i dor. mash. 7 no.5:23-25 My '62. (MIRA 15:5)
(Building materials industry)
(Automatic control)

KIRIYEV, P.S.

The Saratov industrial glass factory as a model experimental enterprise. Stek.i ker. 19 no.12:29-30 D '62. (MIRA 16:1)

1. Starshiy ekspert Gosudarstvennogo komiteta Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu.
(Saratov—Glass factories)

KIREYEV, S.A.

SPEKTROVA, S.I.; KIREYEV, S.A.; LITINSKIY, A.M.

Basic parameters of casting in molding boxes. Lit.proizv. no.6: 9-10 S '54. (MLRA 7:10)
(Founding)

SPEKTOROVA, Sarra Izrailevna; LITINSKIY, Arnol'd Mikhaylovich; KIREYEV, Sergey Antonovich; SERGEYEV, P.S., inzhener, redaktor; MISHKE-VICH, G.I., redaktor; KAMOLOVA, V.M., tekhnicheskiy redaktor.

[Shell mold casting] Lit'e v obolochkovye formy. Leningrad, Ges. soiuznoe izd-vo sudostroit. promyshl., 1955. 116 p. (MLRA 9:5)
(Shell molding (Casting))

KIREYEV, Sh.B.; MAMLEYEV, R.Sh.

Extracting petroleum from the water-oil section of level D of the Pavlovskaya area of the Romashkino oil field. Neftepром. delo no.10:3-8 '63. (MIRA 17:6)

1. Neftepromyslovoye upravleniye "Aznakayevskneft'".

KIREYEV, Sh.G.; SVIKHUSHIN, N.M.

Results of testing and exploiting the interval of the transitional zone from oil to water in the Aznakayevo region. Neftegaz. geol. i geofiz. no.9:26-29 '64. (MIRA 17:11)

1. Neftepromyslovoye upravleniye "Aznakayevskneft'" i Tatarskiy neftyanoy nauchno-issledovatel'skiy institut, g. Bugul'ma.

KIREYEV, S.P., veterinarnyy vrach

Semiautomatic vaccination device for intramuscular injections. Veterinariia 41 no.3:112 Mr '65. (MIRA 18:4)

1. Glavnoye upravleniye veterinarii Ministerstva sel'skogo khozyaystva SSSR.

KIREYEV, V.

Concern for the care of technical equipment. Prof.-tekh. obr. 14 no.2: 9-11 F '57. (MIRA 10:4)

1. Mekhanik tekhnicheskogo uchilishcha no.9, Rostov.
(Technical education)

KIHEYEV, V., arkhitektor; MELLER, V., arkhitektor.

Methods of lowering building costs in the planning stage.
Zhil.-kom.khoz. 4 no.8:6-10 '54. (MLRA 8:3)
(Construction industry--Costs)

KIREYEV, V., arkhitektor; MILLER, V., arkhitektor.

Against excesses in planning ani construction work. Zhil.-kom. khoz. 6 no.1:7-8 '56. (MLRA 9:5)
(Building)

KIRE[illegible]EV, V., arkhitektor; MILLER, V., arkhitektor

Lowering the weight of buildings. Zhil.-kom.khoz. 8 no.10:11-12 '58. (MIRA 11:11)

(Apartment houses) (Precast concrete construction)

KIREYEV, V., starshiy nauchnyy sotrudnik

"Fertilizing field crops" by V.Golubev and B.Chizhov.
Zemledelie 25 no.1:96 Ja '63. (MIRA 16:4)

1. Balashovskaya opytnaya stantsiya.
(Field crops—Fertilizers and manures)
(Golubev, V.) (Chizhov,B.)

KIREYEV, V.A., inzhener; LAZUTIN, L.G., inzhener.

Surface dressing on the Khar'kov-Simferopol' highway. Avt.dor.18 no.1:19 Ja-F '55. (MIRA 8:4)
(Roads--Maintenance and repair)

KIRYUV V A

LAZUTIN, L.G., inzhener; KIRYEV, V.A., inzhener

Strengthen the technical inspection of construction joints of reinforced concrete bridges. Avt. dor. 18 no.3:8-9 My-Je '55. (Bridges, Concrete) (MLRA 8:9)

KIREYEV, V.A., inzhener.

Reconstruction of road sections in flooded zones near the Kakhovka Hydroelectric Power Station. Avt.dor.18 no.7:10-12 N '55.(MIRA 9:4)
(Roads--Maintenance and repair)

KIREYEV, V.A., inzhener.

Pavements made of sandy asphalt concrete for heavy-traffic road sections. Avt.dor.19 no.3:10-12 Mr '56. (MLRA 9:7)
(Pavements, Asphalt)

KIREYEV, V.A., inzhener.

Using soil-asphalt for building road surfaces. Avt.dor.20 no.1:14-16 Ja '57. (MLRA 10:3)
(Pavements)

KIREYEV, V.A., inzhener.

Advantages of relocating the roadway axis in reconstructing highways.
Avt.dor. 20 no.3:23-24 Mr '57. (MLRA 10:5)
(Roads--Design)

KIREYEV, V.A., inzh.

Using sand asphalt concrete and soil asphalt in constructing the surface of the Moscow-Kazan highway. Trudy MADI no.23: 153-158 '58. (MIRA 12:1)
(Pavement, Concrete) (Pavements, Asphalt)

KIREYEV, V.A.

KIREYEV, V.A., insh.

Building road embankments in winter. Avt. dor. 21 no.1:16-17 Ja '58.
(Road construction--Cold weather conditions) (MIRA 11:1)

K, Kireyev, V.A.

KIREYEV, V.A., inzh.

Treating soils with bitumen in regions with unfavorable climatic conditions. Avt. dor. 21 no.2:13 F '58. (MIRA 11:2)
(Road construction) (Bitumen)

KIRNYEV, V.A., inzh.

Maintenance of cement concrete pavements. Avt.dor 21 no.10:16-17 O '58. (MIRA 11:11)
(Road, Concrete--Maintenance and repair)

SARKIS'YANTS, G.A., insh.; KIREYEV, V.A., inzh.

Efficient length for road sections to be serviced by line subdivisions. Avt.dor. 22 no.4:23-24 Ap '59. (MIRA 12:6)
(Roads--Maintenance and repair)

KIREYEV, V.A., inzh.

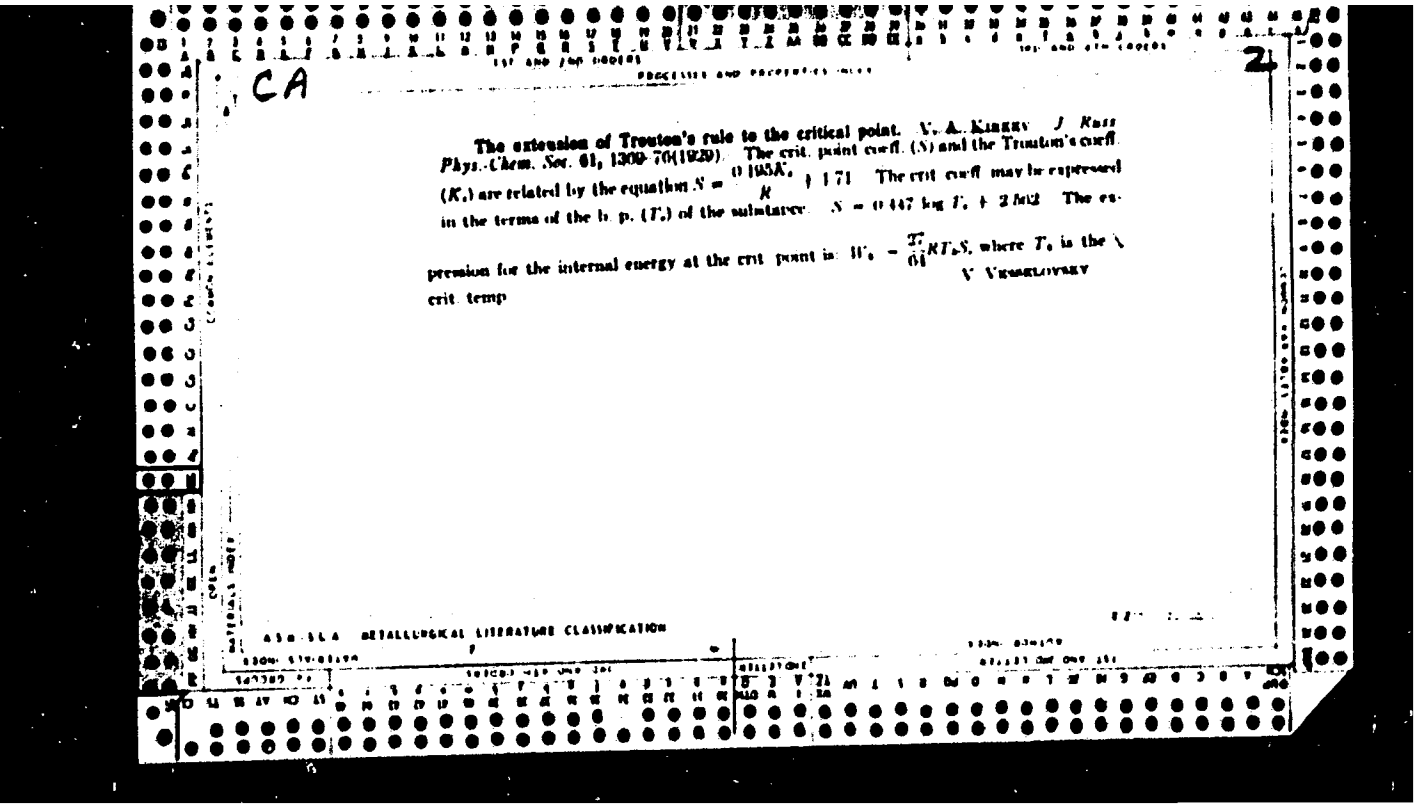
Determining necessary shoulder width. Avt. dor. 22 no.10:18-19 O '59. (MIRA 13:2)
(Road construction)

KIREYEV, V., mekhanik; VOLODKOVICH, V.; RYBINTSEV, P.

Motion pictures in lessons. Prof.-tekh.obr. 19 no.2:27-28 F '62. (MIRA 15:2)

1. Tekhnicheskoye uchilishche No.9, Rostov-na-Donu (for Kireyev).

(Motion pictures in education)



CA

2

The extension of Trouton's rule to the critical point. V. A. Kinney. *J. Phys. Chem. Soc.* 61, 1309-70(1929). The crit. point coeff. (N) and the Trouton's coeff. (K_t) are related by the equation $N = \frac{0.185K_t}{R} + 1.71$. The crit. coeff. may be expressed in the terms of the b. p. (T_b) of the substance: $N = 0.447 \log T_b + 2.803$. The expression for the internal energy at the crit. point is: $W_c = \frac{T_c}{0.6} RT_bS$, where T_c is the crit. temp.

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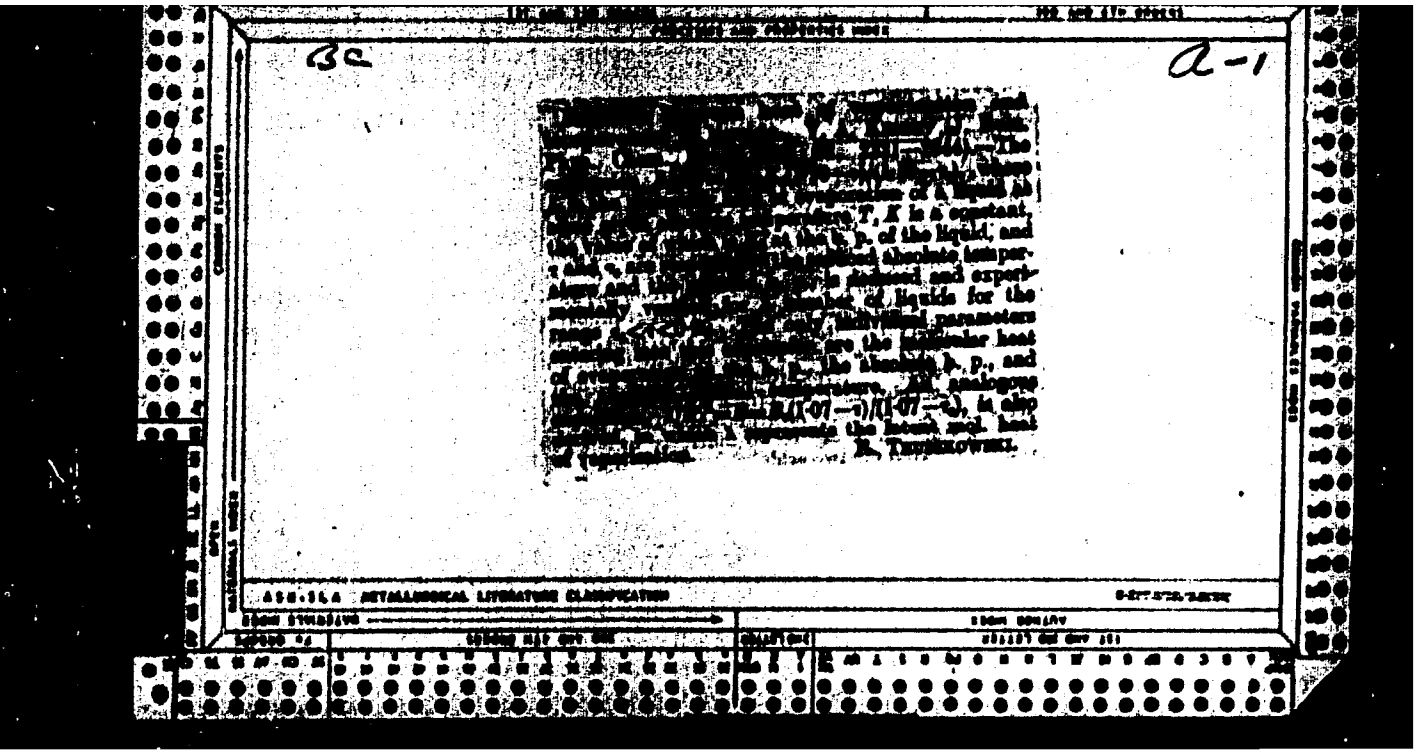

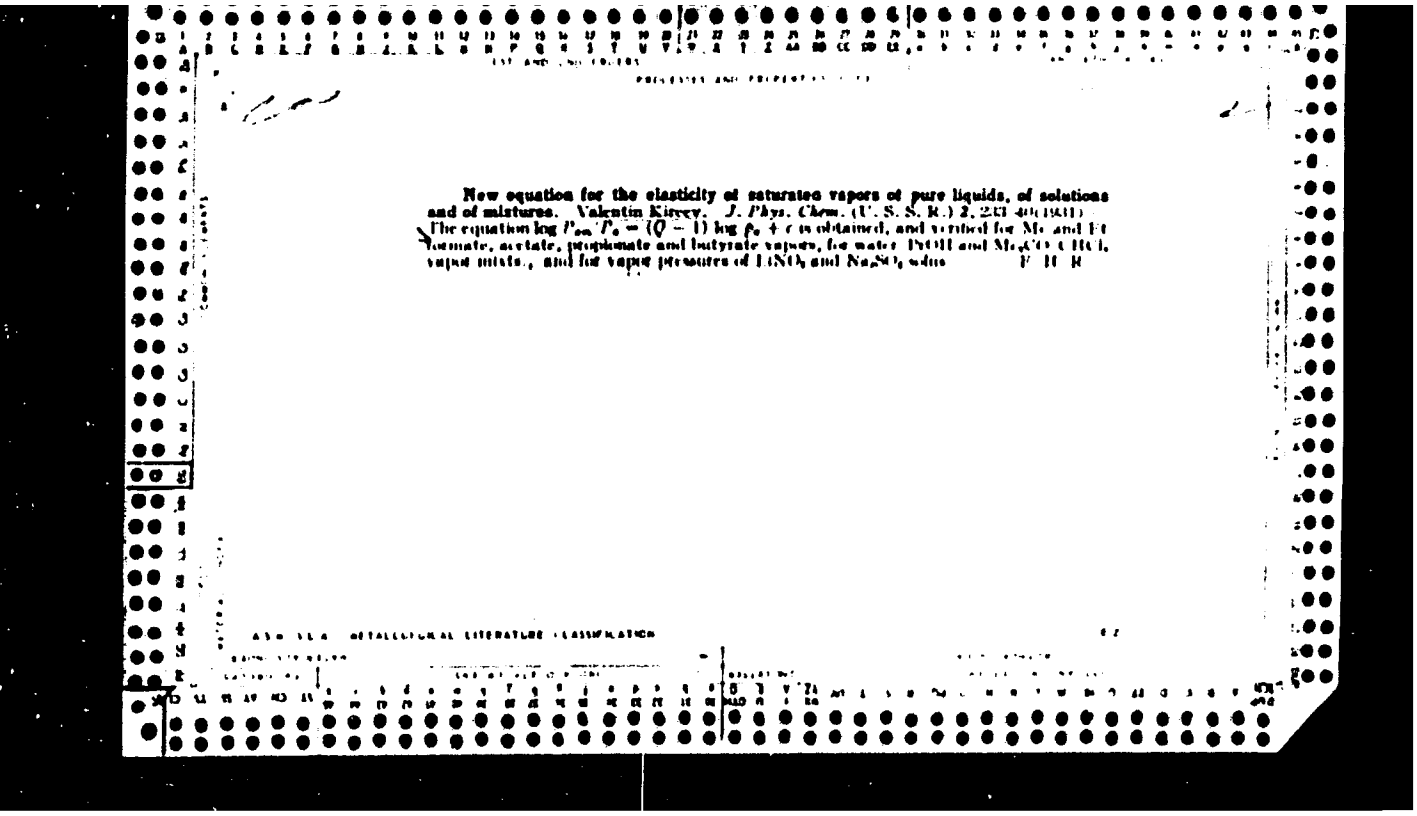

New equation for the elasticity of saturated vapors of pure liquids, of solutions and of mixtures. Valentin Kireev. *J. Phys. Chem.* (U. S. S. R.) 2, 283-40(1931). The equation $\log P_{sat}/P_0 = (Q-1)\log p_0 + c$ is obtained, and verified for Me and Et formate, acetate, propionate and butyrate vapors, for water, PrOH and MeCO CH$_3$, vapor mixts., and for vapor pressures of LiNO$_3$ and Na$_2$SO$_4$ solns. H. H. R.

CA

The elasticity of vapors of saturated solutions of salts. Valentin Kireev. J. Phys. Chem. (U. S. S. R.) 2, 670-3(1931).—Data are given for solns. of Na_2CO_3, $CuSO_4$, $KClO_3$ and NaCl. The results agree well with the equation $k = p_s - Q$, $\log p_s + C$. F. H. Rathmann

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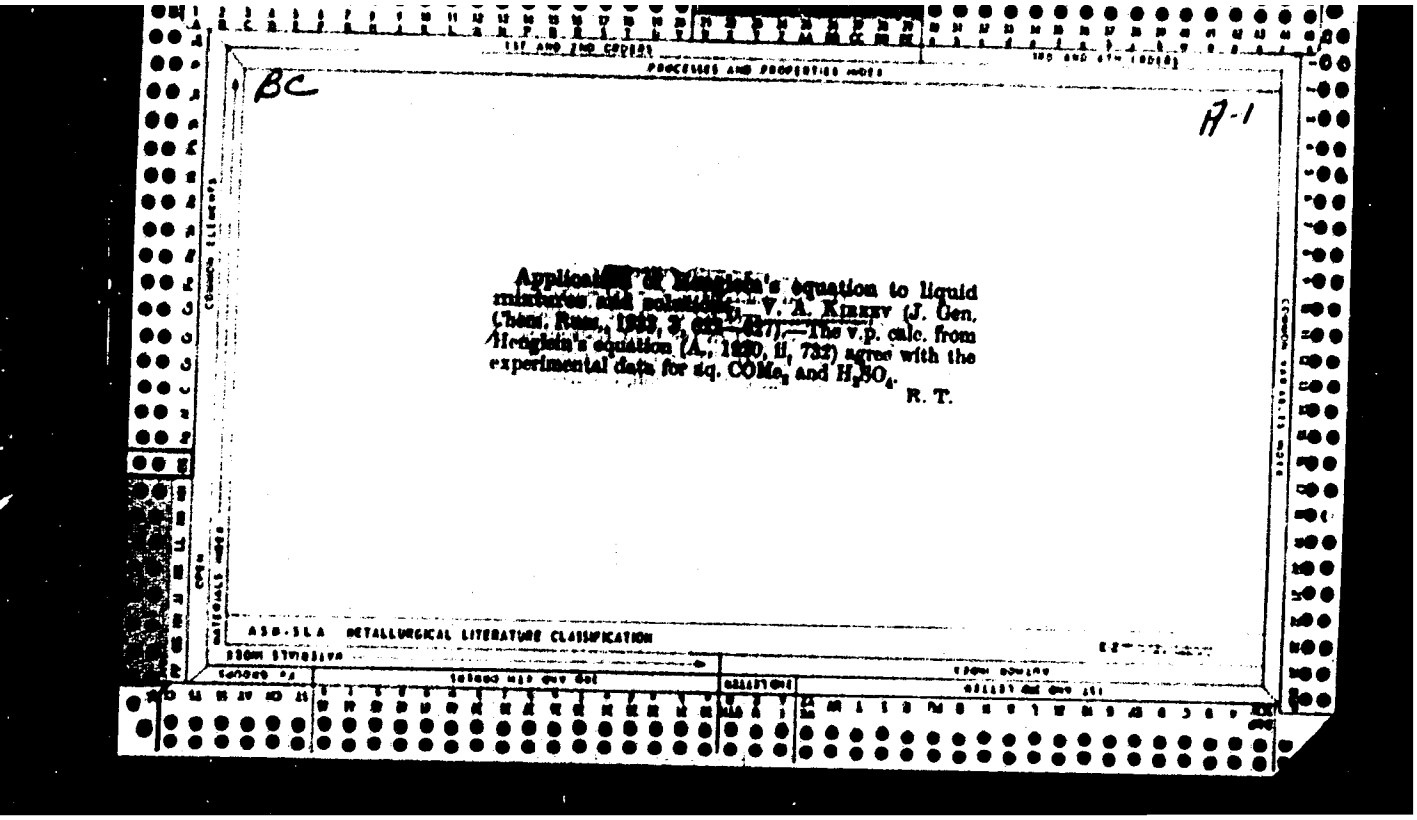


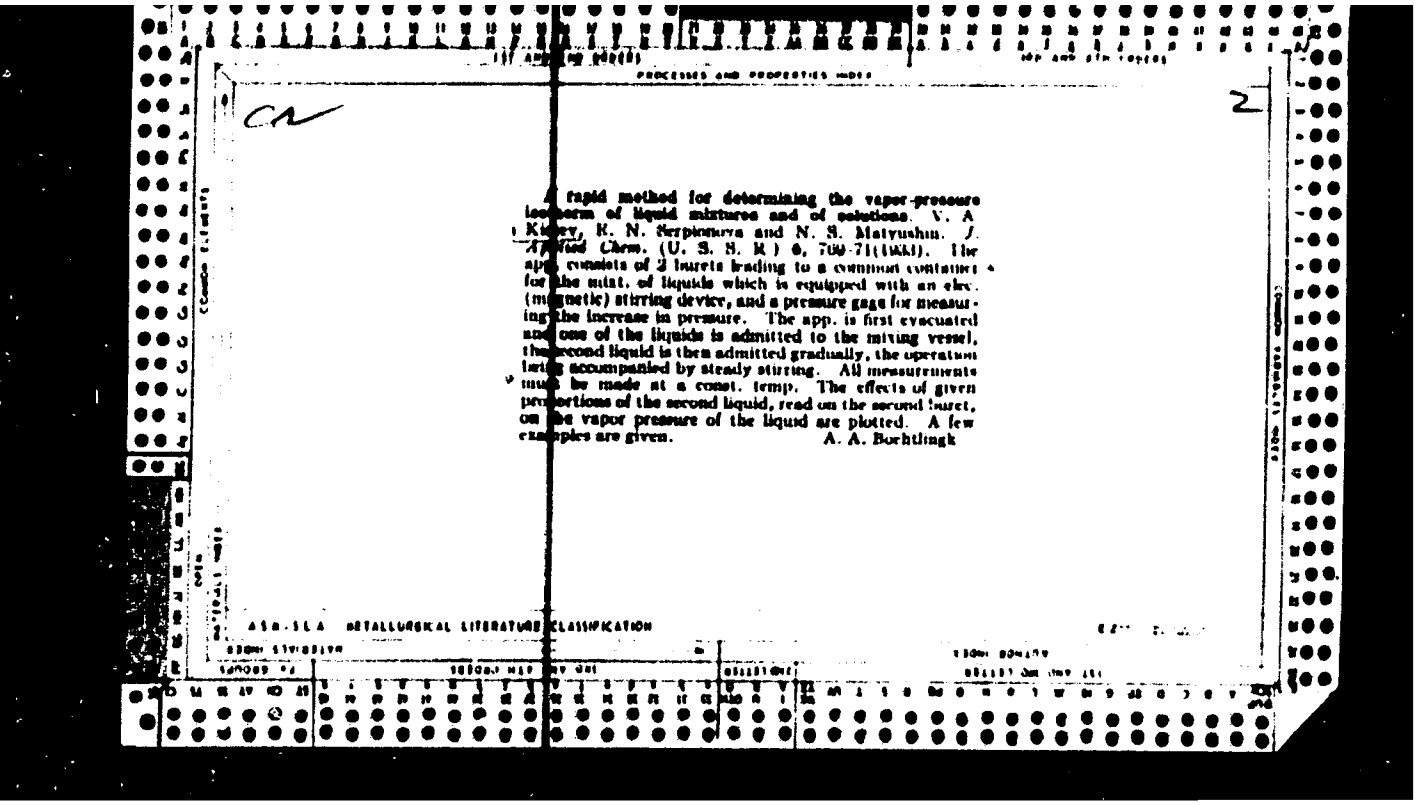
BC

A-1

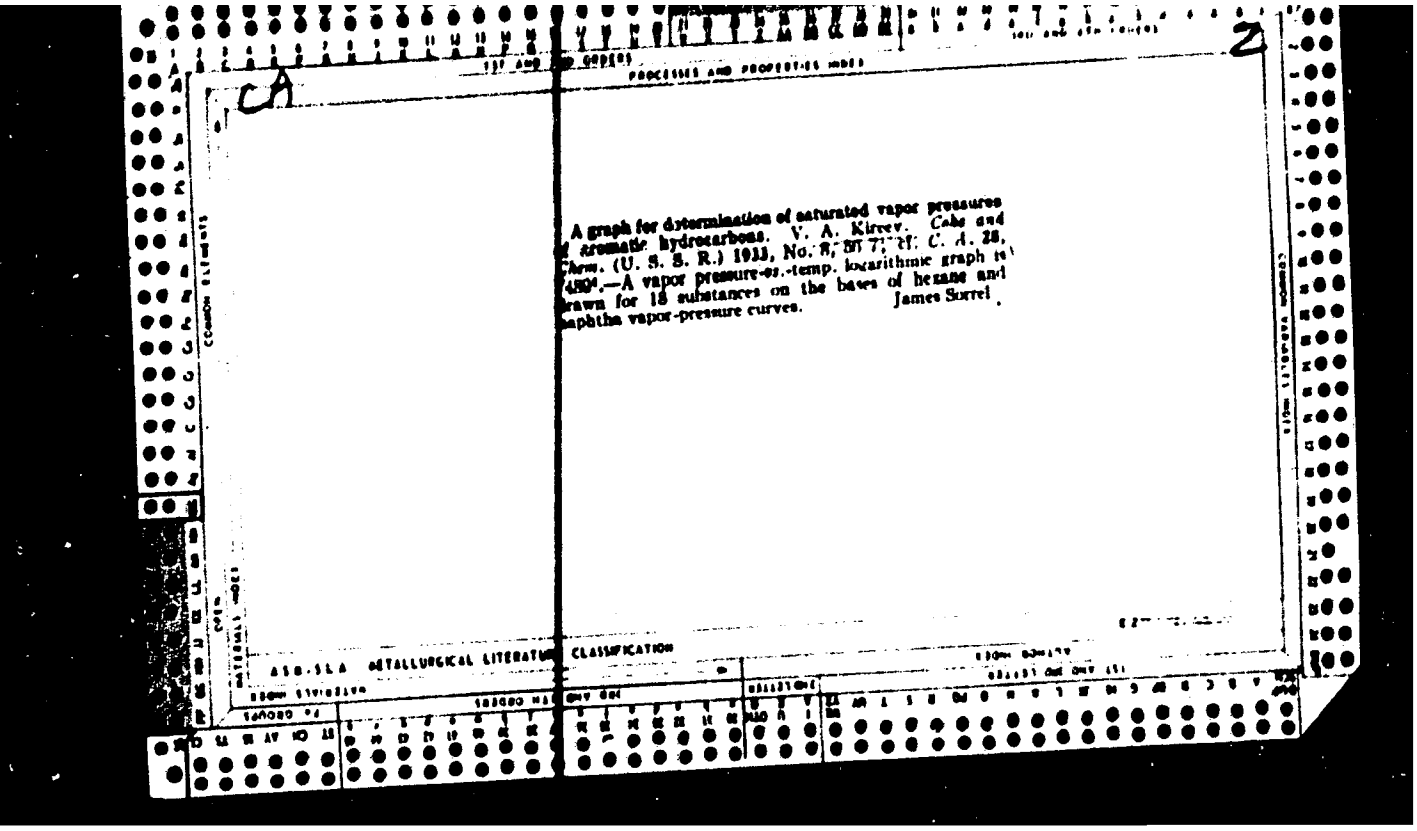
Application of Hinshelwood's equation to liquid mixtures and solutions. V. A. KIREEV (J. Gen. Chem. Russ., 1943, 3, 623–627).—The v.p. calc. from Hinshelwood's equation (A., 1930, II, 732) agree with the experimental data for aq. $COMe_2$ and H_2SO_4.

R. T.

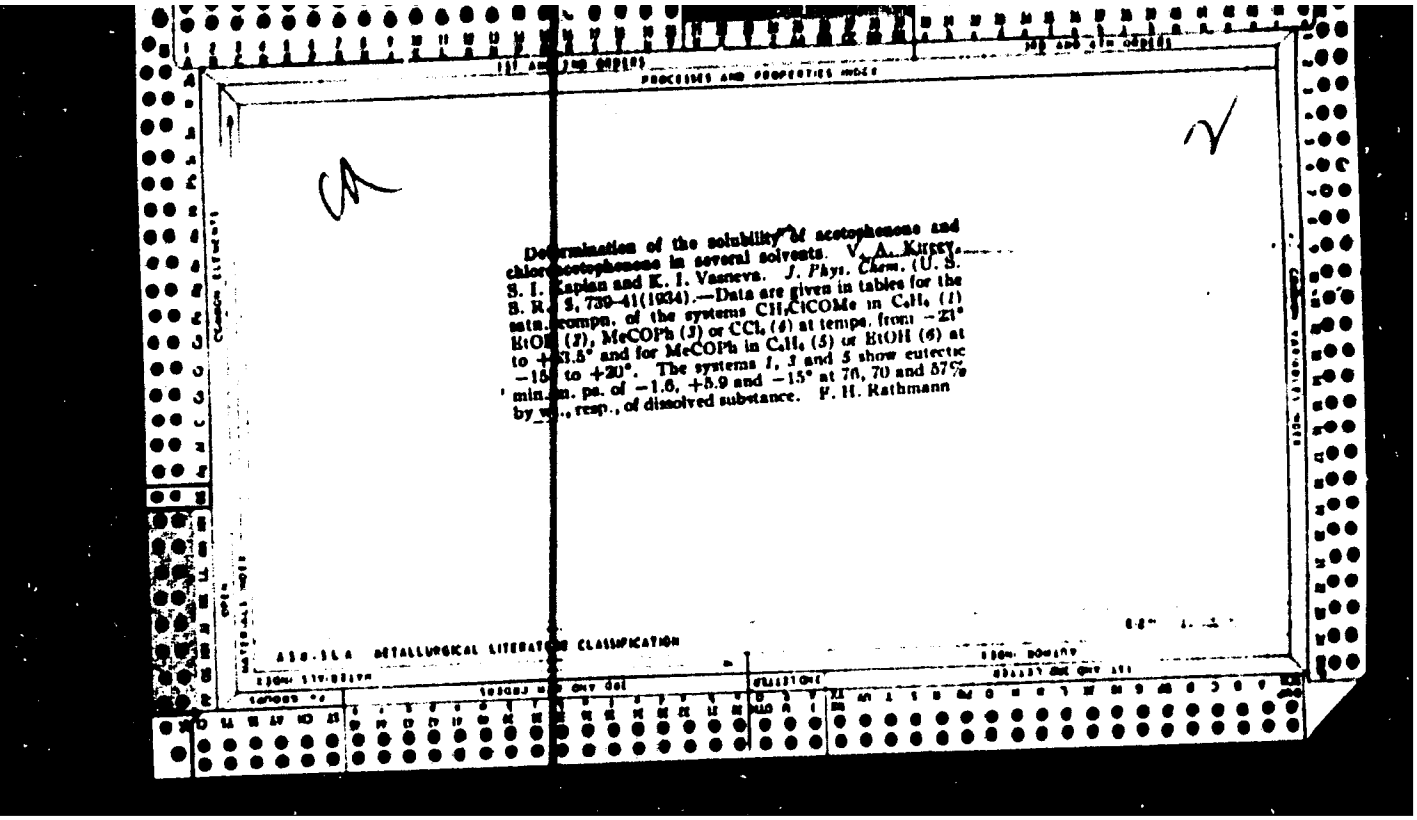
A58-5LA METALLURGICAL LITERATURE CLASSIFICATION



A rapid method for determining the vapor-pressure isotherm of liquid mixtures and of solutions. V. A. Kirev, K. N. Serpinskaya and N. S. Matyushin. *J. Applied Chem.* (U. S. S. R.) 6, 709-71(1933). The app. consists of 3 burets leading to a common container for the mixt. of liquids which is equipped with an elec. (magnetic) stirring device, and a pressure gage for measuring the increase in pressure. The app. is first evacuated and one of the liquids is admitted to the mixing vessel, the second liquid is then admitted gradually, the operation being accompanied by steady stirring. All measurements must be made at a const. temp. The effects of given portions of the second liquid, read on the second buret, on the vapor pressure of the liquid are plotted. A few examples are given. A. A. Boehtlingk



A graph for determination of saturated vapor pressures of aromatic hydrocarbons. V. A. Kirrev. *Coke and Chem.* (U. S. S. R.) 1933, No. 8, 37-7; *C. A.* 28, 4894.—A vapor pressure-vs.-temp. logarithmic graph is drawn for 18 substances on the bases of hexane and naphtha vapor-pressure curves. James Sorrel.



Determination of the solubility of acetophenone and chloroacetophenone in several solvents. V. A. Kirsey. S. I. Kaplan and K. I. Vasneva. *J. Phys. Chem.* (U. S. S. R.) 8, 739–41(1934).—Data are given in tables for the satn. compn. of the systems $CH_2ClCOMe$ in C_6H_6 (*1*) EtOH (*2*), MeCOPh (*3*) or CCl_4 (*4*) at temps. from −21° to +31.5° and for MeCOPh in C_6H_6 (*5*) or EtOH (*6*) at −15° to +20°. The systems *1*, *3* and *5* show eutectic min. m. pts. of −1.6, +5.9 and −15° at 76, 70 and 57% by wt., resp., of dissolved substance. F. H. Rathmann

PROCESSES AND PROPERTIES INDEX

CA

2

Methods for practical calculations of vapor pressure. V. A. Kireev. *J. Applied Chem.* (U. S. S. R.) 7, 1-15 (1934).—A summary of various vapor-pressure equations is given, and various modifications are presented on the basis of analyses. The application of abs. vapor-pressure-detn. methods can be discarded. They can be replaced by relative vapor-pressure calcns., which give the relationship between the b. ps. of two substances at identical pressures or of their vapor pressures at identical temps. These equations yield [illegible], the equation of Henglein (C. A. 18, 196) and that of K., i. e., log p_a = C_1 log p_b + C, are the most accurate for tech. calcns. Plots are constructed for the above detns., whereby 2 points suffice for obtaining intermediate data. These curves are applicable to pure liquids, their mixts. and solns., for the total as well as for partial vapor pressures and for the adsorption of vapors. Thirty-three references.

A. A. Bochtlingk

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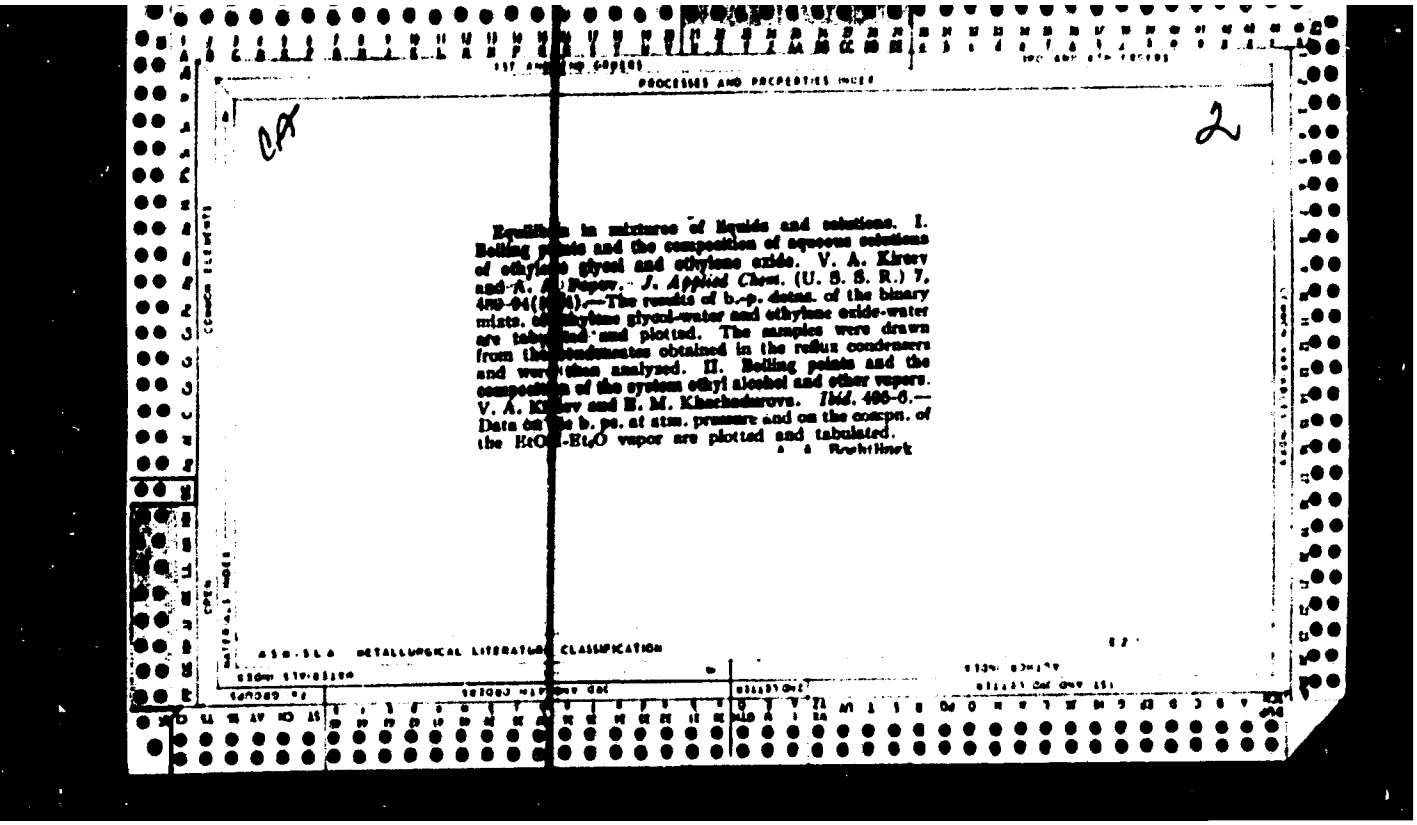


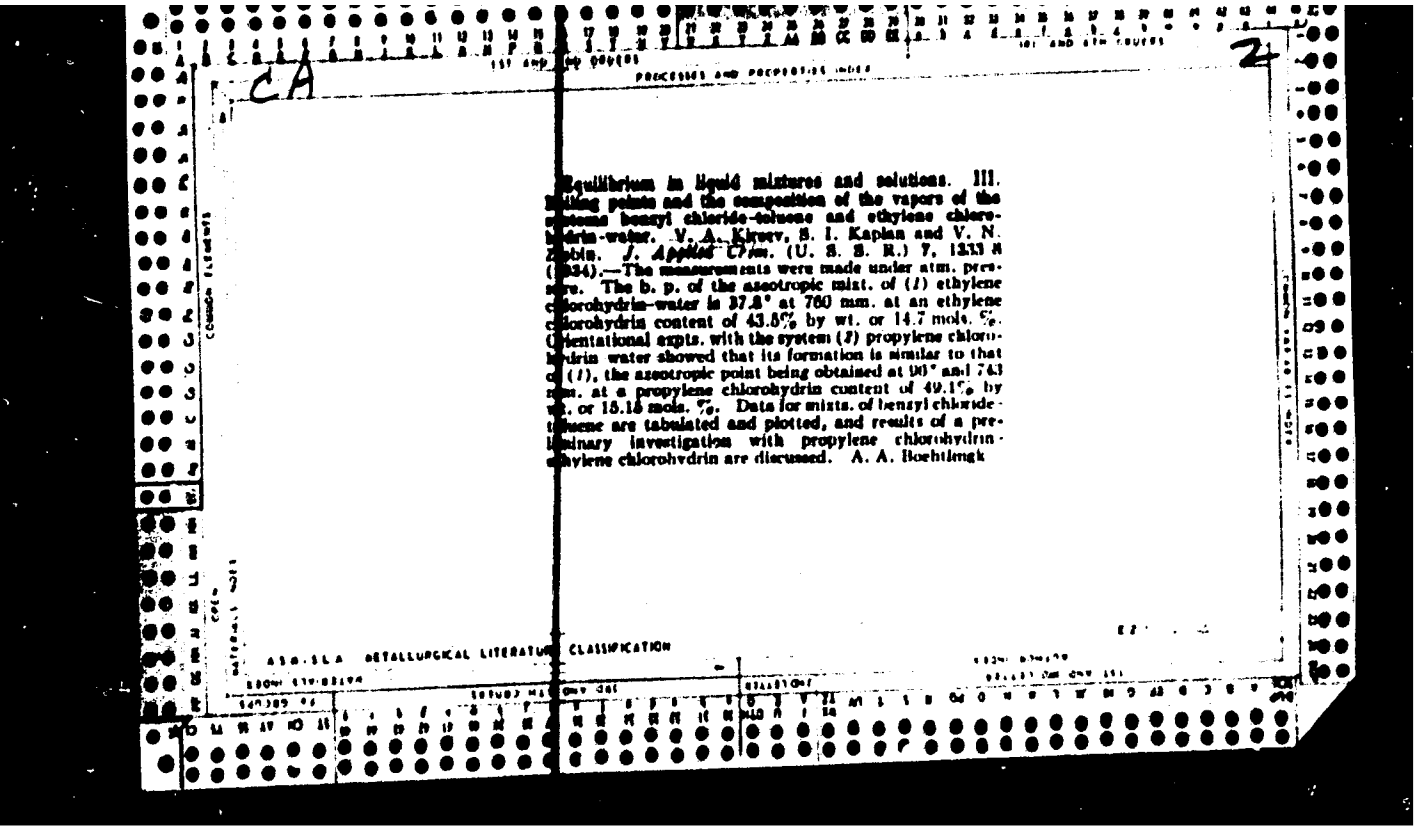
PROCESSES AND PROPERTIES INDEX

2

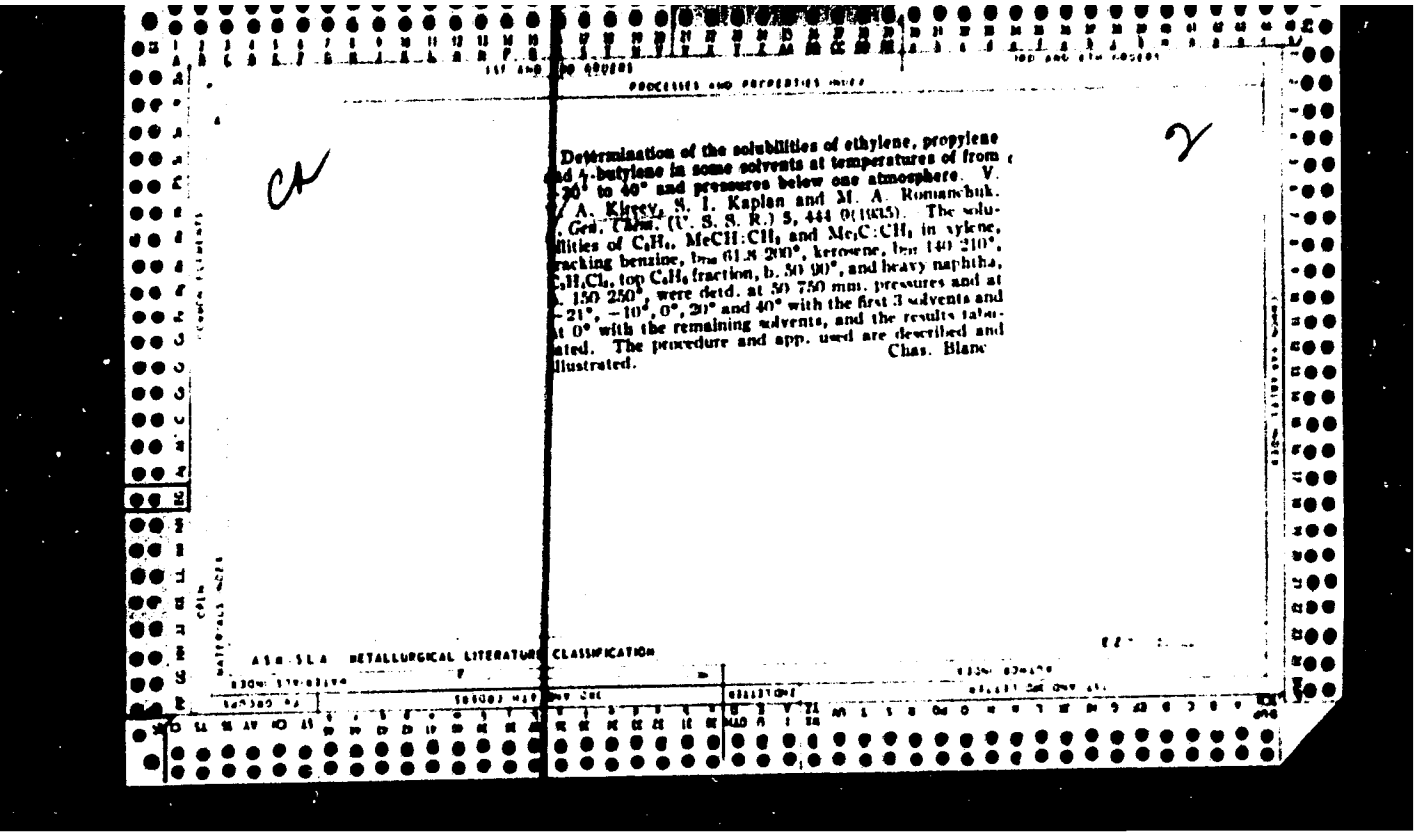
Equilibria in mixtures of liquids and solutions. I. Boiling points and the composition of aqueous solutions of ethylene glycol and ethylene oxide. V. A. Kirev and A. [illegible] Popov. *J. Applied Chem.* (U. S. S. R.) 7, 489-94([illegible]).—The results of b.-p. detns. of the binary mists. of ethylene glycol-water and ethylene oxide-water are tabulated and plotted. The samples were drawn from the condensates obtained in the reflux condensers and were then analyzed. II. Boiling points and the composition of the system ethyl alcohol and ether vapors. V. A. Kirev and E. M. Khachaturova. *Ibid.* 495-6.—Data on the b. pts. at atm. pressure and on the compn. of the EtOH-Et_2O vapor are plotted and tabulated.

A. A. Boehtlingk

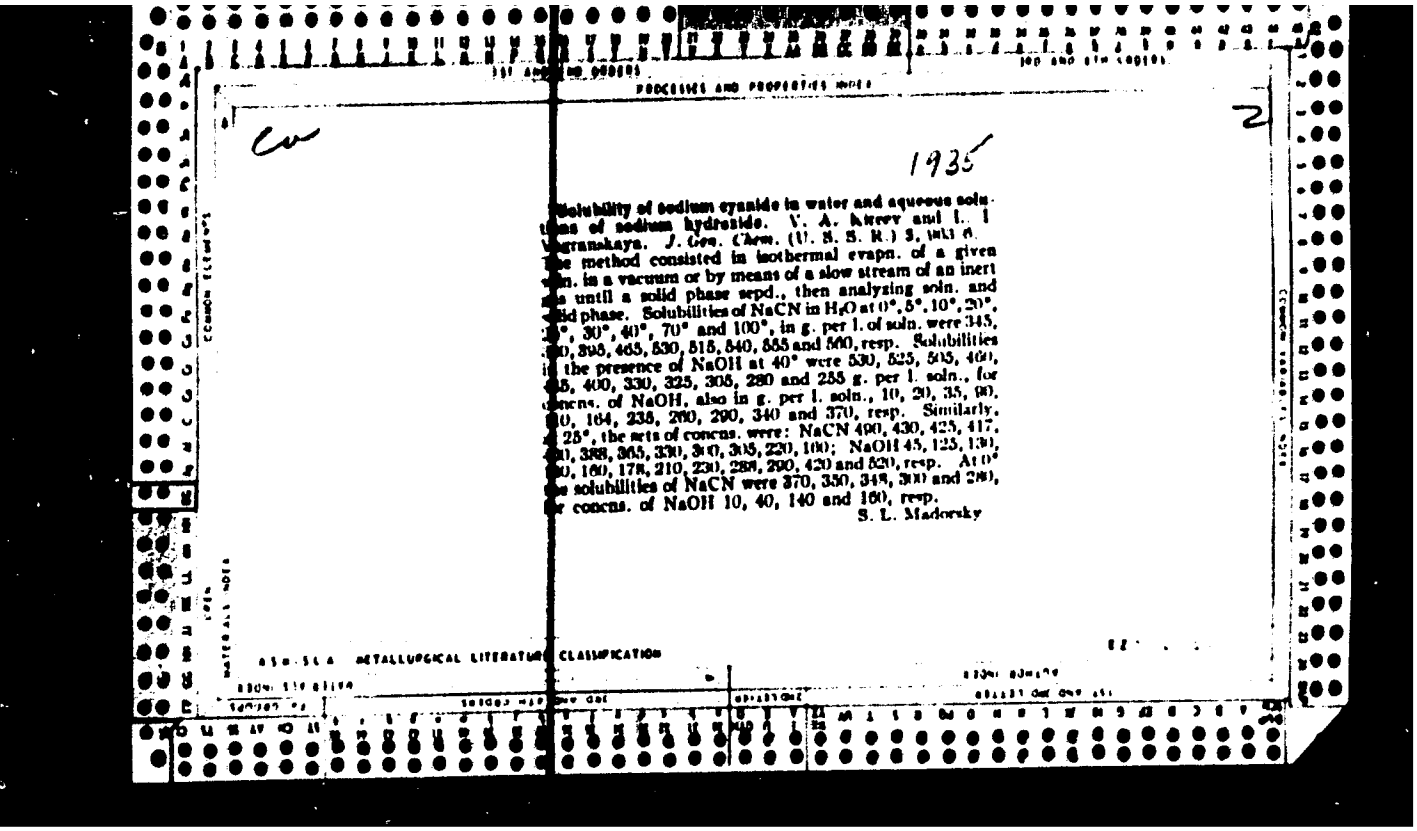
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Equilibrium in liquid mixtures and solutions. III. Boiling points and the composition of the vapors of the systems benzyl chloride-toluene and ethylene chlorohydrin-water. V. A. Kireev, S. I. Kaplan and V. N. Zubkin. *J. Applied Chem.* (U. S. S. R.) 7, 1333 8 (1934).—The measurements were made under atm. pressure. The b. p. of the azeotropic mixt. of (*1*) ethylene chlorohydrin-water is 97.8° at 760 mm. at an ethylene chlorohydrin content of 43.8% by wt. or 14.7 mols. %. Differentational expts. with the system (*2*) propylene chlorohydrin water showed that its formation is similar to that of (*1*), the azeotropic point being obtained at 90° and 763 mm. at a propylene chlorohydrin content of 49.1% by wt. or 15.16 mols. %. Data for mixts. of benzyl chloride-toluene are tabulated and plotted, and results of a preliminary investigation with propylene chlorohydrin-ethylene chlorohydrin are discussed. A. A. Boehtlingk



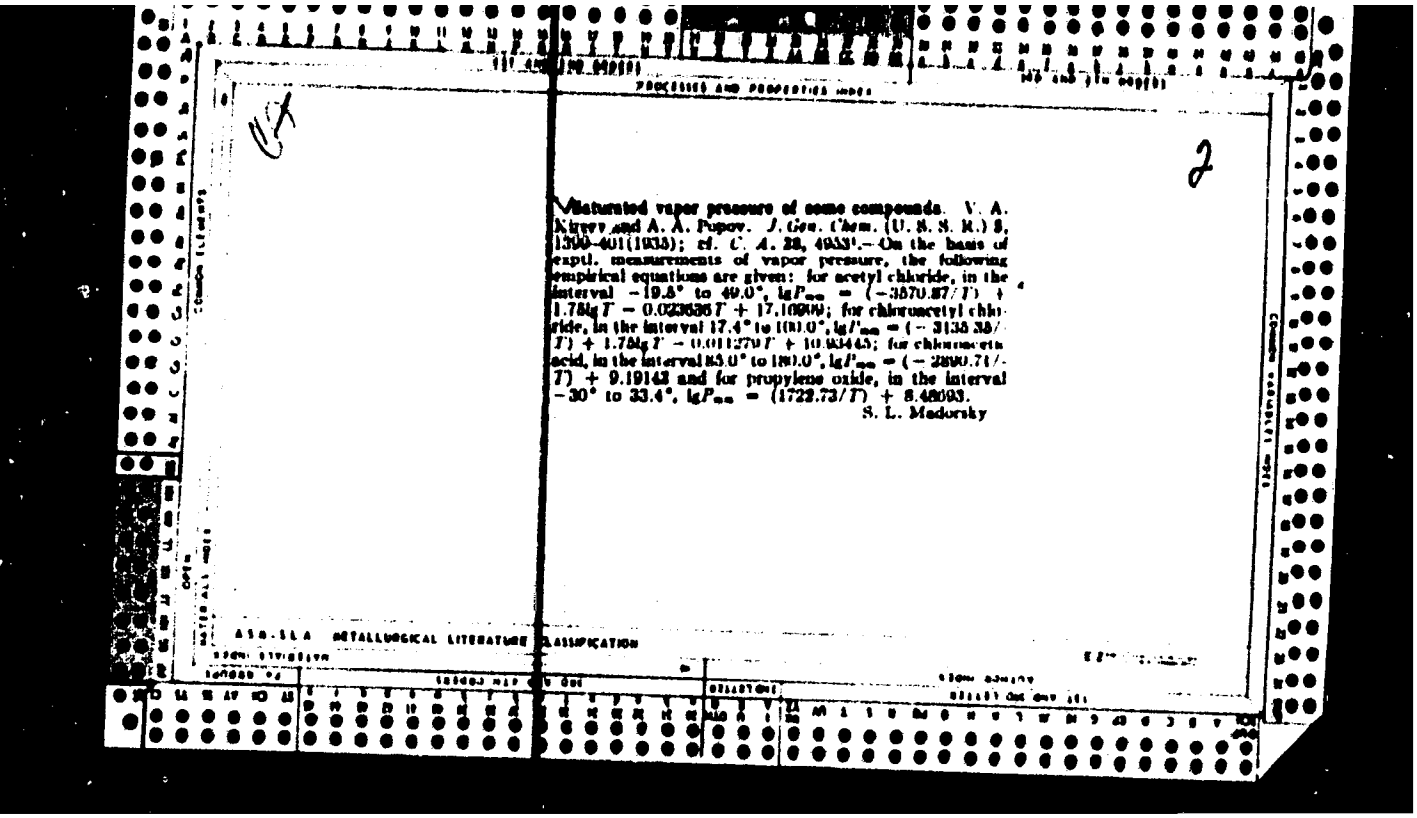
Determination of the solubilities of ethylene, propylene and 1-butylene in some solvents at temperatures of from −20° to 40° and pressures below one atmosphere. V. A. Kireev, S. I. Kaplan and M. A. Romanchuk. *Zhur. Obshch. Khim.* (J. Gen. Chem.) (U. S. S. R.) 5, 444–9(1935). The solubilities of C_2H_4, MeCH:CH_2 and Me_2C:CH_2 in xylene, cracking benzine, bp 61.8–200°, kerosene, bp 140–210°, $C_2H_4Cl_2$, top C_6H_6 fraction, b. 80–90°, and heavy naphtha, b. 150–250°, were detd. at 50–750 mm. pressures and at −21°, −10°, 0°, 20° and 40° with the first 3 solvents and at 0° with the remaining solvents, and the results tabulated. The procedure and app. used are described and illustrated. Chas. Blanc



1935

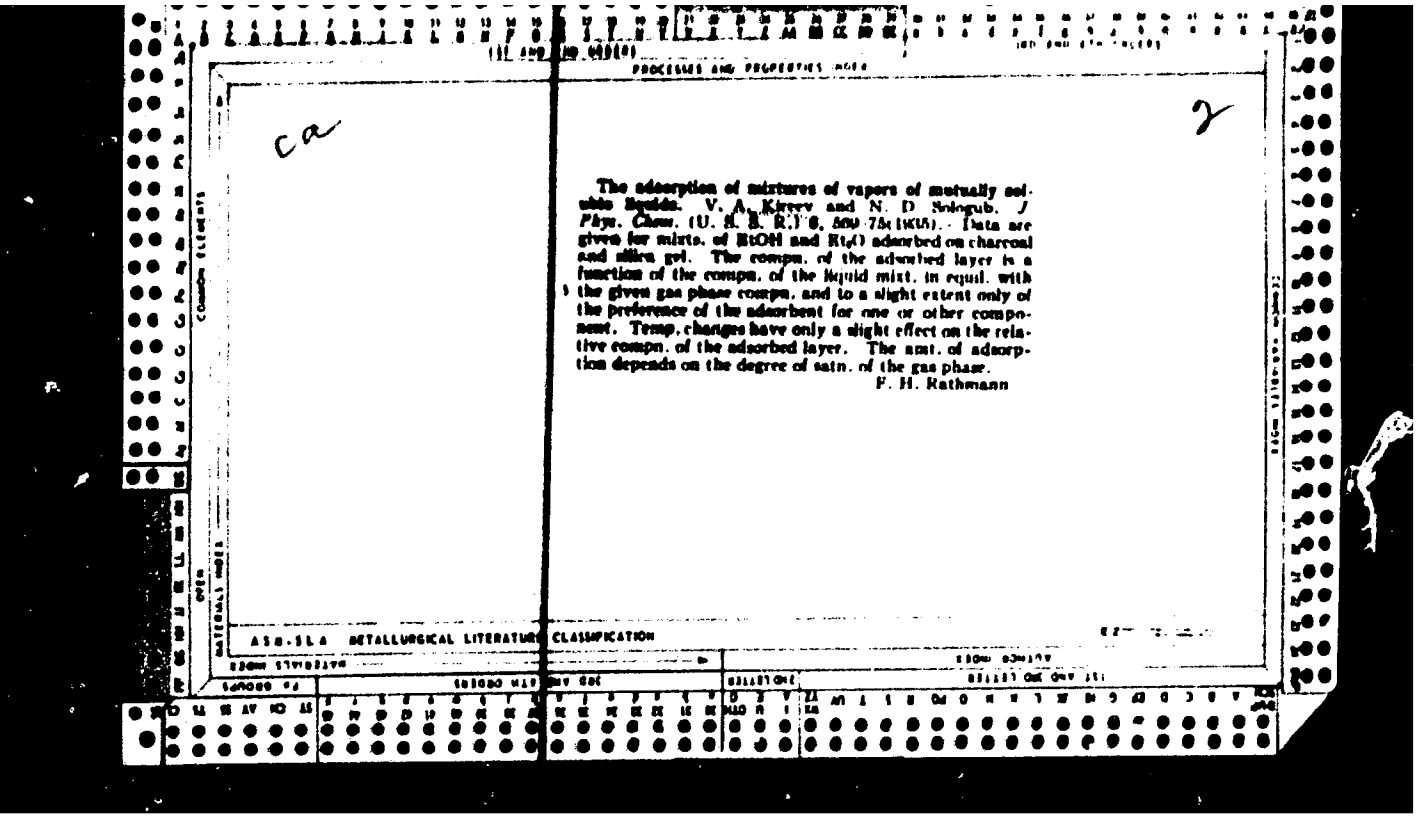
Solubility of sodium cyanide in water and aqueous solutions of sodium hydroxide. V. A. Kireev and L. I. Granskaya. J. Gen. Chem. (U. S. S. R.) 5, [illegible]. The method consisted in isothermal evapn. of a given soln. in a vacuum or by means of a slow stream of an inert gas until a solid phase sepd., then analyzing soln. and solid phase. Solubilities of NaCN in H_2O at 0°, 5°, 10°, 20°, 25°, 30°, 40°, 70° and 100°, in g. per l. of soln. were 345, 350, 395, 465, 530, 515, 540, 555 and 590, resp. Solubilities in the presence of NaOH at 40° were 530, 525, 505, 460, 435, 400, 330, 325, 305, 280 and 235 g. per l. soln., for concns. of NaOH, also in g. per l. soln., 10, 20, 35, 90, 130, 164, 238, 260, 290, 340 and 370, resp. Similarly, at 25°, the sets of concns. were: NaCN 490, 430, 425, 417, 400, 388, 365, 330, 310, 305, 220, 100; NaOH 45, 125, 130, 150, 160, 178, 210, 230, 288, 290, 420 and 520, resp. At 0° the solubilities of NaCN were 370, 350, 348, 300 and 280, for concns. of NaOH 10, 40, 140 and 160, resp.

S. L. Madorsky



Unsaturated vapor pressure of some compounds. V. A. Kirgev and A. A. Popov. *J. Gen. Chem.* (U. S. S. R.) 5, 1399–401 (1935); cf. *C. A.* 28, 4933¹.—On the basis of exptl. measurements of vapor pressure, the following empirical equations are given: for acetyl chloride, in the interval −19.8° to 49.0°, $\lg P_{mm} = (-3570.87/T) + 1.75\lg T - 0.023536T + 17.10899$; for chloroacetyl chloride, in the interval 17.4° to 180.0°, $\lg P_{mm} = (-3135.38/T) + 1.75\lg T - 0.011270T + 10.93445$; for chloroacetic acid, in the interval 85.0° to 180.0°, $\lg P_{mm} = (-2890.71/T) + 9.19143$ and for propylene oxide, in the interval −30° to 33.4°, $\lg P_{mm} = (1722.73/T) + 8.48093$.

S. L. Madorsky



ca

2

The adsorption of mixtures of vapors of mutually soluble liquids. V. A. Kiresv and N. D. Sologub. *J Phys. Chem. (U. S. S. R.)* 8, 509-78(1936). Data are given for mixts. of EtOH and H_2O adsorbed on charcoal and silica gel. The compn. of the adsorbed layer is a function of the compn. of the liquid mixt. in equil. with the given gas phase compn. and to a slight extent only of the preference of the adsorbent for one or other component. Temp. changes have only a slight effect on the relative compn. of the adsorbed layer. The amt. of adsorption depends on the degree of satn. of the gas phase.

F. H. Rathmann

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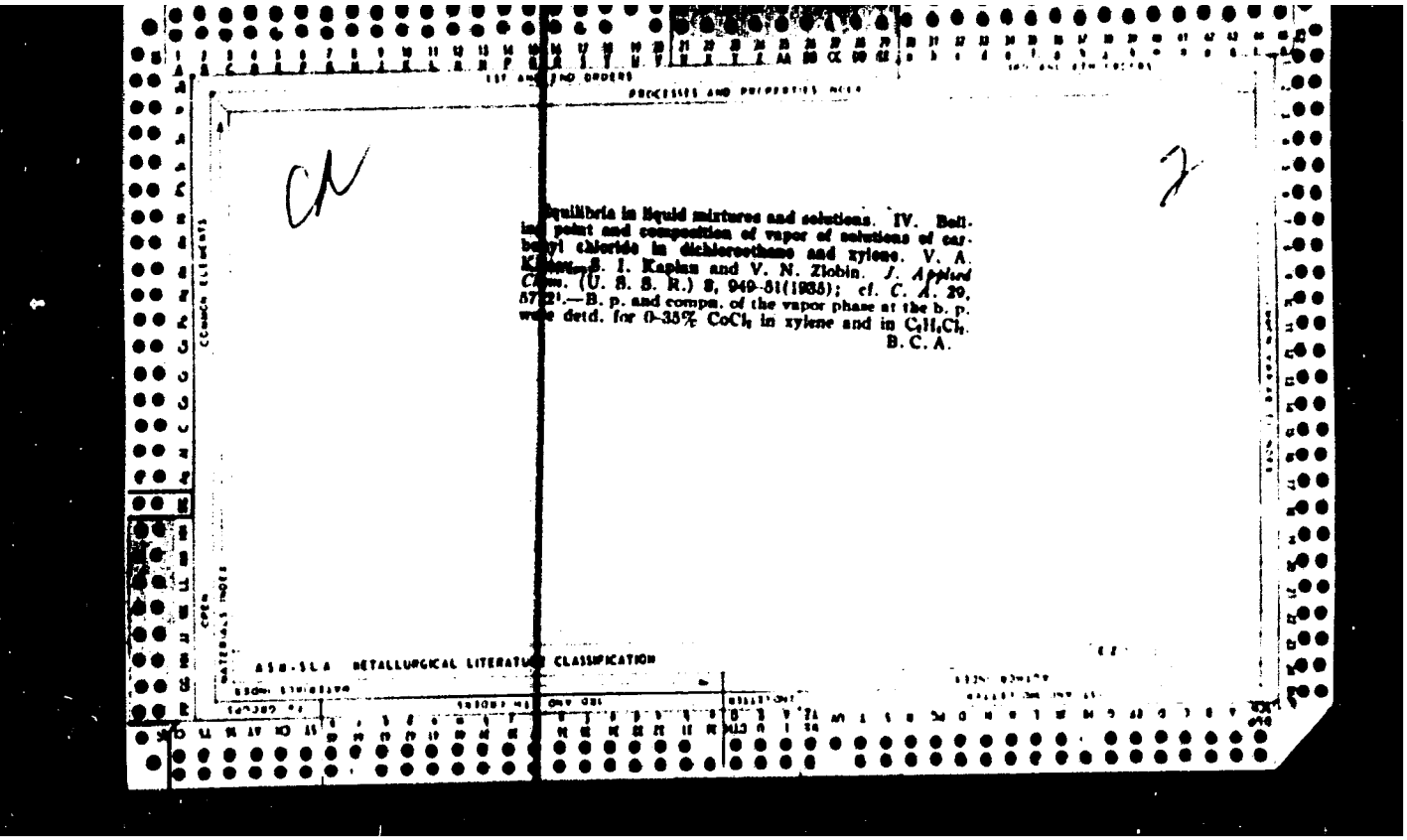

Equilibria in liquid mixtures and solutions. IV. Boiling point and composition of vapor of solutions of carbonyl chloride in dichloroethane and xylene. V. A. Klimov, S. I. Kaplan and V. N. Zlobin. *J. Applied Chem.* (U. S. S. R.) 8, 949-51(1935); *cf. C. A.* 29, 5721.—B. p. and compn. of the vapor phase at the b. p. were detd. for 0-35% $COCl_2$ in xylene and in $C_6H_4Cl_2$.
B. C. A.

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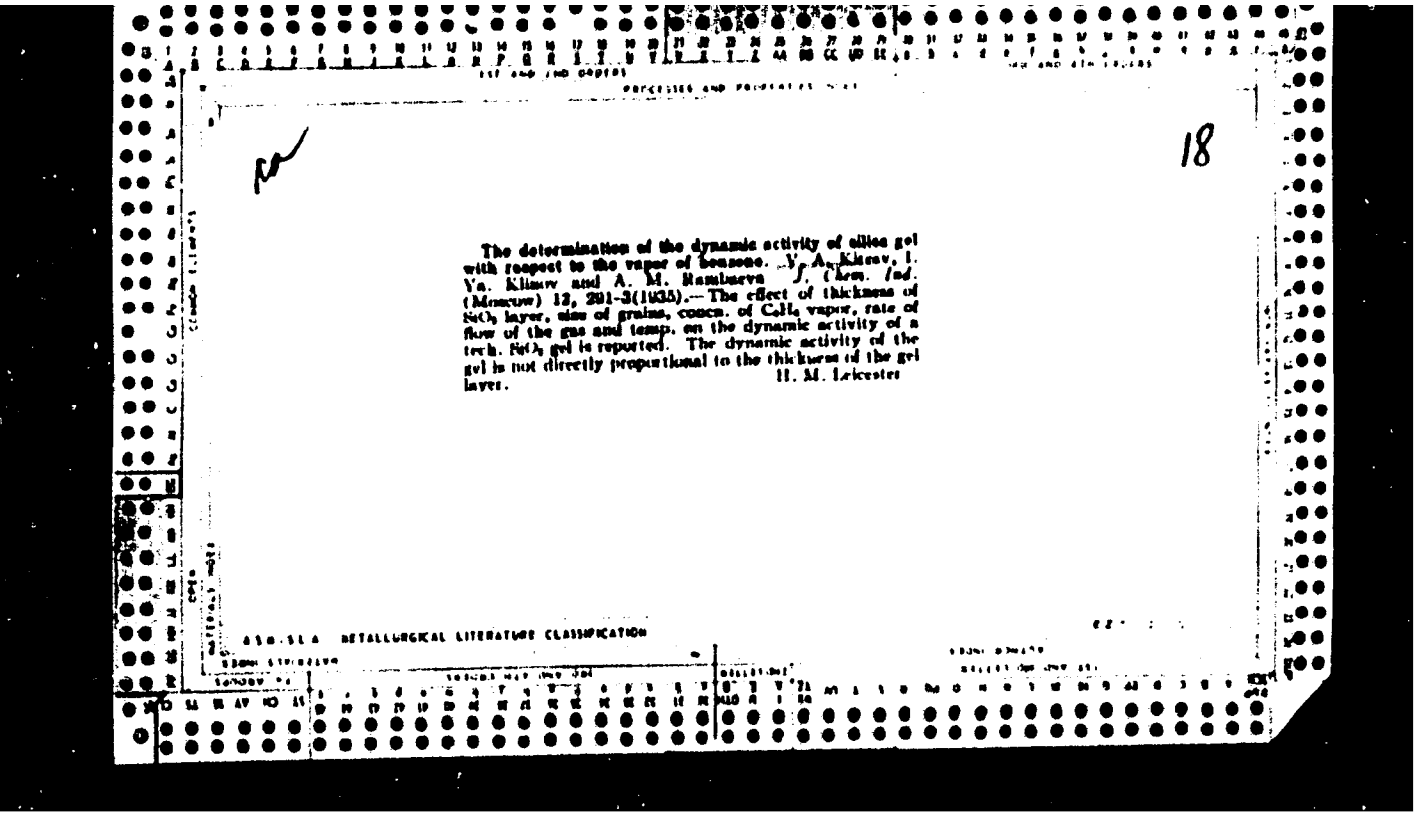


18

The determination of the dynamic activity of silica gel with respect to the vapor of benzene. V. A. Klimov, I. Ya. Klimov and A. M. Rambiseva. *J. Chem. Ind. (Moscow)* 12, 291-3(1935).—The effect of thickness of SiO_2 layer, size of grains, concn. of CCl_4 vapor, rate of flow of the gas and temp. on the dynamic activity of a tech. SiO_2 gel is reported. The dynamic activity of the gel is not directly proportional to the thickness of the gel layer.

H. M. Leicester

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

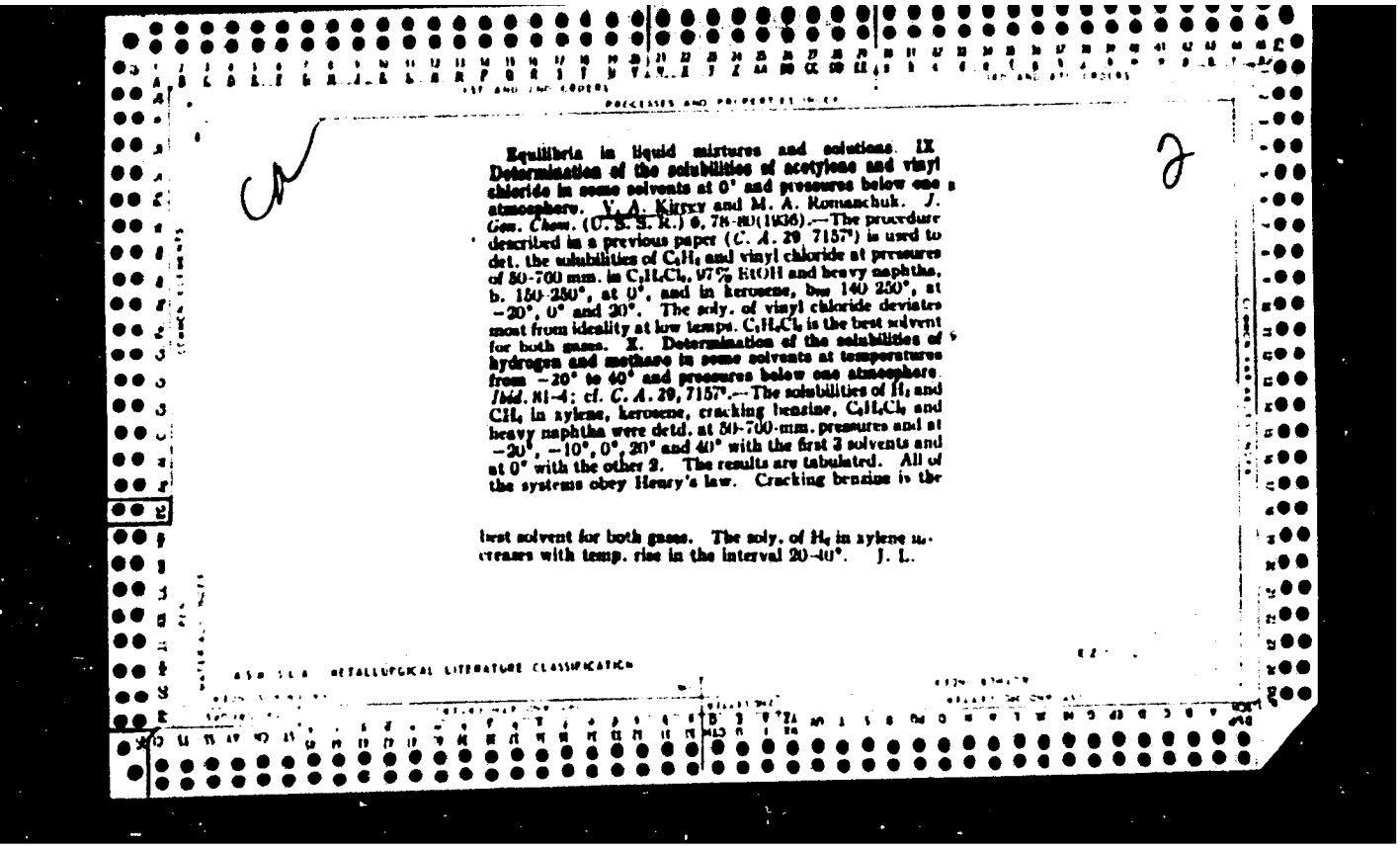
PROCESSES AND PROPERTIES INDEX

The boiling points and vapor-phase composition of the three-component mixture ethyl acetate ethyl alcohol-water. V. A. Kireev, I. Ya. Klinov and A. N. Grigorovich. *J. Chem. Ind.* (Moscow) 12, 950 40(1935). Orienting but not exact data are presented. The isobars of the boiling points at a given ratio of EtOAc to EtOH show a max. and then a min. as H_2O is added. The effect is most pronounced at about 20% EtOAc and 80% EtOH.

H. M. Leicester

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Determination of the saturated vapor pressures of some compounds. II. V. A. Kireev and V. A. Nikiforova. *J. Gen. Chem.* (U.S.S.R.) 6, 75-7(1936); cf. *C. A.* 30, 2441[1].—On the basis of exptl. measurements of vapor pressure the following empirical equations are given: for dichloropropane, in the interval 16.5–95.33°, $\log P_{mm.} = (-1802.04/T) + 1.75 \log T - 0.00$[illegible]$T + 4.71$[illegible]; for ethylene chlorohydrin, in the interval 17.5–127.52°, $\log P_{mm.} = (-2727.40/T) + 1.75 \log T - 0.00$[illegible]$T + 7.83951$; for propylene chlorohydrin, in the interval 43.8–126.0°, $\log P_{mm.} = (-$[illegible]$/T) + 1.75 \log T - 0.0071144\, T + 8.33801$. John Livak

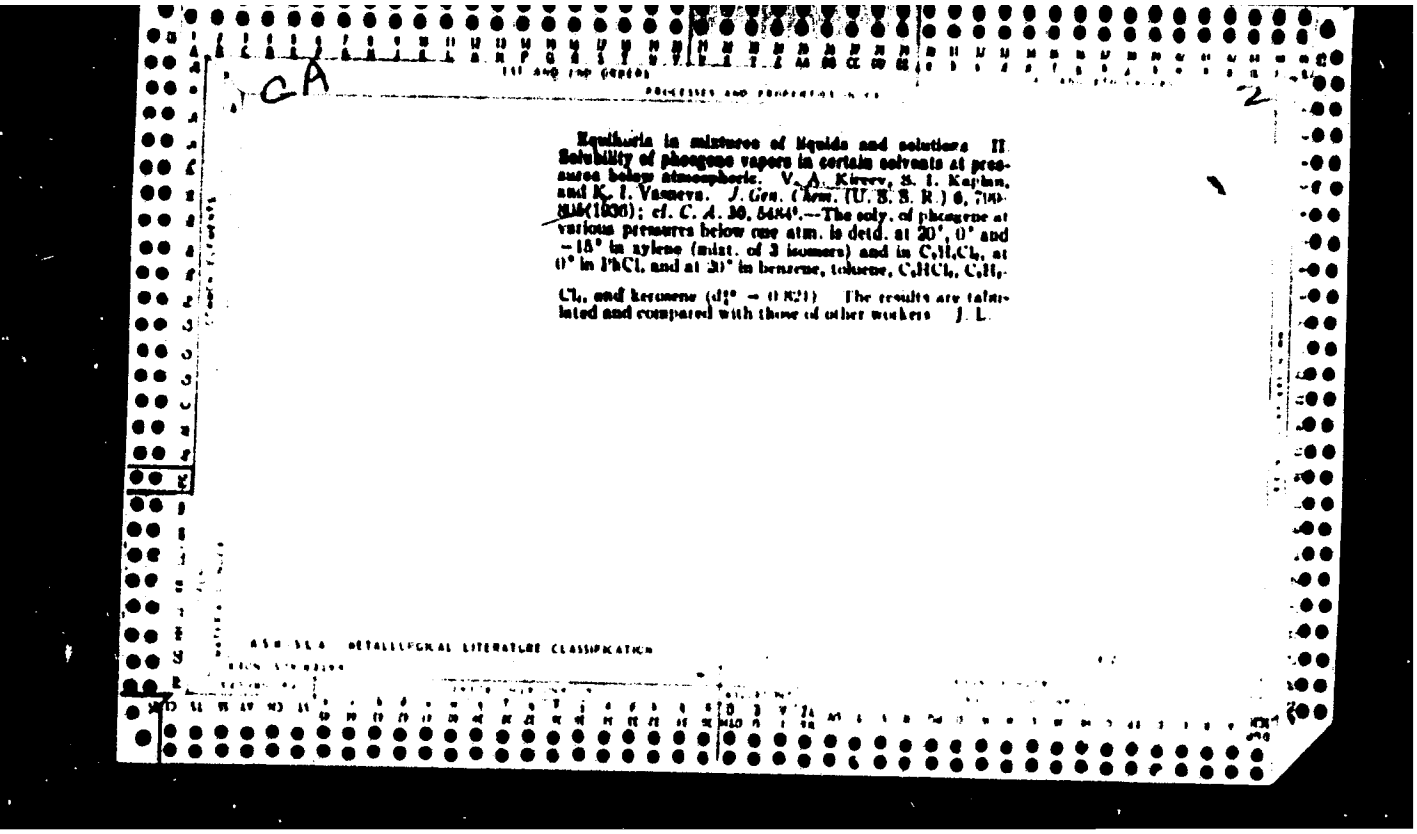


Equilibria in liquid mixtures and solutions. IX. Determination of the solubilities of acetylene and vinyl chloride in some solvents at 0° and pressures below one atmosphere. V. A. Kirrev and M. A. Romanchuk. *J. Gen. Chem.* (U. S. S. R.) 6, 78-80(1936).—The procedure described in a previous paper (*C. A.* 29, 7157°) is used to det. the solubilities of C_2H_2 and vinyl chloride at pressures of 50-700 mm. in $C_2H_4Cl_2$, 97% EtOH and heavy naphtha, b. 150-250°, at 0°, and in kerosene, bw 140-250°, at −20°, 0° and 20°. The soly. of vinyl chloride deviates most from ideality at low temps. $C_2H_4Cl_2$ is the best solvent for both gases. X. Determination of the solubilities of hydrogen and methane in some solvents at temperatures from −20° to 40° and pressures below one atmosphere. *Ibid.* 81-4; cf. *C. A.* 29, 7157°.—The solubilities of H_2 and CH_4 in xylene, kerosene, cracking benzine, $C_2H_4Cl_2$ and heavy naphtha were detd. at 50-700-mm. pressures and at −20°, −10°, 0°, 20° and 40° with the first 3 solvents and at 0° with the other 2. The results are tabulated. All of the systems obey Henry's law. Cracking benzine is the best solvent for both gases. The soly. of H_2 in xylene increases with temp. rise in the interval 20-40°. J. L.

KIRJEEW, W. A.

"Sur l'equilibre dans les melanges liquides et les solutions. Communication X".
Kirjeew, W. A. et Romantchouk, M. A. (p. 81)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1936, Volume 6, No. 1



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Equilibria in mixtures of liquids and solutions. II. Solubility of phosgene vapors in certain solvents at pressures below atmospheric. V. A. Kireev, S. I. Kaplun, and K. I. Vaseneva. *J. Gen. Chem. (U. S. S. R.)* 6, 709-18(1936); *cf. C. A.* 30, 5484⁹.—The soly. of phosgene at various pressures below one atm. is detd. at 20°, 0° and −15° in xylene (mixt. of 3 isomers) and in $C_6H_4Cl_2$ at 0° in PhCl, and at 20° in benzene, toluene, C_6H_5Cl, $C_6H_4Cl_2$, and kerosene (d_4^{20} = 0.821). The results are tabulated and compared with those of other workers. J. L.

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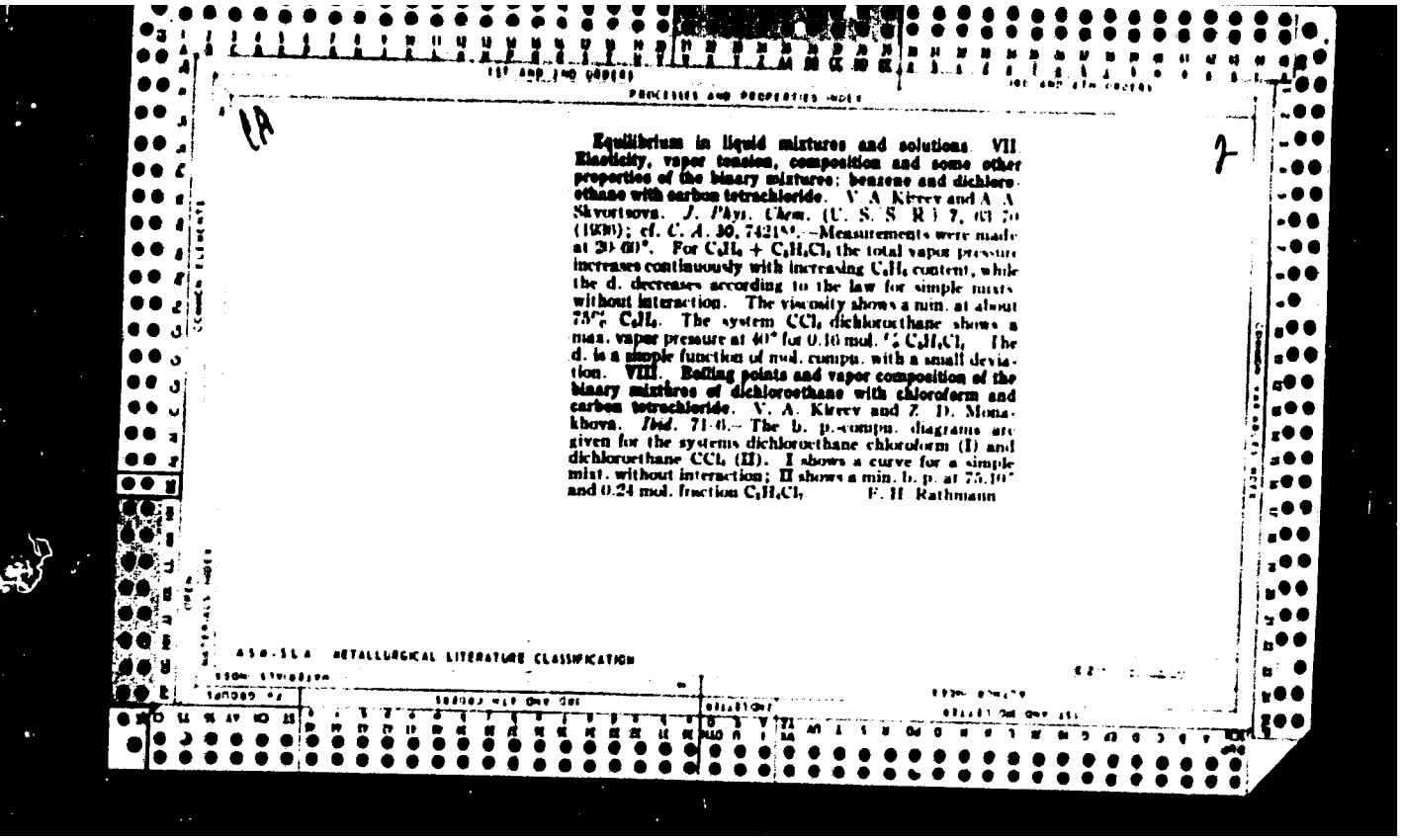

PROCESSES AND PROPERTIES INDEX

1A

Equilibrium in liquid mixtures and solutions. VII. Elasticity, vapor tension, composition and some other properties of the binary mixtures: benzene and dichloroethane with carbon tetrachloride. V. A. Kireev and A. A. Skvortsova. *J. Phys. Chem.* (U. S. S. R.) 7, 63-70 (1936); cf. *C. A.* 30, 7421⁸. —Measurements were made at 20-60°. For C_6H_6 + $C_2H_4Cl_2$ the total vapor pressure increases continuously with increasing C_6H_6 content, while the d. decreases according to the law for simple mixts. without interaction. The viscosity shows a min. at about 75% C_6H_6. The system CCl_4 dichloroethane shows a max. vapor pressure at 40° for 0.10 mol. % $C_2H_4Cl_2$. The d. is a simple function of mol. compn. with a small deviation. **VIII. Boiling points and vapor composition of the binary mixtures of dichloroethane with chloroform and carbon tetrachloride.** V. A. Kireev and Z. D. Monakhova. *Ibid.* 71-6.—The b. p.-compn. diagrams are given for the systems dichloroethane chloroform (I) and dichloroethane CCl_4 (II). I shows a curve for a simple mixt. without interaction; II shows a min. b. p. at 75.10° and 0.24 mol. fraction $C_2H_4Cl_2$. F. H. Rathmann

2

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2

PROCESSES AND PROPERTIES INDEX

The determination of the boiling point and composition of the vapor of the ternary mixture sulfuric acid-nitric acid-water. V. A. Kireev, I. Ya. Klinov and A. N. Grigorovich. *J. Chem. Ind.* (Moscow) 13, 340-8(1936). — Rough detns. of these properties support the results of Pascal and Garnier (*C. A.* 15, 3183) rather than those of Berl and Samtleben (*C. A.* 16, 2309). H. M. L.

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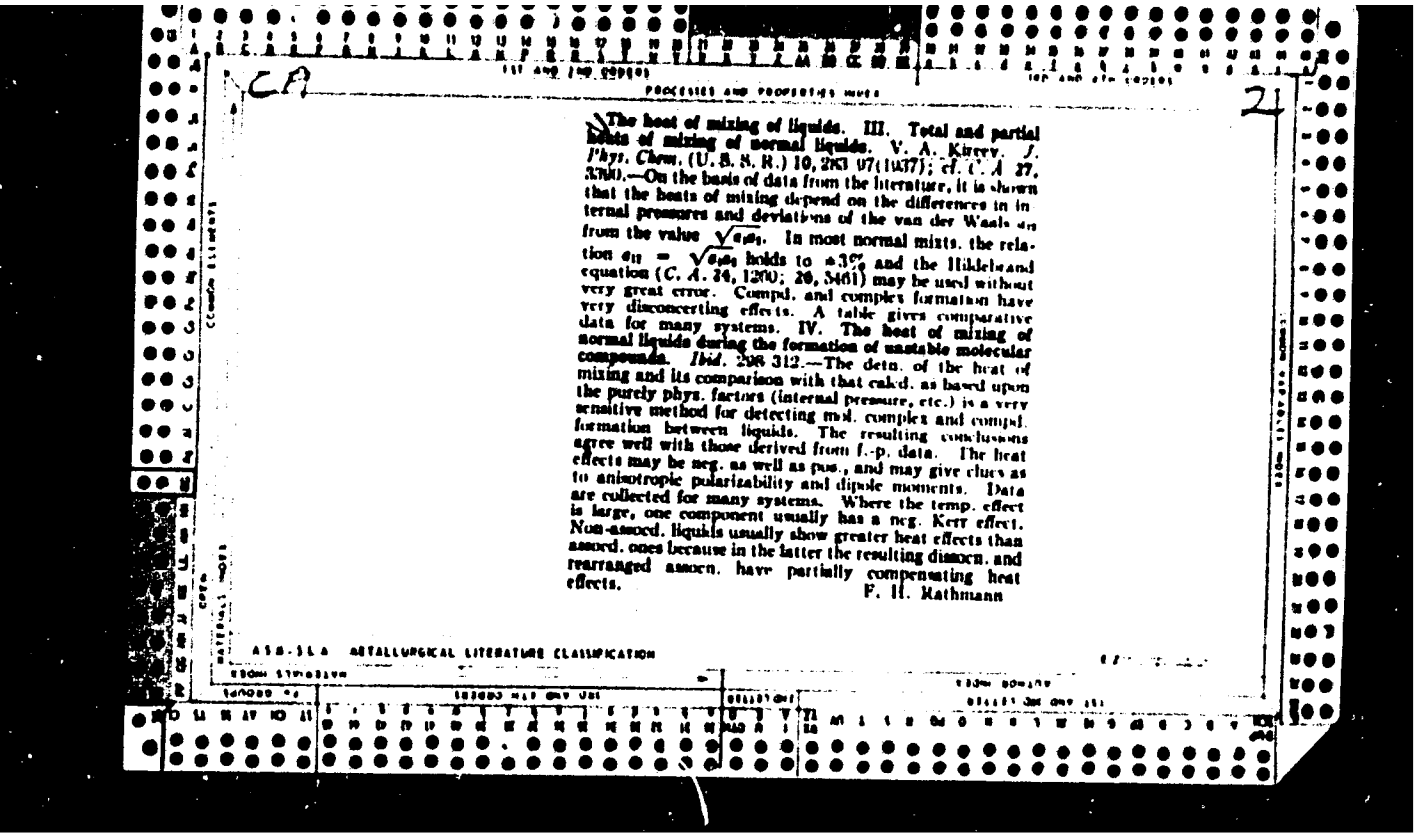

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21

PROCESSES AND PROPERTIES INDEX

The heat of mixing of liquids. III. Total and partial heats of mixing of normal liquids. V. A. Kireev. *J. Phys. Chem.* (U. S. S. R.) 10, 283-97(1937); cf. *C. A.* 27, 3780.—On the basis of data from the literature, it is shown that the heats of mixing depend on the differences in internal pressures and deviations of the van der Waals a_{12} from the value $\sqrt{a_1 a_2}$. In most normal mixts. the relation $a_{12} = \sqrt{a_1 a_2}$ holds to ±3% and the Hildebrand equation (*C. A.* 24, 1200; 26, 5461) may be used without very great error. Compd. and complex formation have very disconcerting effects. A table gives comparative data for many systems. **IV. The heat of mixing of normal liquids during the formation of unstable molecular compounds.** *Ibid.* 298-312.—The detn. of the heat of mixing and its comparison with that calcd. as based upon the purely phys. factors (internal pressure, etc.) is a very sensitive method for detecting mol. complex and compd. formation between liquids. The resulting conclusions agree well with those derived from f.-p. data. The heat effects may be neg. as well as pos., and may give clues as to anisotropic polarizability and dipole moments. Data are collected for many systems. Where the temp. effect is large, one component usually has a neg. Kerr effect. Non-assocd. liquids usually show greater heat effects than assocd. ones because in the latter the resulting dissocn. and rearranged assocn. have partially compensating heat effects.

F. H. Rathmann

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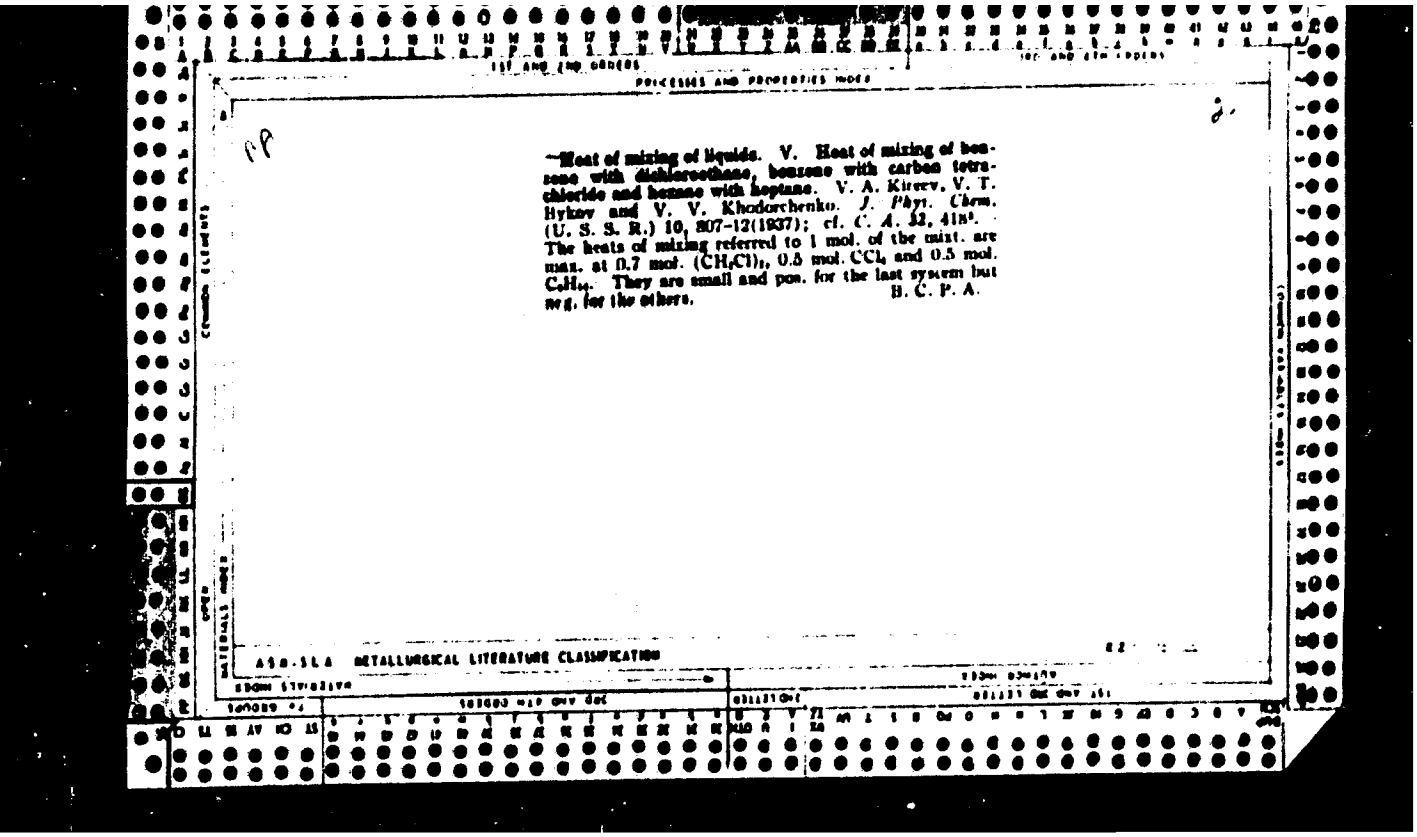
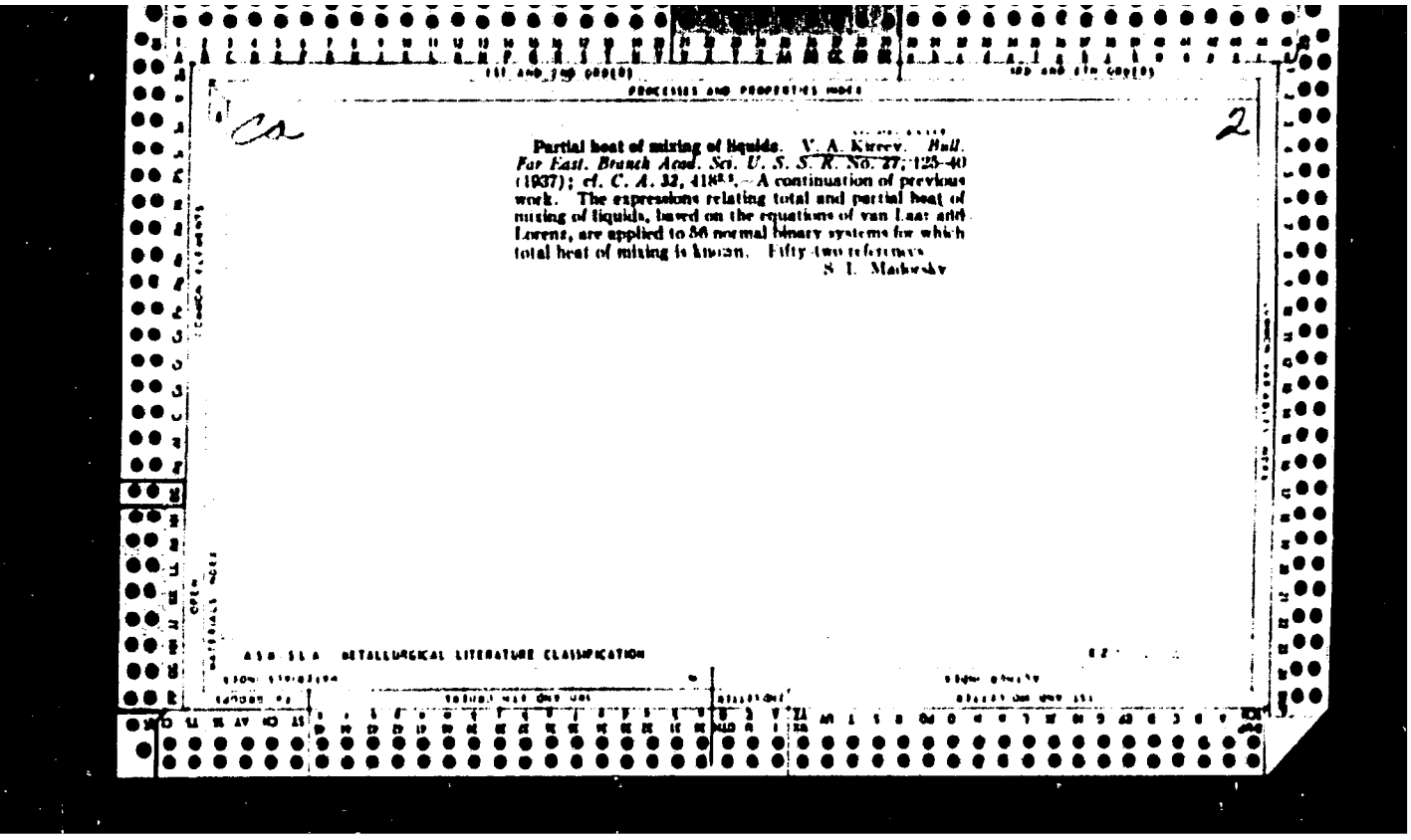


—Heat of mixing of liquids. V. Heat of mixing of benzene with dichloroethane, benzene with carbon tetrachloride and hexane with heptane. V. A. Kireev, V. T. Hykov and V. V. Khodorchenko. *J. Phys. Chem.* (U. S. S. R.) 10, 807–12(1937); cf. *C. A.* 32, 418⁹. The heats of mixing referred to 1 mol. of the mixt. are max. at 0.7 mol. $(CH_2Cl)_2$, 0.5 mol. CCl_4 and 0.5 mol. C_6H_{14}. They are small and pos. for the last system but neg. for the others. B. C. P. A.



Partial heat of mixing of liquids. V. A. Kireev. *Bull. Far East. Branch Acad. Sci. U. S. S. R.* No. 27, 125–40 (1937); cf. *C. A.* 32, 4182[1]. — A continuation of previous work. The expressions relating total and partial heat of mixing of liquids, based on the equations of van Laar and Lorenz, are applied to 56 normal binary systems for which total heat of mixing is known. Fifty-two references.

S. L. Madorsky

PROCESSES AND PROPERTIES INDEX

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3

Composition of the vapor of equimolecular mixtures. V. Kireev.—*Acta Physicochim. U. R. S. S.* 13, 454-65 (1940)(in German).—For binary solns. not subject to electrolytic dissocn., with vapors obeying the ideal gas laws and by assuming that the max. or min. of the heat-of-soln. curve lies near the 1:1 compn., the compn. of the vapors, m' (expressed in mole fractions of b), should obey the simplified equation $m' = p_b/(p_a + p_b)$ where p_a and p_b are the vapor pressures of the components in the pure state. Since a slight shift of the max. or min. of the heat-of-soln. curve has only a slight effect on m', the equation is applicable in most cases. On the basis of a discussion of exptl. data from the literature on 55 binary systems of org. and inorg. liquids and molten solids it is found that in almost all cases they obey this equation. For systems with large heats of soln. and for which the heat-of-soln. curve is strongly asym., the equation is not applicable, but such cases are relatively rare. The rate of change of m' with temp. as a function of the heats of evapn. of the components is given. F. H. Rathmann

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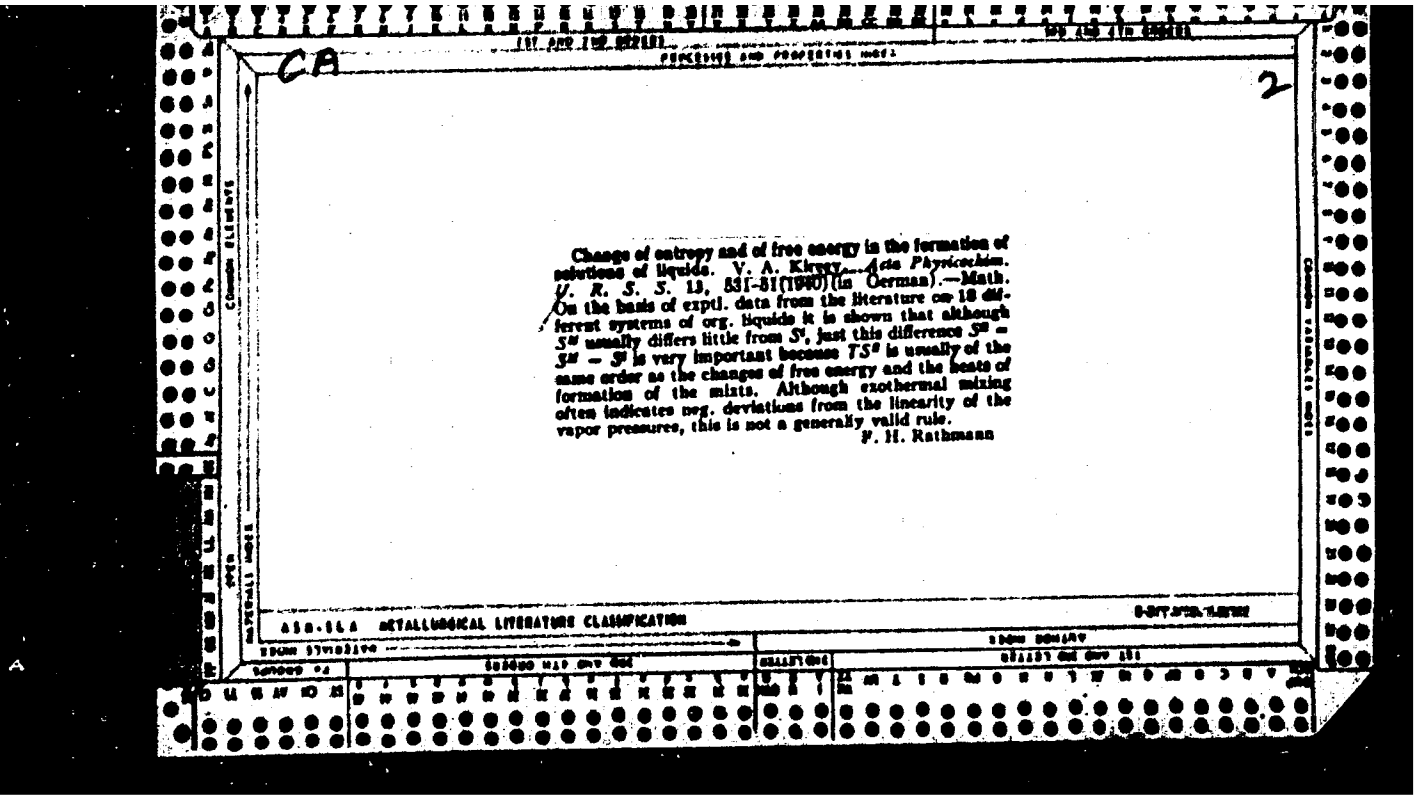

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Change of entropy and of free energy in the formation of solutions of liquids. V. A. Kireev. *Acta Physicochim. U. R. S. S.* 13, 831-81(1940)(in German).—Math. On the basis of expt. data from the literature on 18 different systems of org. liquids it is shown that although S^M usually differs little from S^I, just this difference $S^M - S^I = S^M - S^I$ is very important because TS^E is usually of the same order as the changes of free energy and the heats of formation of the mixts. Although exothermal mixing often indicates neg. deviations from the linearity of the vapor pressures, this is not a generally valid rule.
F. H. Rathmann

ASB-61A METALLURGICAL LITERATURE CLASSIFICATION