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SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. [illegible]. 1[illegible]

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"Making a New Hearth by Fusion for a Martin Process Furnace." p.5
(WIADOMOSCI HUTNICZE VOL. 10, no. 1, Jan. 1954 Stalinogrod, Poland)

SO: Monthly List of East European Accessions, LC, Vol. 3, no. 5, May 1954/Uncl.

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On the [illegible]

A set of ax[illegible]
Ibid.,111,-1.

On the equivalence [illegible]
variables and [illegible]
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1. Department of Mat[illegible],
Presented by A. Mos[illegible].

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1. Of the Pediatric Department at the Sanatorium imienia Marchlewski in Otwock of the Institute of Tuberculosis (Director--Prof. J. Misiewicz, M. D.).

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PIECZYKOLAN, Eugeniusz, inz.; BIELSKI, Tomasz, inz.

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[illegible]. Pl[illegible], Institute of [illegible]ology, Polish Academy of Sciences [illegible]
[illegible]ologii, PAN [Polska Akademia Nauk].)

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[illegible]arsaw, Bulletin de l'Academie Polonaise des Sciences, Serie des Sciences Biologiques, Vol IV, No 7, 1962, pp 421-424.

[illegible] [illegible] article] Description of method. Yield satisfactory [illegible], depending on species. Two tables, 6 diagrams; 1 Soviet, 1 Western and 2 Polish references.

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SCIENCE

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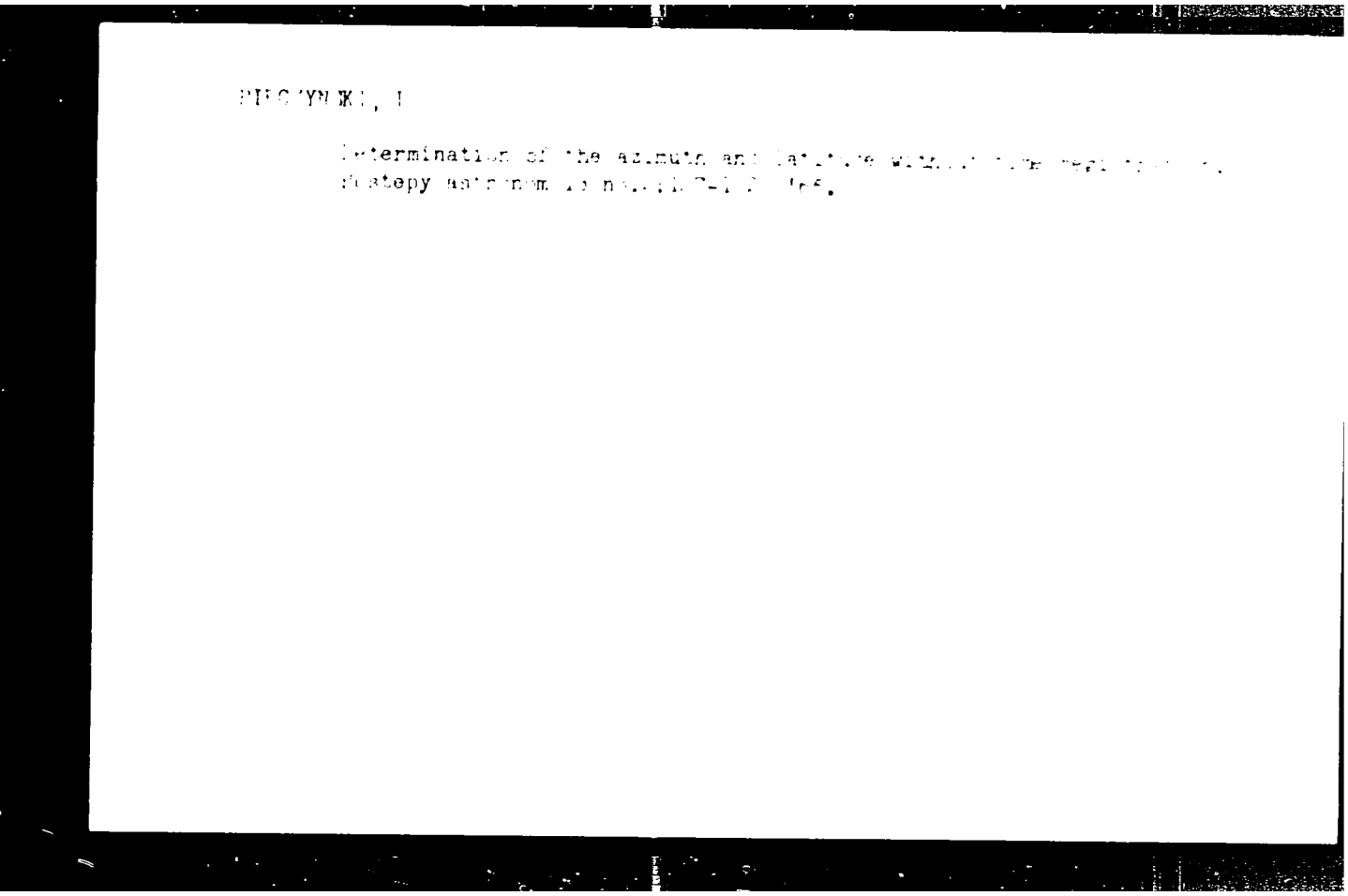

[redacted]

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without time recording. Postepy astronom. [redacted]

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Determination of the aximuth while not knowing the geographical coördinates and without recorded time. Przegl geod 35 no.11: 474-477 N '63.

PIECZYWKO, Z.

"A production cycle and the designing of clothing patterns", p. 24 (Odziez, Vol. 4, no. 1, Jan. 1953, Lodz)

SO: Monthly List of East European Accessions./Library of Congress, March 1954, Uncl. Vol. 3, No. 3

PIECZYWKO, Z., JAROSZYNSKA, K.

"Clothing for youth in lyceums." p. 135. (ODZIEZ, Vol. 4, no. 6, June 1953, Lodz, Poland)

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Work of the Institute of Industrial Design connected with the designing of work clothes p. 19. (ODZIEZ, Lodz, Vol. 6, no. 1, Jan. 1955.)

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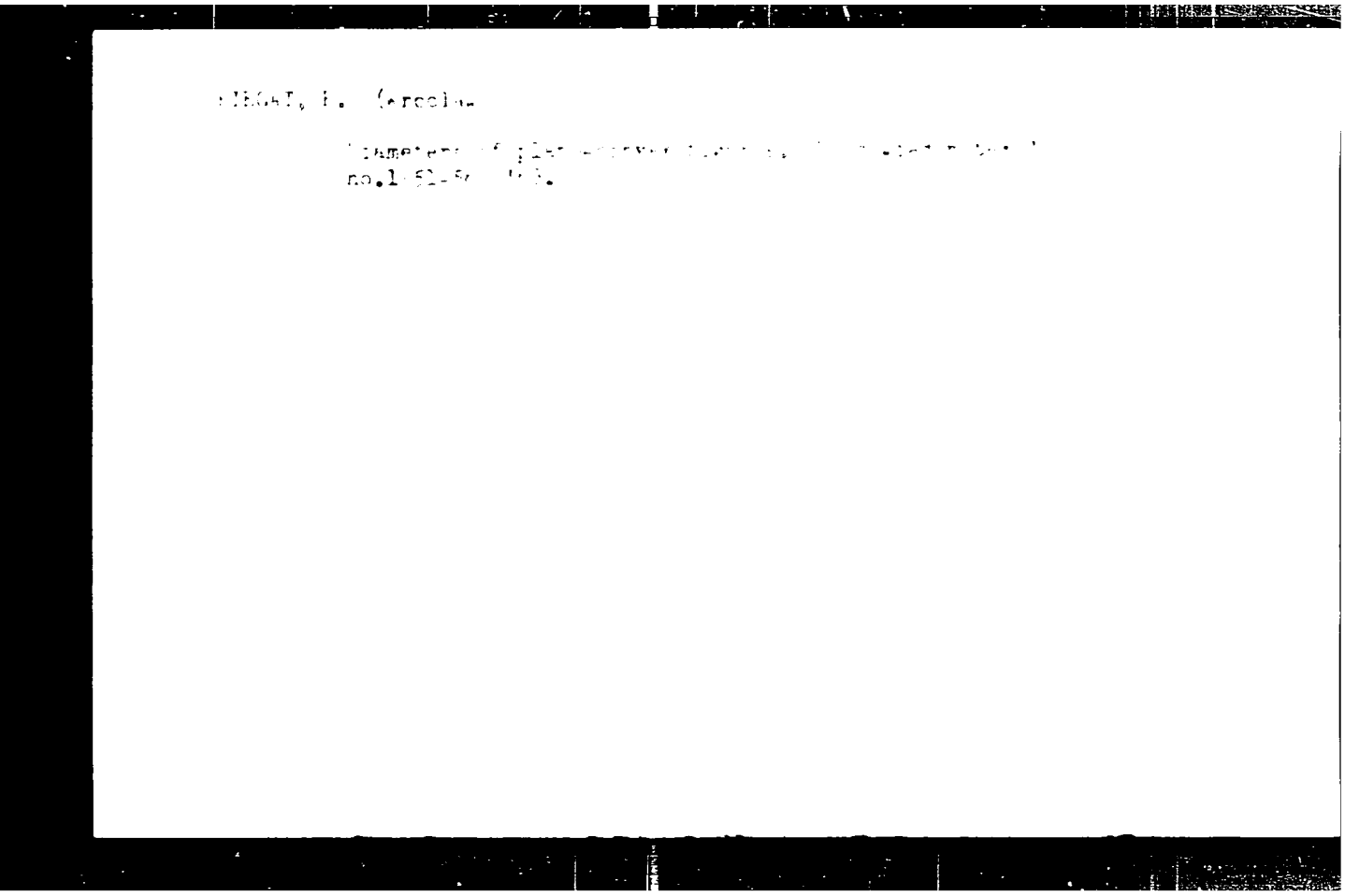
"Patterns of the Institute of Industrial Design at the 4th World Festival of Youth and Students in Bucharest." p. 252. Courier, Vol. 4, no. 12, Dec 53, Lodz

SO: Monthly List of East European Accessions, Vol 3 No 6 Library of Congress Jun 54, Unclassified



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More textile, clothing, and leather articles, p. 4. (ROLNIK SPOLDZIELCA, Warszawa, Vol. 8, no. 5, Jan. 1955.)

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Contest announcement. Bany lap 93 no.4:285 Ap '60.

1. Orszagos Magyar Banyaszati es Kohaszati Egyesulet Komloi Csoport Vezetosege elnoke (for Piegl).
2. Orszagos Magyar Banyaszati es Kohaszati Egyesulet Komloi Csoport Vezetosege titkara (for Wietorisz).

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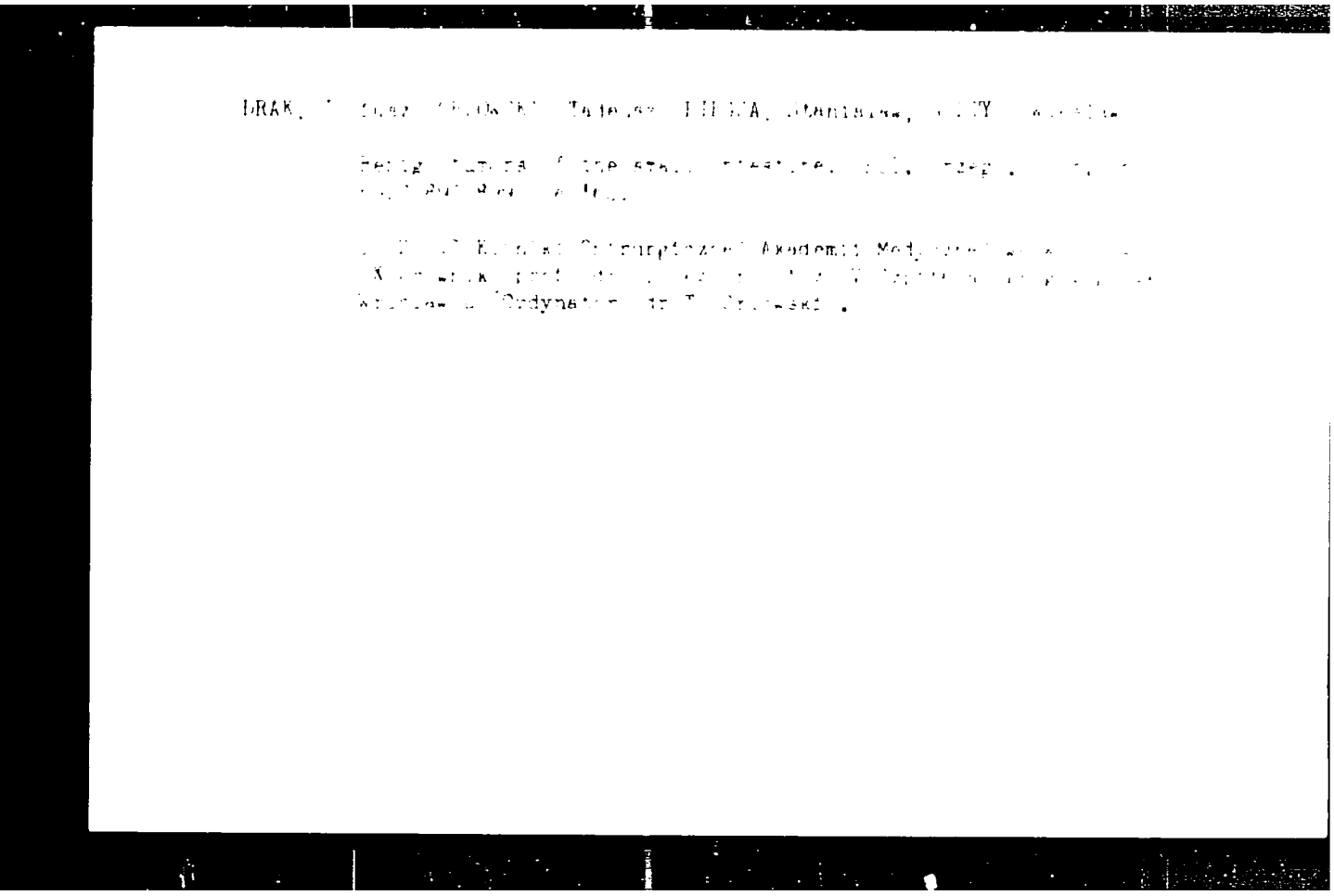
Peptic esophagitis following Heller's operation for cardiospasm complicated by persistent hemorrhage. Pol. przegl. chir. 35 no.5:451-458 '63.

1. Z III Kliniki Chirurgicznej AM we Wroclawiu Kierownik: prof. dr Z. Jezioro.
(ESOPHAGITIS, PEPTIC) (CARDIOSPASM)
(SURGERY, OPERATIVE)
(HEMORRHAGE, GASTROINTESTINAL)
(POSTOPERATIVE COMPLICATIONS)



JEZIORO, Zdzislaw; [illegible] Jan; PIEGZA, Stanislaw; SOLTYS, Wojciech

Reconstructive surgery of the bile ducts. Pol. przegl. chir. 35 no.7/8:790-792 '63.

1. Z III Kliniki Chirurgicznej AM we Wroclawiu Kierownik: prof. dr Z. Jezioro.

(CHOLELITHIASIS) (CHOLECYSTECTOMY)
(BILE DUCTS) (WOUNDS AND INJURIES)
(PERITONITIS) (SURGERY, OPERATIVE)
(IATROGENIC [illegible])

PIEH, Harry

Cortical cataract. Polski tygod. lek. 9 no.31:984-986 2 Aug 54.

1. Z Oddzialu Ocznego Instytutu Doskonalenia i Specjalizacji Kadr Lekarskich; kierownik: doc. Wiktor Arkin.

(CATARACT,
cortical)

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Periodicals: [redacted]

[redacted] lectric lines [redacted] t air protection against atmospheric [redacted]

Monthly List of East European Accessions [redacted]
February [redacted]

JEZIORO, Zdzislaw; PIEGZA, Stanislaw; SOLTYS, Wieslaw

Secondary lithiasis of the biliary tract after choledochoduodenostomy. Polski przegl. chir. 33 no.3:239-244 '61.

1. Z III Kliniki Chirurgicznej AM we Wroclawiu Kierownik: prof. dr Z. Jezioro.

(CHOLELITHIASIS surg)

[illegible], Marian, [illegible], Stanislaw, and [illegible], Aleksander, Clinic of Surgical Diseases (II Klinika Chirurgiczna), Academia Medyczna, Wroclaw [illegible] (Director: Prof. Dr. Med. [illegible])

"Aseptic Biliary Peritonitis. Case Report."

Warsaw, Polski Tygodnik Lekarski, Vol 19, No 2, 17 Jan 64, pp 90-[illegible]

Abstract: [Authors' English summary] Authors report a case of a woman with aseptic biliary peritonitis due to damage of bile ducts during cholecystectomy, with course and clinical picture different from cases previously reported. After 4 weeks, 12 liters of bile were removed from the peritoneal cavity, and hepatoduodenostomy was effectively performed. Authors suggest that recovery was probably due to the fact that bile was sterile, in support of the contention of Ariles T. and Jack H. (Surgery 1[illegible], 54, 445) that severe course and high mortality of biliary peritonitis is due to biliary infection. 7 references: 2 German, 5 English.

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JEZIORO, Zdzislaw; PIEGZA, Stanislaw; SOLTYS, Wieslaw

Aseptic biliary peritonitis. Pol. tyg. lek. 18 no.25:908-909 17 Je '63.

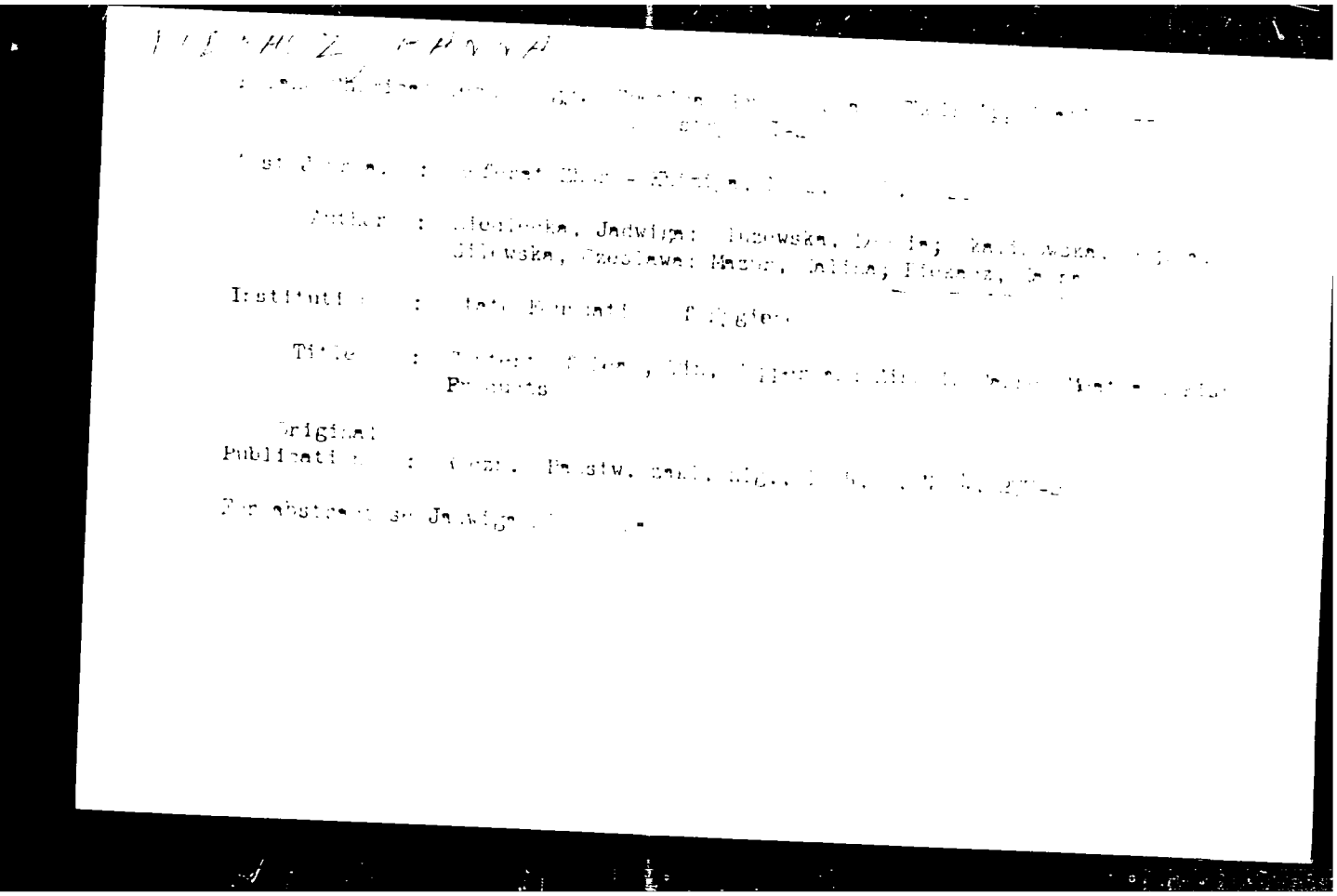
1. Z III Kliniki Chirurgicznej AM we Wroclawiu; kierownik: prof. dr med. J. Jezioro.
(PERITONITIS) (BILE)

JEZIORO, Zdzislaw; PIEGZA, Stanislaw; ZIMMER, Zenon

Post-diphtherial cicatricial stenosis of the esophagus. Polski tygod. lek. 16 no.7:258-262 13 F '61.

1. Z III Kliniki Chirurgicznej A.M. we Wroclawiu; kierownik: prof. dr med. Z. Jeziorо.

(DIPHTHERIA compl) (ESOPHAGEAL STENOSIS etiol)



Author : [illegible]

Institution : [illegible]

Title : [illegible]

Original Publication : [illegible]

PIEKAESKA, J.

Use of the calorimeter bomb to determine the energy values of vegetables, p. 39. (ROCZNIKI, Warsaw, Vol. 6, no. 1, 1955.)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 6, Jan. 1955, Uncl.

PIEGAT, W.

PIEGAT, W. Appeal of the management of the District Management of Township Cooperatives in Rybnik. p. 4.

Vol. 9, no. 6, Feb. 1956
ROLNIK SPOLDZIELCA
AGRICULTURE
Poland

So: East European Accession, Vol. 6, No. 5, May 1957

KORBECKI, Michal; MIZIKOWSKA, Ewa; PIEKACZ, Kazimiera

The metabolism of HeLa cells infected with influenza viruses. Arch. immun.ter.dosw. 9 no.3:527-542 '61.

1. Department of Medical Microbiology, School of Medicine, Warsaw.

(INFLUENZA VIRUSES metab)

KORBECKI, M.; MIZIKOWSKA, E.; PIEKACZ, K.A.

Metabolism of tissue infected with viruses. I. Influence of influenza virus on glycolysis of HeLa cells. II. Influence of infection with influenza virus on catalase activity of HeLa cells and the utilization of proteins from the milk medium. Bul Ac Pol biol 8 no.4:137-142 '60.

1. Department of Microbiology, School of Medicine Warsaw. (EEAI 9:10)
Presented by E.Mikulaszek.

(TISSUES) (VIRUSES) (INFLUENZA) (GLYCOLYSIS)
(CELLS) (CATALASE) (PROTEINS) (MILK)

Abstract [English summary modified] - Intravenous inoculation of rabbits with various strains of staphylococci generally resulted in colonization of the kidneys with virulent strains and near exclusion of non-pathogenic ones, but the coagulase production seems relatively unrelated to viral [illegible] experiments. [illegible] 15 Western references.

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PIEKALKIEWICZ, W.

First exhibition of machine tools in Milan. p. 165

PRZEGLAD MECHANICZNY. (Stowarzyszenie Inzynierow i Technikow Mechanikow Polskich)
Warszawa, Poland
Vol. 18, no. 6, Mar. 1959

Monthly List of East European Accession (EEAI) LC, Vol. 8, no. 7, July. 1959

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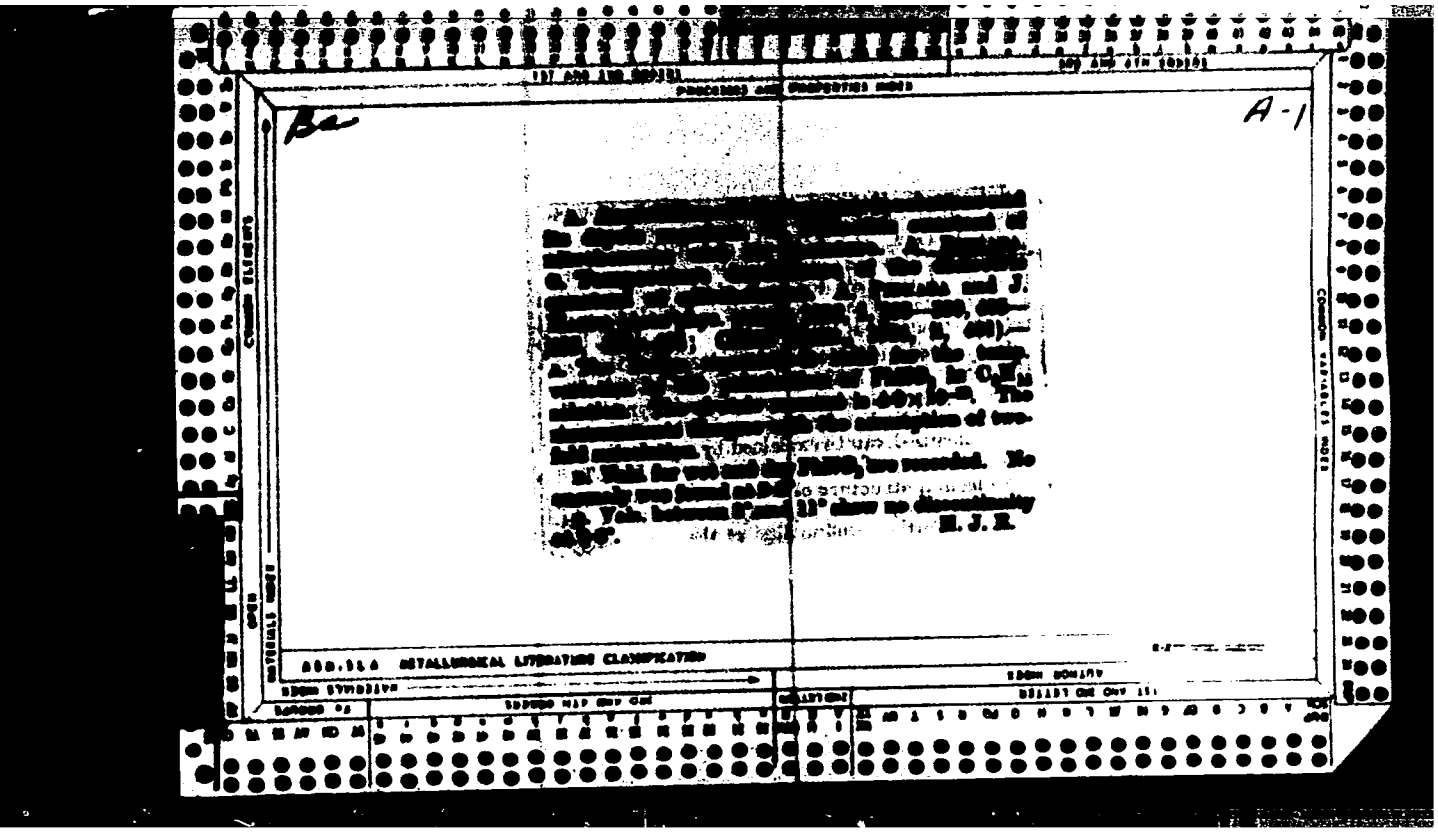
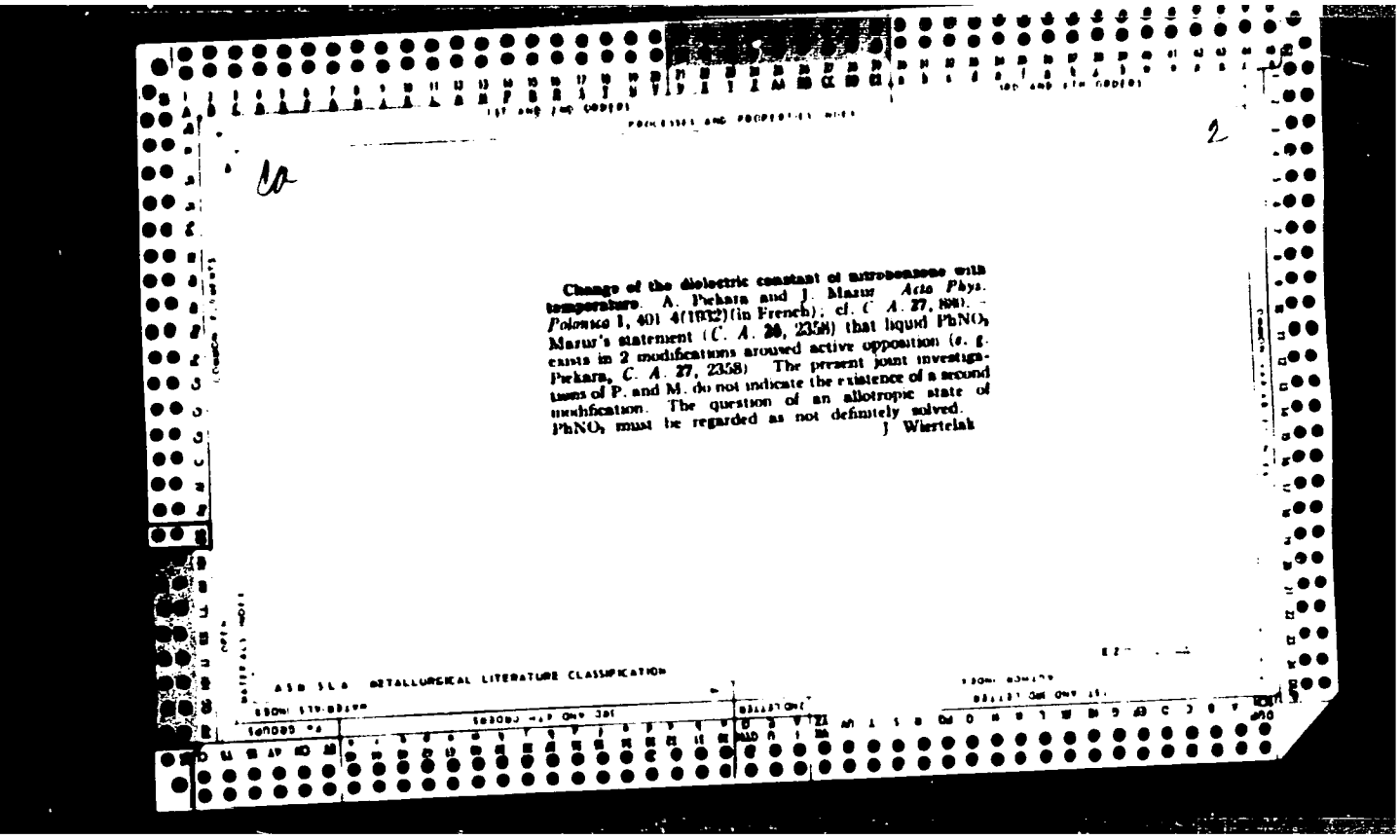
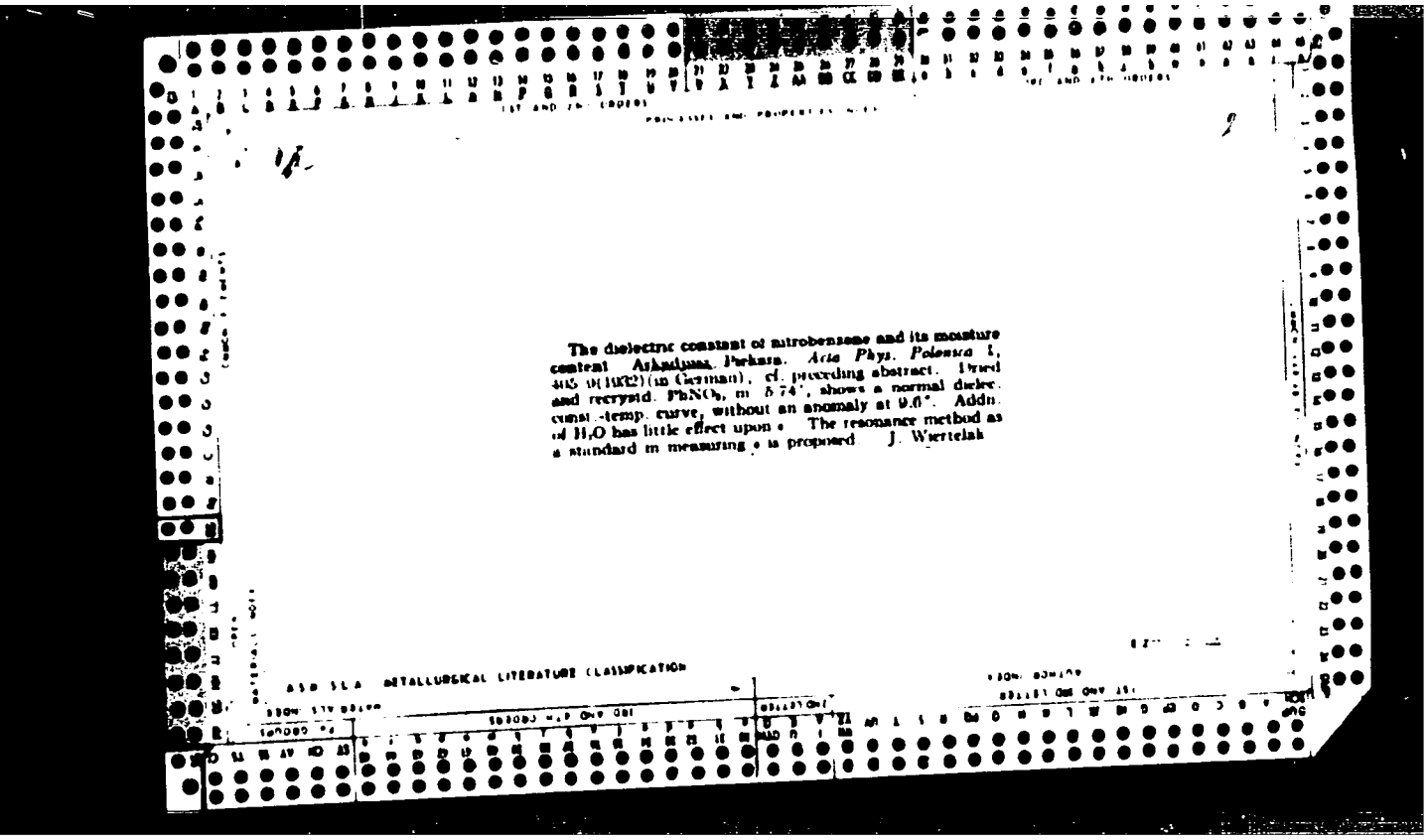
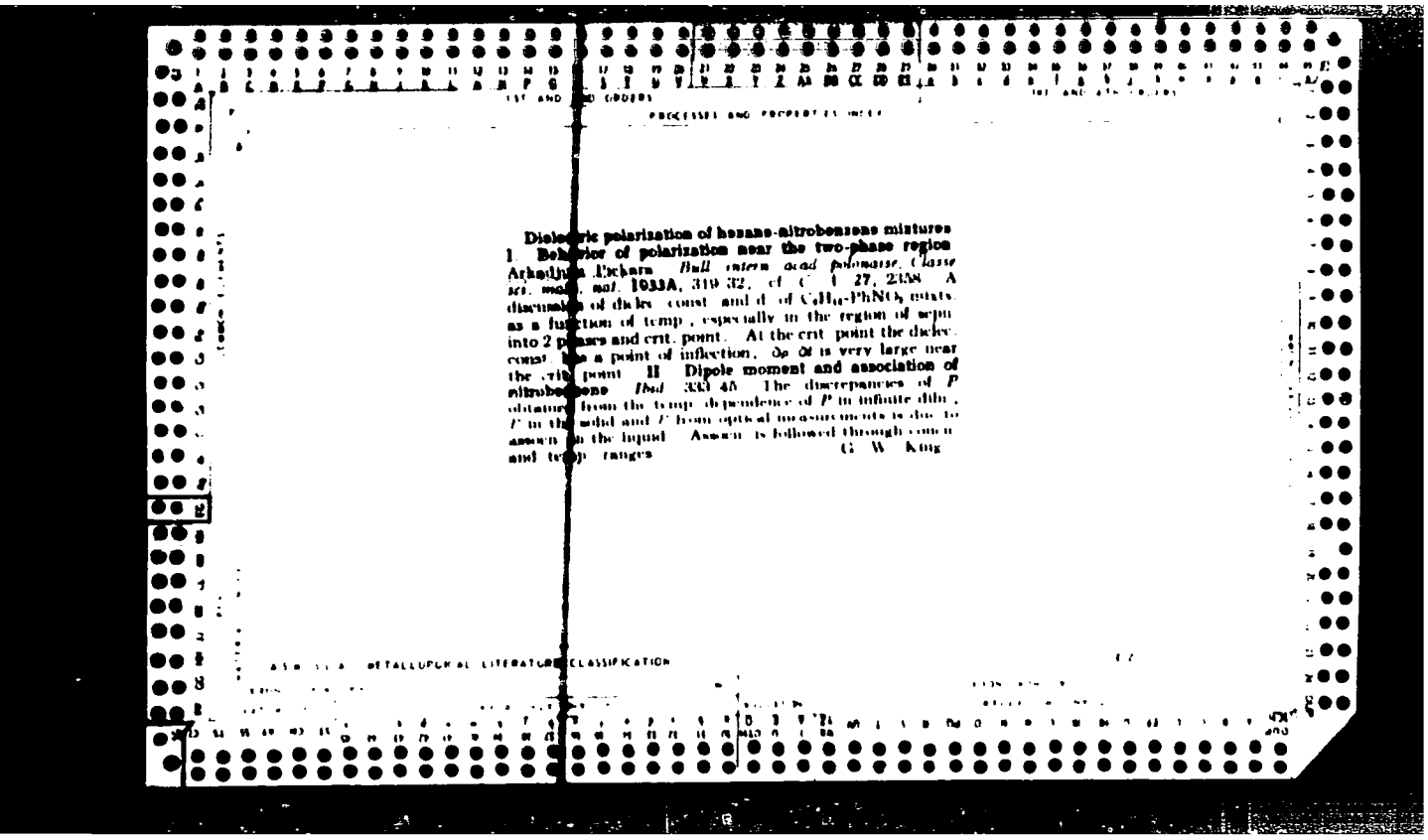




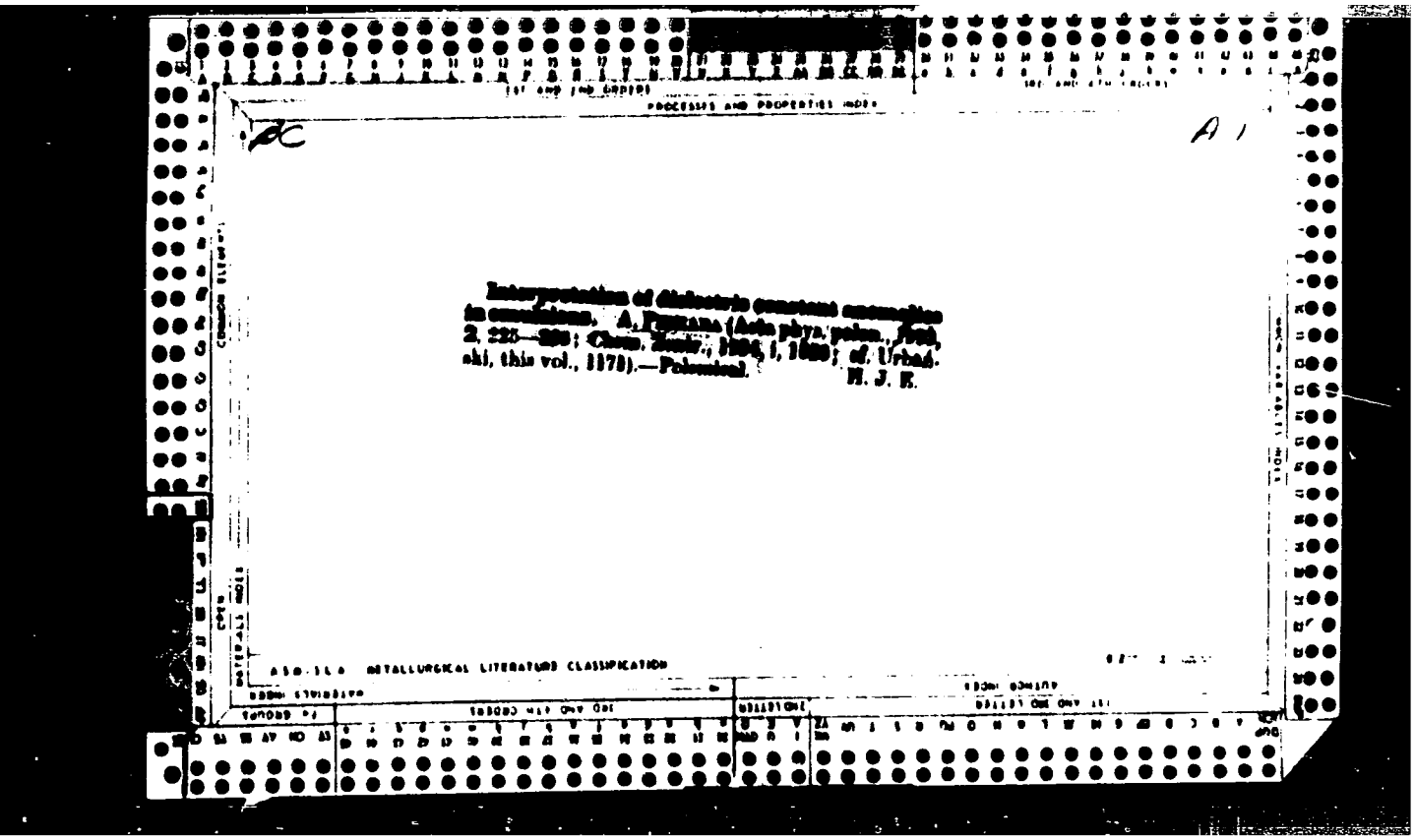
Change of the dielectric constant of nitrobenzene with temperature. A. Piekara and J. Mazur *Acta Phys. Polonica* 1, 401 4(1932)(in French); cf. *C. A.* 27, 888). Mazur's statement (*C. A.* 20, 2358) that liquid $PhNO_2$ exists in 2 modifications aroused active opposition (*e. g.* Piekara, *C. A.* 27, 2358). The present joint investigations of P. and M. do not indicate the existence of a second modification. The question of an allotropic state of $PhNO_2$ must be regarded as not definitely solved.
J. Wiertelak



The dielectric constant of nitrobenzene and its moisture content. Arkadiusz Perkara. *Acta Phys. Polonica* 1, 445–9(1932)(in German). cf. preceding abstract. Dried and recrystd. $PhNO_2$, m. 5.74°, shows a normal dielec. const.–temp. curve, without an anomaly at 9.6°. Addn. of H_2O has little effect upon ε. The resonance method as a standard in measuring ε is proposed. J. Wertelak

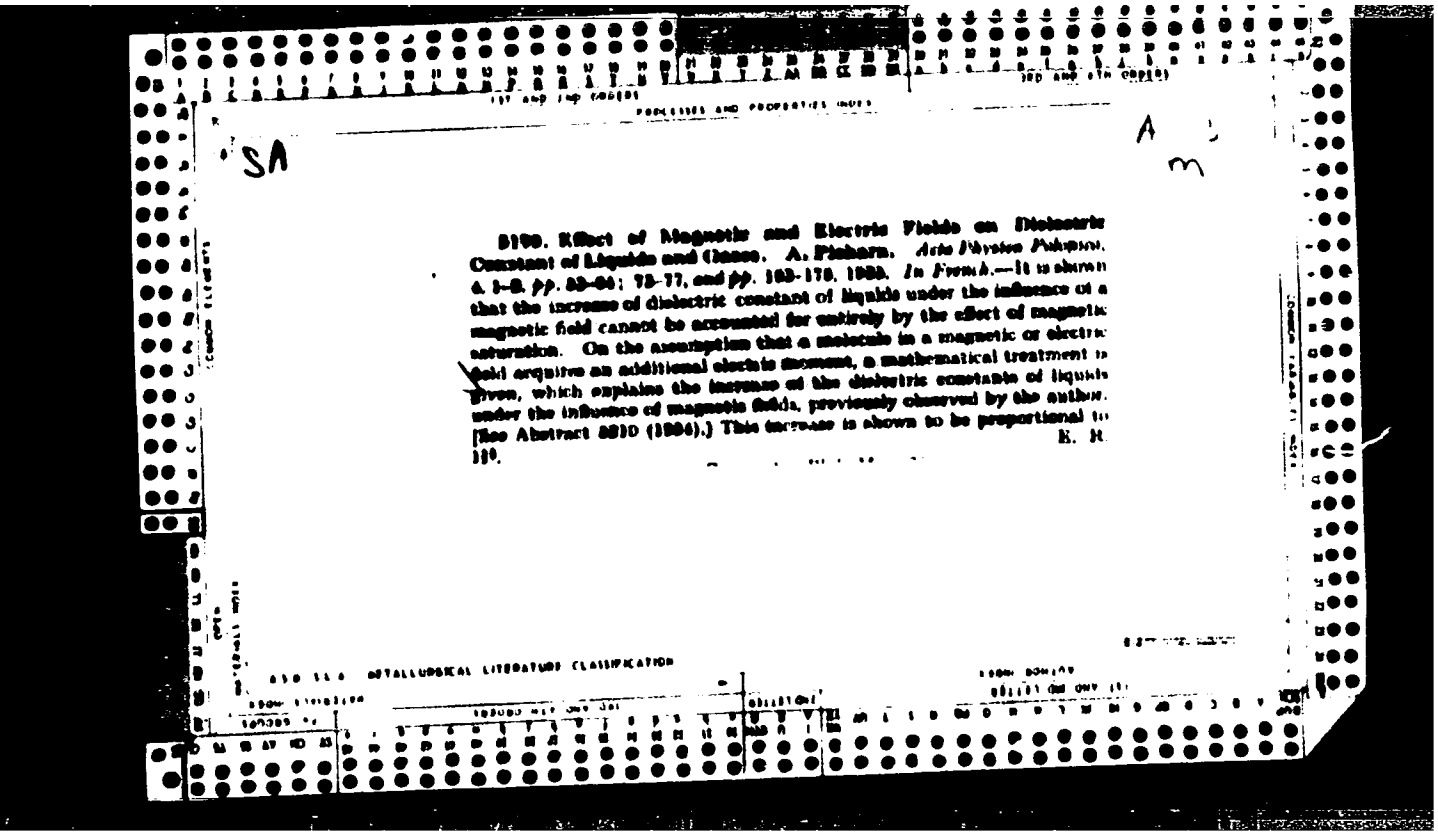


Dielectric polarization of hexane-nitrobenzene mixtures
I Behavior of polarization near the two-phase region
Arkadiusz Ecksara *Bull intern acad polonaise, Classe sci. math. nat.* 1933A, 319-32; cf. C. 1927, 2358. A discussion of dielec. const. and d. of C_6H_{14}-$PhNO_2$ mixts. as a function of temp., especially in the region of separation into 2 phases and crit. point. At the crit. point the dielec. const. has a point of inflection, $\delta\varepsilon/\delta t$ is very large near the crit. point. II **Dipole moment and association of nitrobenzene** *Ibid* 333-48. The discrepancies of P obtained from the temp. dependence of P in infinite dil. soln. in the solid and P from optical measurements is due to association in the liquid. Assocn. is followed through concn. and temp. ranges. G. W. King



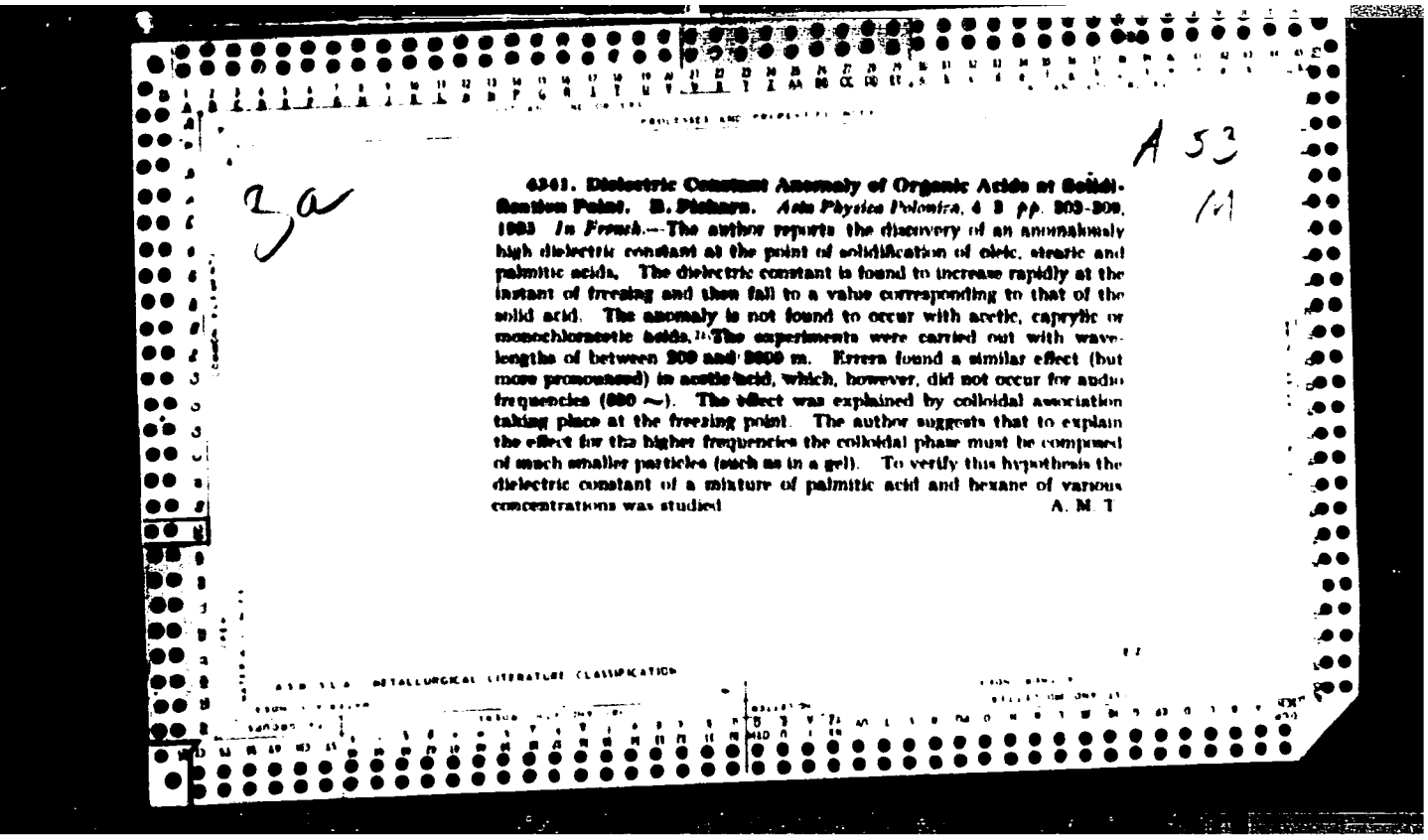
Interpretation of dielectric constant anomalies in emulsions. A. Fontana (Acta phys. polon., 1933, 2, 225—230; Chem. Zentr., 1934, I, 1830; cf. Urbach, ibid., this vol., 1178).—Polemical.

W. J. R.



8190. Effect of Magnetic and Electric Fields on Dielectric Constant of Liquids and Gases. A. Piekara. *Acta Physica Polonica*, A 1–3, pp. 39–64; 73–77, and pp. 163–178, 1938. *In French.*—It is shown that the increase of dielectric constant of liquids under the influence of a magnetic field cannot be accounted for entirely by the effect of magnetic saturation. On the assumption that a molecule in a magnetic or electric field acquires an additional electric moment, a mathematical treatment is given, which explains the increase of the dielectric constants of liquids under the influence of magnetic fields, previously observed by the author. [See Abstract 8810 (1936).] This increase is shown to be proportional to

E. H.



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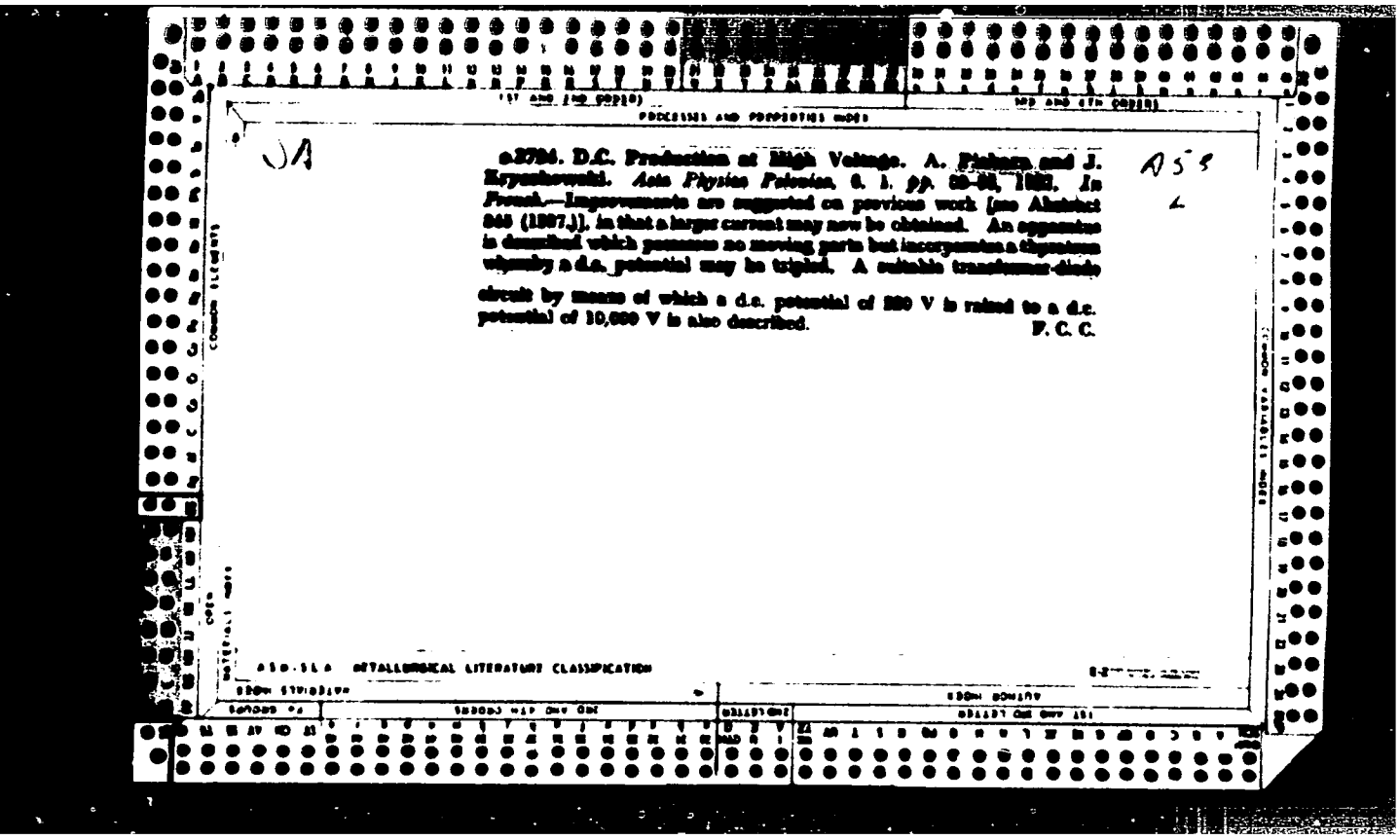
6361. **Dielectric Constant Anomaly of Organic Acids at Solidification Point.** B. Pichara. *Acta Physica Polonica*, 4 3 pp. 303-309, 1935 *In French.*—The author reports the discovery of an anomalously high dielectric constant at the point of solidification of oleic, stearic and palmitic acids. The dielectric constant is found to increase rapidly at the instant of freezing and then fall to a value corresponding to that of the solid acid. The anomaly is not found to occur with acetic, caprylic or monochloracetic acids. The experiments were carried out with wavelengths of between 200 and 3000 m. Errera found a similar effect (but more pronounced) in acetic acid, which, however, did not occur for audio frequencies (800 ~). The effect was explained by colloidal association taking place at the freezing point. The author suggests that to explain the effect for the higher frequencies the colloidal phase must be composed of much smaller particles (such as in a gel). To verify this hypothesis the dielectric constant of a mixture of palmitic acid and hexane of various concentrations was studied A. M. T

A53 V1.0 METALLURGICAL LITERATURE CLASSIFICATION



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a.2784. D.C. Production at High Voltage. A. Pichon and J. Krysinkowski. *Acta Physica Polonica*, 6. 1. pp. 59-68, 1937. *In French.*—Improvements are suggested on previous work [see Abstract 865 (1937 J)], in that a larger current may now be obtained. An apparatus is described which possesses no moving parts but incorporates a thyratron whereby a d.c. potential may be tripled. A suitable transformer-diode circuit by means of which a d.c. potential of 220 V is raised to a d.c. potential of 10,000 V is also described. P. C. C.

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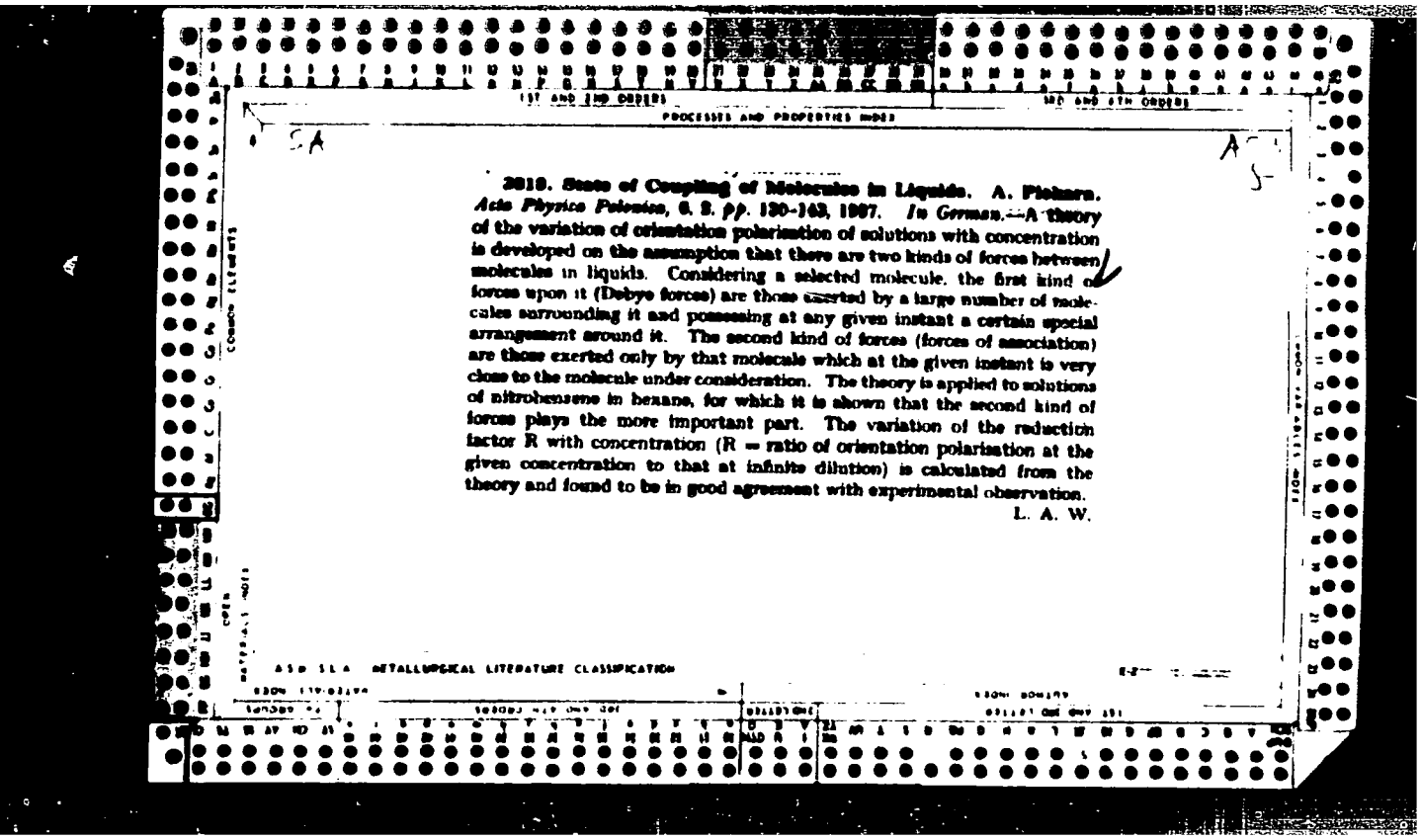
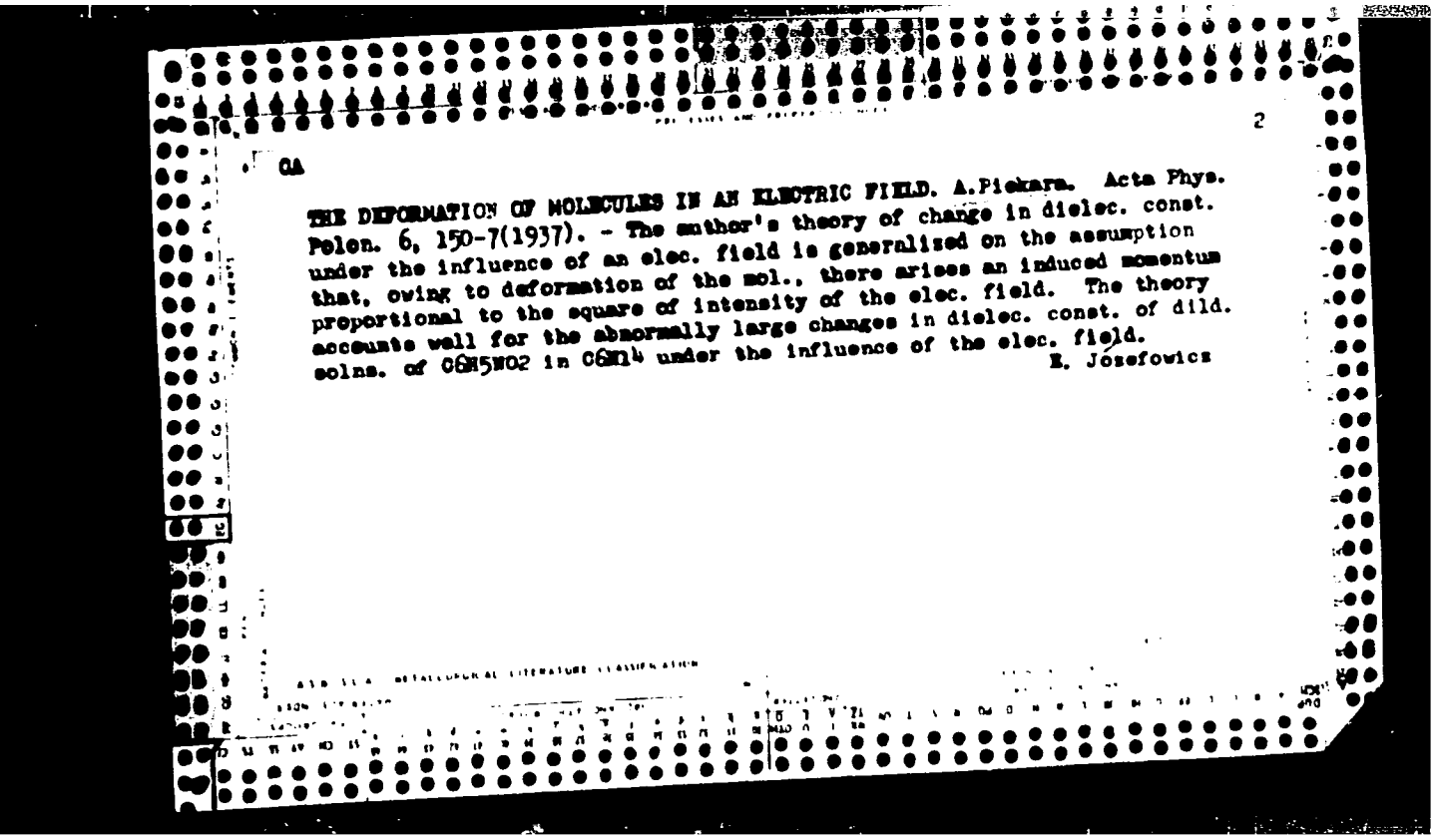


2810. State of Coupling of Molecules in Liquids. A. Piekara. *Acta Physica Polonica*, **6**, 2. *pp.* 130-143, 1937. *In German.*—A theory of the variation of orientation polarisation of solutions with concentration is developed on the assumption that there are two kinds of forces between molecules in liquids. Considering a selected molecule, the first kind of forces upon it (Debye forces) are those exerted by a large number of molecules surrounding it and possessing at any given instant a certain special arrangement around it. The second kind of forces (forces of association) are those exerted only by that molecule which at the given instant is very close to the molecule under consideration. The theory is applied to solutions of nitrobenzene in benzene, for which it is shown that the second kind of forces plays the more important part. The variation of the reduction factor R with concentration (R = ratio of orientation polarisation at the given concentration to that at infinite dilution) is calculated from the theory and found to be in good agreement with experimental observation.

L. A. W.



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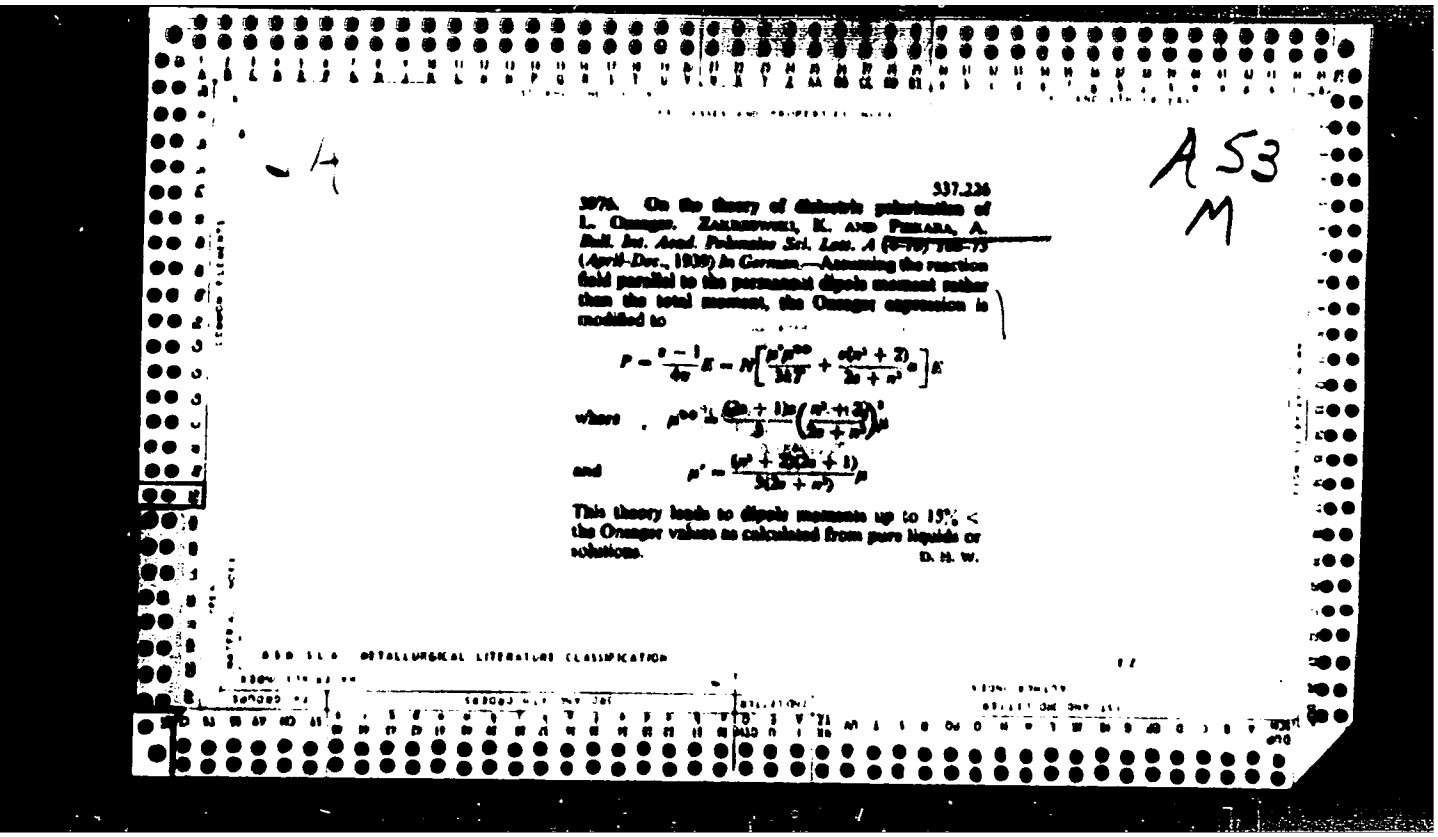
THE DEFORMATION OF MOLECULES IN AN ELECTRIC FIELD. A. Piekara. Acta Phys. Polon. 6, 150-7(1937). - The author's theory of change in dielec. const. under the influence of an elec. field is generalized on the assumption that, owing to deformation of the mol., there arises an induced momentum proportional to the square of intensity of the elec. field. The theory accounts well for the abnormally large changes in dielec. const. of dild. solns. of $C_6H_5NO_2$ in C_6H_{14} under the influence of the elec. field.

E. Josefowicz



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537.226

3978. **On the theory of dielectric polarisation of L. Onsager.** ZAMANSKOWSKI, K. AND PIEKARA, A. *Bull. Int. Acad. Polonaise Sci. Lett. A* (1939) 71–75 (*April–Dec., 1939*) *In German.*—Assuming the reaction field parallel to the permanent dipole moment rather than the total moment, the Onsager expression is modified to

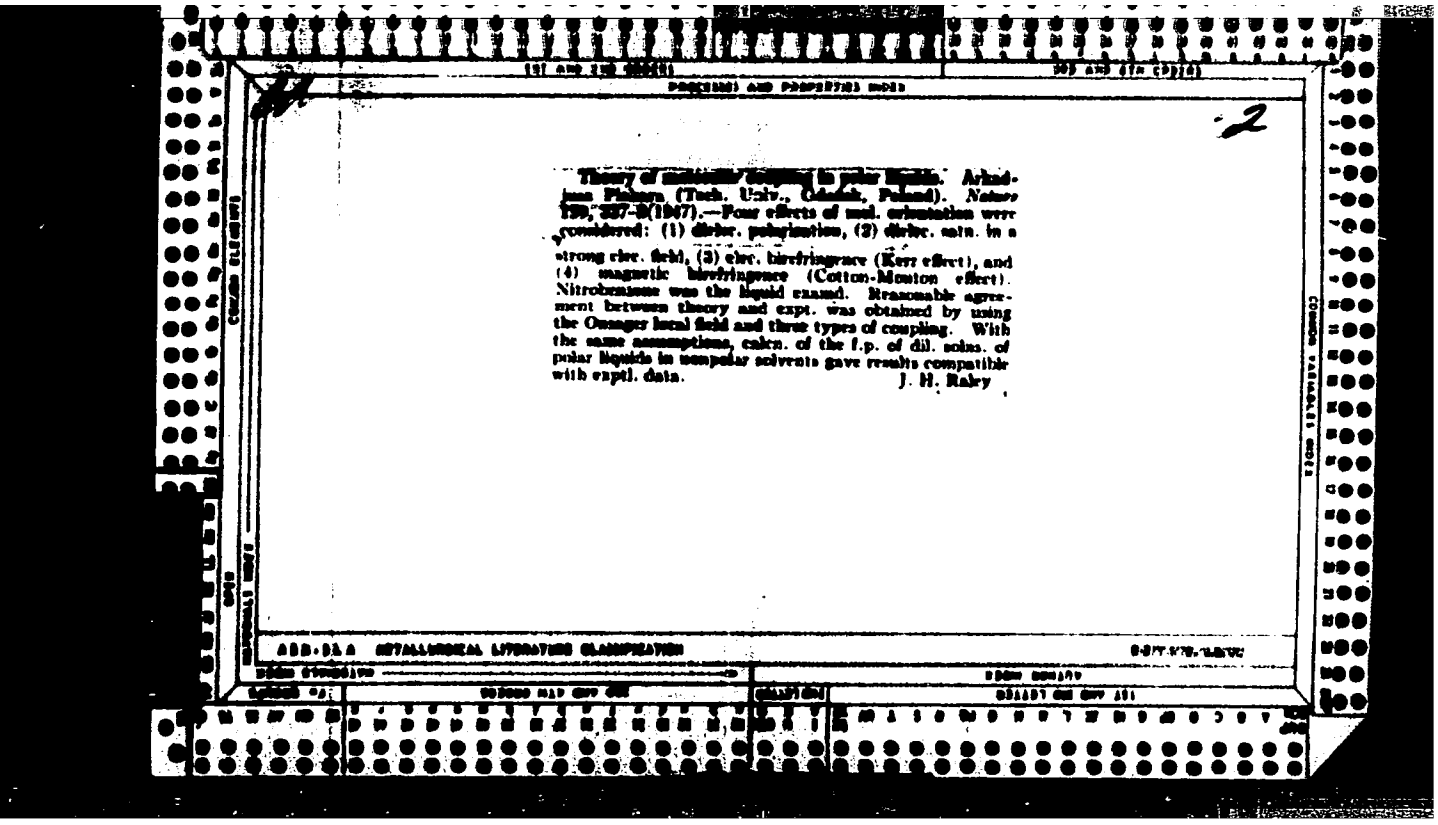
$$P = \frac{\varepsilon - 1}{4\pi} E = N\left[\frac{\mu^2 \mu^{\infty}}{3kT} + \frac{\alpha(n^2 + 2)}{2\varepsilon + n^2}\right] E$$

where $\mu^{\infty} = \frac{(2\varepsilon + 1)n}{3} \left(\frac{n^2 + 2}{2\varepsilon + n^2}\right) \mu$

and $\mu' = \frac{(n^2 + 2)(2\varepsilon + 1)}{3(2\varepsilon + n^2)} \mu$

This theory leads to dipole moments up to 15% < the Onsager values as calculated from pure liquids or solutions.

D. H. W.



-2

Theory of [illegible] in polar liquids. Arkadiusz Piekara (Tech. Univ., Gdańsk, Poland). *Nature* 179, 257-8(1957).—Four effects of mol. orientation were considered: (1) dielec. polarization, (2) dielec. satn. in a strong elec. field, (3) elec. birefringence (Kerr effect), and (4) magnetic birefringence (Cotton-Mouton effect). Nitrobenzene was the liquid examd. Reasonable agreement between theory and expt. was obtained by using the Onsager local field and three types of coupling. With the same assumptions, calcn. of the f.p. of dil. solns. of polar liquids in nonpolar solvents gave results compatible with exptl. data.

J. H. Rakv

P.T.A.

Math. & Natural Scienc

853

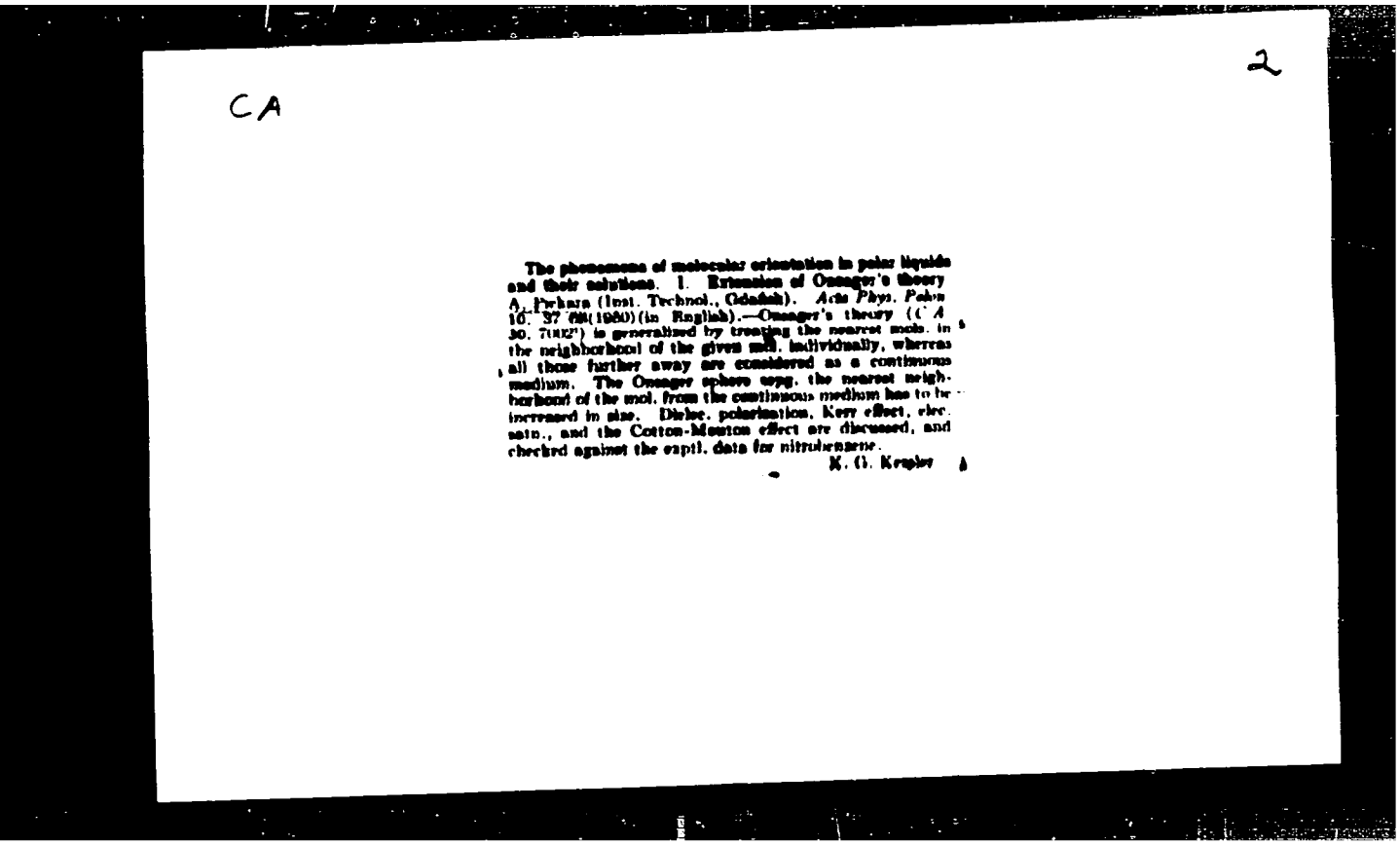
537.1 + 539

Piekara A. Electricity and the Structure of Matter.

„Elektryczność i budowa materii" Krakow, 1948. S. Kamiński. 8°. pp. 650. 595 figs.

Elementary science of electricity and magnetism (general laws of electric current. Electrostatics. Magnetic field. Electromagnetic in-

[illegible] phenomena in matter and [illegible] the liquid [illegible] and in vacuum. The [illegible] The structure of [illegible] Atomic nucleus and [illegible]



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CA

The phenomena of molecular orientation in polar liquids and their solutions. I. Extension of Onsager's theory A. Perkara (Inst. Technol., Gdańsk). *Acta Phys. Polon.* 10, 37 (in English).—Onsager's theory (*C. A.* 30, 7112[2]) is generalized by treating the nearest mols. in the neighborhood of the given mol. individually, whereas all those further away are considered as a continuous medium. The Onsager sphere supp. the nearest neighborhood of the mol. from the continuous medium has to be increased in size. Dielec. polarization, Kerr effect, elec. satn., and the Cotton-Mouton effect are discussed, and checked against the exptl. data for nitrobenzene.

K. G. Kepler

CA
1951

General and Physical Chemistry
3

The phenomena of molecular orientation in polar liquids and their solutions. II. Further development of the theory of dipole coupling in polar liquids. A. Piekara (Inst. Technol., Gdansk, Poland). *Acta Phys. Polon.* 10, 107–40 (1950); cf. *C.A.* 39, 3607*; 44, 10417g.—The expressions for the 4 phenomena of mol. orientation, i.e. elec. polarization, elec. birefringence (the Kerr effect), elec. satn., and magnetic birefringence (the Cotton-Mouton effect), in liquids involve "reducing factors" R, R_E, R_A, and R_{CM}, resp., which measure the ratio of the property in the liquid to that in the gas. The reducing factors were obtained experimentally for solns. of $PhNO_2$ in benzene at various concns. Different curves are obtained depending on whether a Lorentz or an Onsager local field is used in the calcn. R, R_E, and R_A decreased with concn. in dil. solns., R_A so much that it became neg. R_{CM} increased with concn. R and R_E increased with concn. in concd. solns. A theory of dipole coupling is developed to explain these results. Three kinds of dipole coupling are considered: (1) Coupling due to a directional field produced by surrounding mols. ordered as in a crystal lattice. This effect is almost independent of concn., and is considered const. (2) Formation of transitory pairs between nearest neighbors. This coupling can be nearly parallel or nearly antiparallel in general, but is the latter in $PhNO_2$. This effect increases strongly with concn. (3) Formation of bigger aggregates of two nearly antiparallel pairs, coupled nearly parallel. This effect becomes important only in concd. solns. Reducing factors were calcd. on the basis of this mechanism and compared with exptl. values. Satisfactory agreement was obtained only when all 3 types of coupling were considered, and the Onsager local field was used.

H. Newcombe

PIEKARA, A.

"Microwave Spectroscopy," Postepy Fiziki, Vol.3, No.1, pp. 25-58, 1952.

Gdansk Polytech.

Review describing microwaves, their emission, spectrography, rotational spectra and their quadrupole structure, inversion bands and shifts of Lamb and Retherford (Phys Rev, 72, 1947).

252T101

PIEKARA, A.

POL

532.77

3177. The lowering of the [illegible] in the theory of dipolar coupling. A. PIEKARA. *Acta phys. Polon.*, 11, No. 2, 95-108 (1951).

The theory of dipolar coupling developed by the author [Abstr. 7835 (1951)] is applied to the calculation of the lowering of the freezing-point of dilute solutions of polar substances in non-polar solvents. The lowering of the freezing-point in these solutions (ΔT) is less than that in "ideal" solutions (ΔT_{id}) in which the dissolved molecules do not exert any forces on each other. The quantity $\beta = (\Delta T - \Delta T_{id})/\Delta T_{id}$ is calculated on the assumption of a "co[illegible] of the second kind" tending to associate [illegible] molecules in antiparallel couples. The v[illegible] $(d\beta/dm)_{m=0}$, where m is the molar concentration, determines the tangent to the curve $\beta(m)$ at $m = 0$; it is found to depend on the shortest possible distance r_0 between the molecules. The theoretically calculated tangents fit well enough with the experimental curves. It is emphasized that for nitrobenzene, orthonitrophenol and paranitrophenol no new constants have been introduced, as the value of r_0 was taken from the earlier paper, where it was determined from a discussion of the dielectric, electro-optical and magneto-optic[illegible] phenomena in solutions of nitrobenzene in non-p[illegible]vents. A.

PIEKARA, A.

PIEKARA, A.; PAJAK, Z.

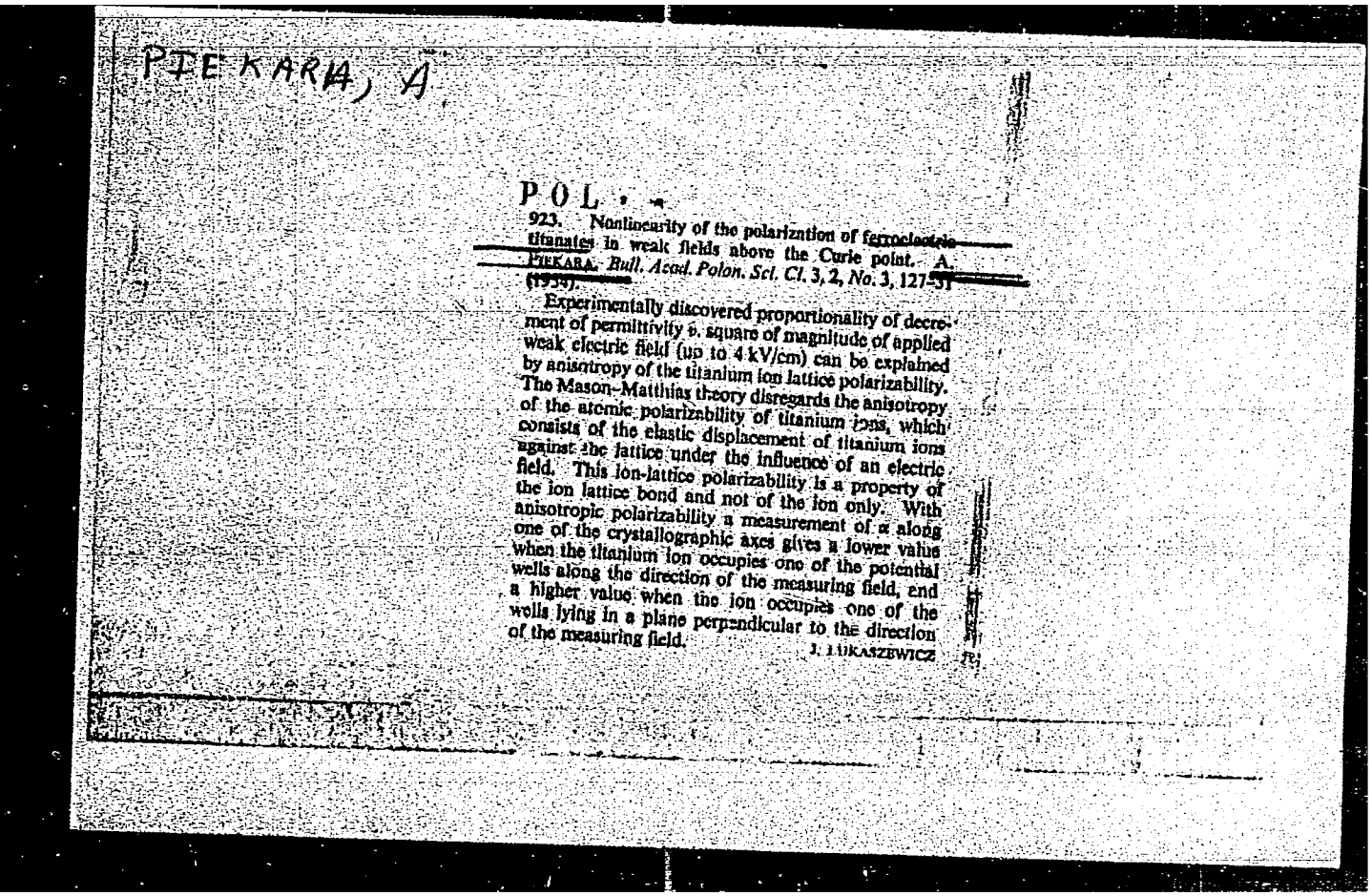
"Thermal pseudohysteresis of the dielectric constant of ferroelectric titanates" p. 256 (acta physiologica polonica, Vol. 11, No. 3/4/ 1951/52, Warszawa)

SO: Monthly List of East European Accessions, Vol. 3, No. 3 Library of Congress, March 1953, Uncl. 4

(3)

9

Effect of electric field on dielectric constant of ferroelectric titanates. A. Pikara and [illegible] (Inst. Technol., Gdansk). *Acta Phys. Polon.* 12, 170–80(1953).—The dielec. coast. of polycryst. Ba and Ba Sr titanates was obtained as a function of d.c. biasing field for quasistatic states above and below the Curie point. Particularly the effect of preliminary polarization of Ba titanates on time-variation behavior of dielec. const. below the Curie point, depending on direction of applied field, was observed.
Sylvia Nowinska



PIEKARA, A.

POL

923. Nonlinearity of the polarization of ferroelectric titanates in weak fields above the Curie point. A. PIEKARA. *Bull. Acad. Polon. Sci. Cl.* 3, 2, *No.* 3, 127-31 (1954).

Experimentally discovered proportionality of decrement of permittivity δ, square of magnitude of applied weak electric field (up to 4 kV/cm) can be explained by anisotropy of the titanium ion lattice polarizability. The Mason-Matthias theory disregards the anisotropy of the atomic polarizability of titanium ions, which consists of the elastic displacement of titanium ions against the lattice under the influence of an electric field. This ion-lattice polarizability is a property of the ion lattice bond and not of the ion only. With anisotropic polarizability a measurement of α along one of the crystallographic axes gives a lower value when the titanium ion occupies one of the potential wells along the direction of the measuring field, and a higher value when the ion occupies one of the wells lying in a plane perpendicular to the direction of the measuring field.

J. ŁUKASZEWICZ

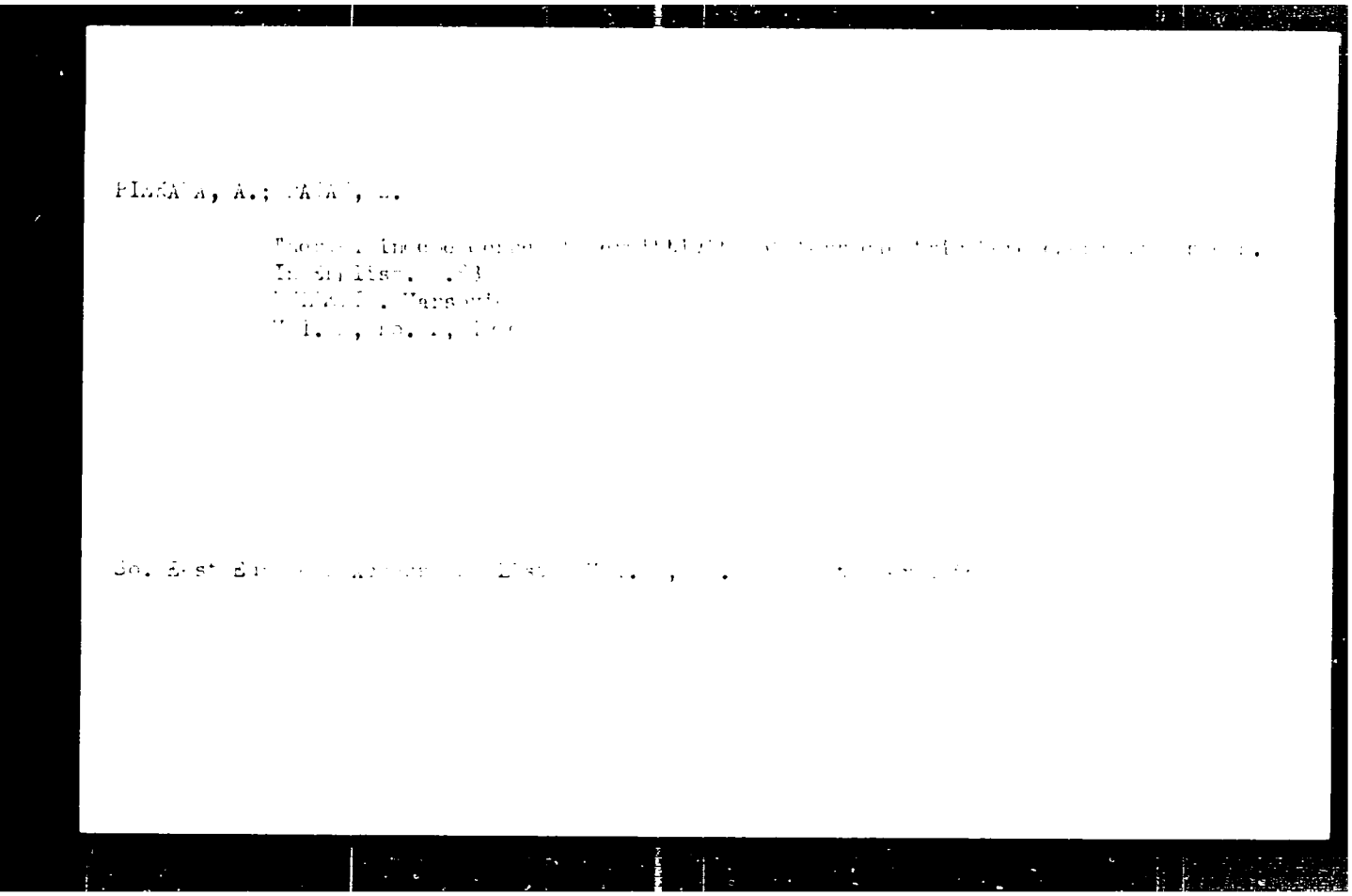
PIEKARA, A.

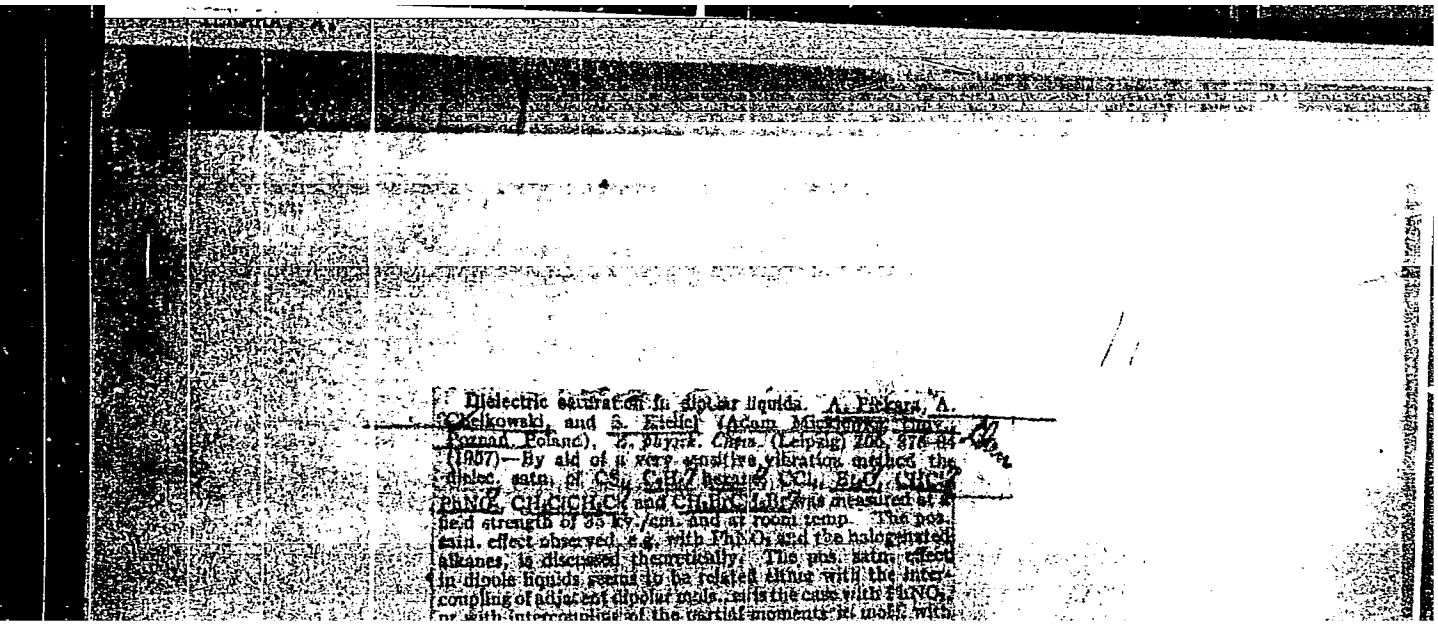
"Elektryczność i budowa materii" (Electricity and construction of material), by A. Piekara. Reported in New Books (Nowe Ksiazki), No. 15, August 1, 1955

HEKARA, ARKADIUSZ

Elektrycznosc i budowa materii. Wyd. 2., popr. luzup. Warszawa, Panstwowe Wydawn. Naukowe, 1955. 700 p. (Electricity and the structure of matter; a university textbook. 2 d ed., enl. and rev. illus., diagrs., graphs, index, tables)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 9, Sept. 1957 Uncl.





Dielectric saturation in dipolar liquids. A. Piekara, A. Chełkowski, and S. Kielich (Adam Mickiewicz Univ., Poznań, Poland). *Z. Physik. Chem.* (Leipzig) 208, 276-84 (1957).—By aid of a very sensitive vibration method the dielec. satn. of CS_2, C_6H_6, benzene, CCl_4, Et_2O, $(HOCH_2)_2$, $PhNO_2$, $ClCH_2CH_2Cl$, and CH_3NO_2 (at 0°) was measured at a field strength of 35 kv./cm. and at room temp. The pos. satn. effect observed, e.g., with Ph_2O and the halogenated alkanes, is discussed theoretically. The pos. satn. effect in dipole liquids seems to be related thus with the intercoupling of adjacent dipolar mols., as is the case with $EtNO_2$ or with intercouplings of the partial moments at work with

Theory of magnetic birefringence and other phenomena of molecular orientation in diamagnetic liquids. A. Piekara and S. Kielich (Univ. Adam Mickiewicz, Poznań, Poland). *J. phys. radium* 18, 490–7(1957); cf. *C.A.* 51, 1674g.—Elec. birefringence, dielec. polarization, effect of the elec. field on the dielec. permittivity, and effect of the magnetic field on the elec. permittivity are calcd. It is assumed that the mols. are anisotropic with respect to their optical, elec., and magnetic properties and are subject to interaction with surrounding mols. The variation of the dielec. permittivity resulting from the effect of the magnetic field is related to the Cotton-Mouton and Kerr consts. Values for this variation are obtained for nitrobenzene in a magnetic field by assuming a Lorentz field or Onsager field. The molar Cotton-Mouton const. of $PhNO_2$ in a nonpolar solvent rises rapidly with the concn., whereas the elec. satn. of the dielec. polarization changes its sign to pos. H. R.

POLAND/Electricity - Dielectric.

Abs Jour : Ref Zhur - Fizika, No 6, 1959, 13299

Author : Piekara, A., Kielich, S.

Inst : Institute of Physics, Polish Academy of Sciences, University in the Name of A. Mickiewicz, Poznan, Poland

Title : A Nonlinear Theory of the Electric Permittivity and Refractivity of Dielectric Liquids in Electric and Magnetic Fields.

Orig Pub : Acta Phys. polon., 1958, 17, No 4, 209-238

Abstract : A general molecular theory is given for the nonlinear effects of the orientation of molecules, produced in gases and dielectric liquid by the application of electric and magnetic fields. The following molar constants are calculated: the dielectric polarization, the Cotton-Mouton constant, the Kerr constant, and the constant of dielectric

Card 1/2

PIEKARA

21

Some phenomena of molecular orientation due to electric and magnetic fields. A. Piekara and S. Kielich (Polish Acad. Sci., Poznan). *Arch. sci.* (Geneva) 11, Spec. No., 304–9(1958).—The elec., magnetic, and optical effects to be expected in the regions of nonlinearity, i.e., under conditions of satn. by the same or another influence, are discussed. Formulas are given for the expected changes in dielec. const., magnetic permeability, or *n*. James H. Pannell

TA 1/1

3

24(3),5(4)

AUTHOR: Piekara, A.

POL/45-18-4-6/8

TITLE: The Dielectric Constant of Dielectric Fluids in Strong Electric Fields. Theoretical and Experimental Presentation

PERIODICAL: Acta Physica Polonica, 1959, Vol 18, Nr 4, pp 361-370 (Poland)

ABSTRACT: As has been found previously (Table 1), the dielectric constant of polar gases and fluids may drop or increase when a strong electric field is applied. Figure 1 shows a block diagram of the experimental device, figure 2 a liquid-dielectric capacitor designed for the investigation of the dielectric fluid. Amount and sign of $\Delta\varepsilon$ (variation of the dielectric constant) of polar fluids dissolved in non-polar solvents (for which $\Delta\varepsilon = 0$) is of special interest. This $\Delta\varepsilon$ is due to the effect of dielectric saturation which exhibits a different character for various polar substances. According to recent investigations, there exist three different cases of dielectric saturation (Fig 3): (1) A "negative effect" ($\Delta\varepsilon < 0$) appearing in the pure fluid as well as in its solutions of any concentration. (2) A positive effect ($\Delta\varepsilon > 0$) in pure fluids which, however, changes its sign and becomes negative at a certain degree of dilution; this effect is

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termed "positive effect with inversion". (3) A "positive effect without inversion" independent of concentration. The mechanism of the positive effect with inversion has found its explanation in 1937 (Refs 13,14). It is due to molecule pair formation, viz. the orientation (mutual position) of the dipoles. This hypothesis led to formula (1) for the mean statistical value of the field vector direction component of the electric moment of the molecule. Figure 4 shows the dependence of the dipole coupling energy on the saturation correlation factor R_s, thus justifying the existence of a positive effect with inversion. The positive effect without inversion is an intramolecular effect since it is independent of the degree of dilution. It may occur in compounds in which the moment-producing dipoles belong to one and the same molecule, and thus dilution has almost no influence upon the coupling energy. A. Cherkowski (1959) measured $\Delta\varepsilon$ of the 1,n-dihalogen derivatives of ethane, propane, butane, etc (Fig 5) showing that the distance between the moments of the C-Cl bond increases with increasing number

The Dielectric Constant of Dielectric Fluids in Strong Electric Fields. Theoretical and Experimental Presentation

POL/45-18-4-6/8

of carbon atoms in the chain. The fact that the rotation due to the C-Cl bond plays the decisive role in the positive effect without inversion has been confirmed by cryoscopic measurements (Ref 19). The negative effect occurs in molecule structures of low coupling energy which is due to the momenta whose mutual position is by far not antiparallel but almost perpendicular. This article was presented at the Dielectric Congress of the USSR, Moscow, November 1958. There are 9 figures, 2 tables, and 22 references, 2 of which are Soviet.

ASSOCIATION: Polska Akademia Nauk, Instytut Fizyki (Polish Academy of Sciences, Physics Institute); A. Mickiewicz University, Poznán

SUBMITTED: February 16, 1959

Card 3/3

24.2100
~~24 (3)~~

IOL/45-18 5 5/11

AUTHORS: Kielich, S., Piekara, A.

TITLE: A Statistical Molecular Theory of Electric, Magnetic and Optical Saturation Phenomena in Isotropic Dielectric and Diamagnetic Media

PERIODICAL: Acta Physica Polonica, 1959, Vol 18, Nr 5, PP 439-471 (Poland)

ABSTRACT: The present paper aims at establishing a unified theory of the nine electric, magnetic and optical saturation phenomena in substances of the above mentioned properties (gases, [illegible] gases, fluids) For condensed media composed of polar molecules of arbitrary symmetry, anisotropically polarizable and non-linearly deformable in an external field, general expressions yielding the nine molar constants have been derived, namely: Group I - electric saturation: S_M^{ee} in an electric, S_M^{em} in a magnetic and S_M^{eo} in an optical field.

Group II - magnetic saturation: S_M^{me} in an electric, S_M^{mm} in a magnetic and S_M^{mo} in an optical field.

Group III optical saturation: S_M^{oe} in an electric, S_M^{om} in a

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67145

A Statistical Molecular Theory of [illegible] and Optical Saturation Phenomena in Isotropic [illegible] Magnetic

magnetic and S_M^{oo} in an optical field.

A discussion of these molar constants is given for particular cases of spherical and axial symmetry of the molecules. For axial symmetry, the general formulas are reduced to those given previously. Moreover, expressions have been derived relating the above mentioned molar constants to the variations of the electric permittivity, of the magnetic permeability and of the optical refractive index of the medium, as resulting from the action thereon of a strong polarizing electric, magnetic or optical field. Only three of the nine possible effects under consideration have been detected until now, namely the electrooptical Kerr effect, the magneto-optical Cotton-Mouton effect, and the electric saturation in an electric field, i.e. electro-electric saturation. The authors derived equations for computing each of the six as yet unknown quantities from the known experimental Kerr and Cotton-Mouton constants. By these formulas the variations in permittivity, permeability and refractive index under the action of respective fields have been numerically computed for nitro-

Card 2/3

A Statistical Molecular Theory of Electric, Magnetic and Optical Saturation Phenomena in Isotropic Dielectric and Diamagnetic Media

POL/45-18-5-5/11

benzene There are 1 table and 41 references, 1 of which is Soviet.

ASSOCIATION: Institute of Physics, Polish Academy of Sciences; A. Mickiewicz University, Poznań

SUBMITTED: February 16, 1959

Card 3/3

PIEKARA, Arkadiusz, Prof. Dr.

Present state and needs of the popularization of physics in Poland. Problemy [illegible] 43-48 '62

PIEKARA, Arkadiusz

Origin of quantum electronics, Third International Congress of Quantum Electronics, Paris, February 11-15, 1963. Nauka polska 11 no.4:131-136 Jl-Ag '63.

1. Czlonek korespondent Polskiej Akademii Nauk, Warszawa.

PIEKARA, Arkadiusz

Development of the physics of dielectrics in Poland.
Postepy fizyki 14 no.6;679-690 '63.

1. Uniwersytet im. Adama Mickiewicza, Poznan.

PIEKARA, Arkadiusz, prof, dr

Quantum amplifiers and generators; masers and lasers; popular introduction to quantum electronics. Problemy 19 no.7:407-433 '63.

1. Czlonek korespondent Polskiej Akademii Nauk, kierownik Katedry Fizyki Doswiadczalnej, Uniwersytet, Poznan, i Zakladu Dielektrykow Instytutu Fizyki, Polska Akademia Nauk; laureat nagrody Problemow.

PIEKARA, Arkadiusz, prof. dr

Cooperation of physics and engineering. Problemy 19 no.10: 599-604 '63.

1. Przewodniczacy Komitetu Fizyki, Polska Akademia Nauk, Warszawa.

L 45507-65 EPF(c)/EPA(s)-2/EWP(j)/EWT(l)/EEC(t)/EWP(i)/T/EWP(e) Po-4/Pt-7/Pr-4/
PI-4/Pab DIAAP/IJP(c)/RPL GG/RM/WH

ACCESSION NR: AP5014787 PO/0002/64/000/004/0176/0181

AUTHOR: Piekara, Arkadiusz (Corresponding member of PAN)(Poznan)

TITLE: From radioscopy to quantum electronics

SOURCE: Nauka Polska, no. 4, 1964, 176-181

TOPIC TAGS: electron paramagnetic resonance, laser, maser, electronics, acoustics, electric engineering conference

Abstract: The article reports on the I.st All-Polish Conference in Poznan, held on 13-15 April 1964 to deal with the subjects of radioscopy and quantum electronics. The concept of resonance is traced all the way from simple acoustic phenomena to nuclear paramagnetic resonance, spins and absorption or emission spectra. Presentations were made on the subject of lasers and masers, magnetic relaxation, nuclear paramagnetic resonance in the Earth's field and in solids, chemical shift in liquids, optical pumping, magnetic field measurements, sensitivity of receiving systems and on problems in electronic paramagnetic resonance (study of various types of carbon, effect of electronic relaxation on directional correlations of gamma rays, study of molybdenum-vanadium complexes, free radicals in irradiated

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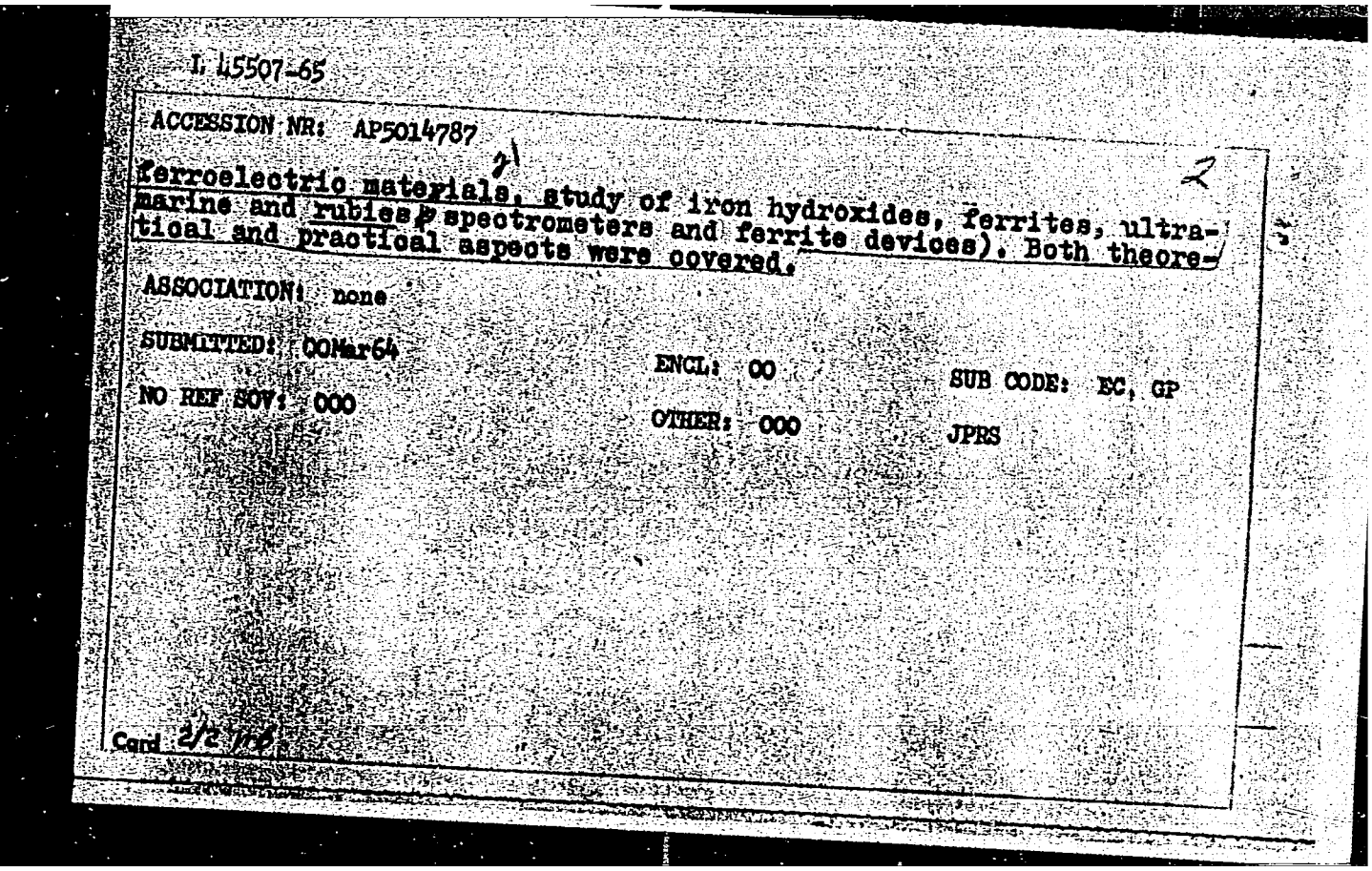

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ACCESSION NR: AP5014787

ferroelectric materials, study of iron hydroxides, ferrites, ultra-marine and rubies, spectrometers and ferrite devices). Both theoretical and practical aspects were covered.

ASSOCIATION: none

SUBMITTED: 00Mar64 ENCL: 00 SUB CODE: EC, GP

NO REF SOV: 000 OTHER: 000 JPRS

Card 2/2

L 35573-65 EEC(b)-2/EPF(c)/EPF(n)-2/EPR/EWG(j)/EEC(k)-2/EWA(h)/EWA(k)/EWP(k)/
EWT(l)/EWT(m)/EEC(t)/FBD/EWP(b)/T/EWA(m)-2/EWP(e)/EWP(t) Pf-4/Pi-4/
ACCESSION NR: AP4047632 Pn-4/Po-4/Pr-4/ P/0047/64/015/004/0451/0457 Ps-4/Pu-4/
Peb IJP(c)
WH/WG/JD

AUTHOR: Piekara, A.; Kaczmarek, F.; Drobnik, A.; Graja, A.; Ramiszowna, T.

TITLE: Lasers at the Poznan scientific center

SOURCE: Postepy fizyki, v. 15, no. 4, 1964, 451-457

TOPIC TAGS: laser, ruby laser, helium neon laser, nonlinear optics, excitation threshold

ABSTRACT: For the past few years, the Katedra fizyki doswiadczalnej Uniwersytetu im. A. Mickiewicza (Experimental physics department of Adam Mickiewicz University) and the Zaklad dielektrykow Instytutu fizyki PAN (Dielectrics department of the Physics institute of the Polish Academy of Sciences) in Poznan have been carrying out theoretical studies in the field of nonlinear optics. Since the second half of 1962, the Poznan scientific center has been engaged in experimental studies on lasers. The purpose of these studies was to design gaseous and ruby lasers and to apply them to the investigation of nonlinear optical and dielectric effects. Towards the end of 1963, the design of a few experimental models of gaseous, helium-neon lasers for the near infrared, (λ =1.15 μ) was completed, and also two

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ACCESSION NR: AP4047632

ruby lasers were put into operation (λ=6943 A). One of them operates with a ruby in a confocal system of mirrors and the other operates with a ruby rod and plane mirrors. The gaseous helium-neon lasers, the schematic diagram of which is shown in Fig. 1 of the Enclosure, are described. A 28mc oscillator was used to trigger the lasers into operation. The output power of the lasers in continuous operation was of the order of a few milliwatts. The purpose of further work is to increase the output power in order to use them for the investigation of nonlinear effects. The ruby lasers, the schematic diagram of which is shown in Fig. 2 of the Enclosure, have a pulsed operation and thus gave much higher peak powers of the optical beam. The synthetic ruby crystals were produced by the Hute Aluminum (Aluminum Smelting Plant) in Skawina. In order to lower the excitation threshold, the ruby was cooled with liquid nitrogen. Oscillograms of ruby fluorescence below the excitation threshold and of lasing above the excitation threshold are shown, when the ruby was placed in a confocal system of mirrors. The other laser employed a ruby rod (made in Switzerland) having surfaces polished and coated with totally reflecting silver layers. One of the end surfaces had a transmittivity of 1-2%. The physical data on gaseous and ruby lasers are tabulated. The laser employing a confocal ruby gave a more divergent beam than the laser em-

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L 35573-65
ACCESSION NR: AP4047632

2

ployed the ruby with flat ends. The confocal ruby had a 30% lower energy of excitation than the ruby with flat end surfaces. The least divergent beam (angle of divergence of 45') was obtained with the Swiss-made ruby 50 mm in length, 5.0 mm in diameter, with a Cr^{+3} concentration of 0.035% and employing plane silver mirrors. The purpose of further work will be to design and produce ruby lasers of high output power suitable for the investigation of nonlinear dielectric, optical, and electrooptical effects in liquids and crystals. Orig. art. has: 7 figures, and 2 tables.

ASSOCIATION: Katedra fizyki doswiadczalnej Uniwersytetu im. A. Mickiewicza (Experimental physics department, Mickiewicz University); Zaklad dielektrykow Instytutu fizyki PAN, Poznan (Dielectrics department, Physics institute, PAN)

SUBMITTED: 00 ENCL: 02 SUB CODE: OP, EC

NO REF SOV: 000 OTHER: 005

Card 3/5

PIEKARA, A.; STANKOWSKI, J.; SMOLINSKA, S.; GALICA, J.

The ammonia maser of the Poznan Center. Postepy fizyki 15 no.5:565-568 '64.

1. Department of Dielectrics, Institute of Physics, Polish Academy of Sciences, Poznan, and Department of Experimental Physics, A. Mickiewicz University, Poznan.

PIEKARA, Arkadiusz, prof. dr.

Popularization of science is as necessary as air and sun...
Problemy 19 [i.e. 20] no.1:4 '64.

1. Czlonek korespondent Polskiej Akademii Nauk, kierownik Katedry Fizyki Doswiadczalnej, Uniwersytet im. Adama Mickiewicza, Poznan, i kierownik Zakładu Dielektrykow, Instytut Fizyki, Polska Akademia Nauk, Poznan.

L 16285-65 EWT(1)/EPA(s)-2/EEC(t)/EEC(b)-2 Pt-10/Pl-4 IJP(c) GG
ACCESSION NR: AP4046070 P/0045/64/026/001/0085/0093

AUTHOR: Piekara, A.; Kaczmarek, F.

TITLE: Investigation of piezoelectric vibrations and dielectric loss factor by a thermal method

SOURCE: Acta physica polonica, v. 26, no. 1, 1964, 85-93

TOPIC TAGS: piezoelectric vibration, transducer dielectric loss, transducer dielectric loss factor, ferroelectric transducer, ferroelectric transducer vibration, transducer piezoelectric vibration

ABSTRACT: The piezoelectric vibrations and dielectric loss factor of $BaTiO_3$ polycrystal and monocrystal were investigated by applying the thermal method. This method is based on detecting directly the temperature changes in a ferromagnetic specimen. It was found that ferroelectric transducers have a very complicated a-c voltage response due to mechanical vibrations. Among the basic, very strong transverse and longitudinal vibrations there are many other vibrations which cover almost the entire frequency range from 100 kcps to

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ACCESSION NR: AP4046070

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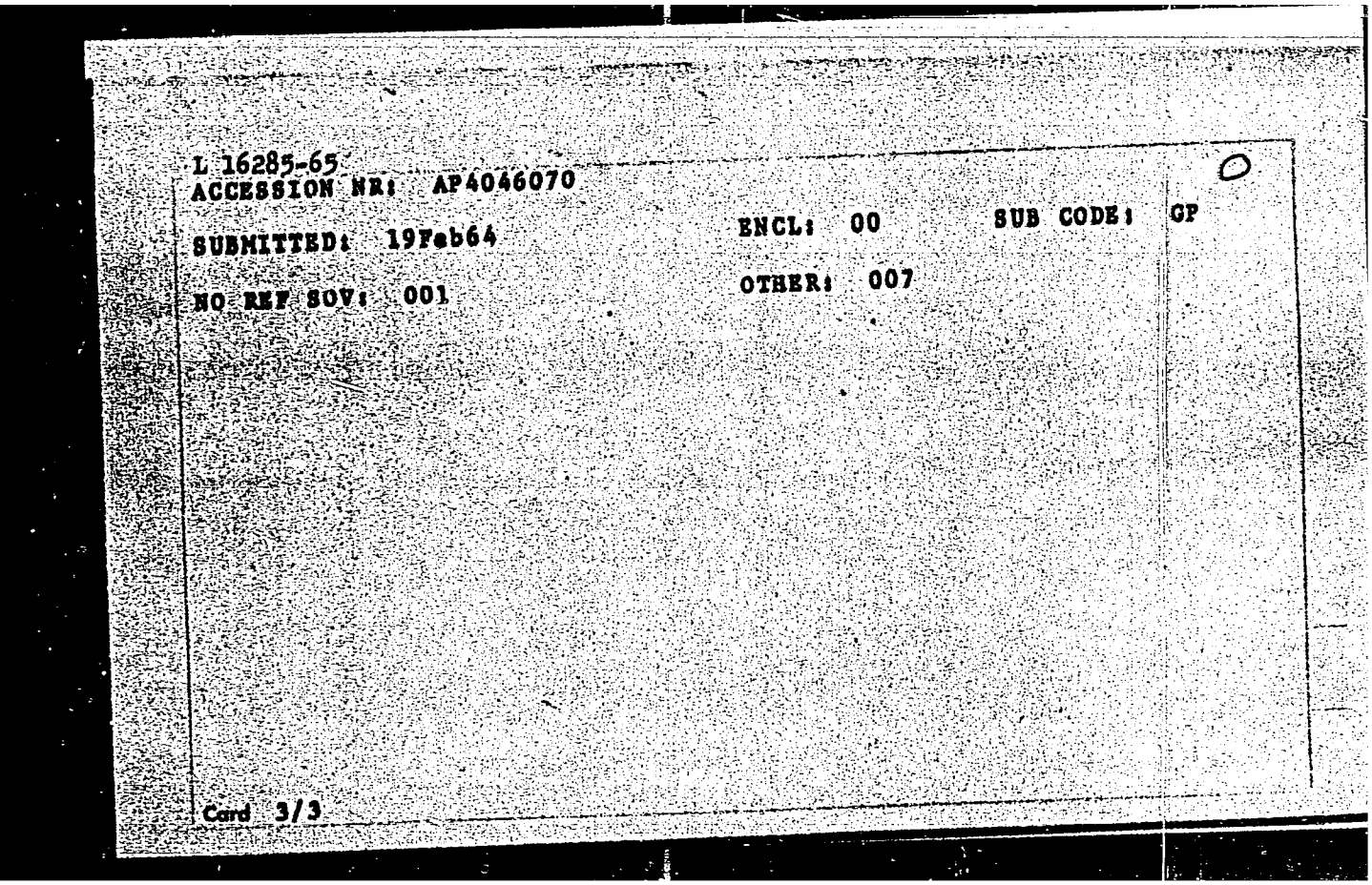
10 Mcps. Weak piezoelectric vibrations were also found in ceramic specimens which were investigated several months after the polarization voltage had been removed. Most of the investigated multidomain single crystals do not exhibit piezoelectric vibrations without external d-c polarization voltage. A d-c biasing field causes the dielectric loss factor to decrease. In the case of ceramic $BaTiO_3$ this decrease was about 42% (in a field of 10 kv/cm) and about 90% in the multidomain crystal when saturation was achieved (in a field of 2 kv/cm). In the frequency range from several kc to 10 mc there is no absorption band in either unpolarized $BaTiO_3$ ceramic or in multidomain single crystals; the temperature of the sample in relation to the frequency of the applied field is linear. Orig. art. has: 9 figures and 4 formulas.

ASSOCIATION: Institute of Experimental Physics, A. Mickiewicz University, Institute of Physics, Polish Academy of Sciences, Poznan.

Card 2/3



L 16285-65
ACCESSION NR: AP4046070

SUBMITTED: 19Feb64 ENCL: 00 SUB CODE: GP

NO REF SOV: 001 OTHER: 007

Card 3/3

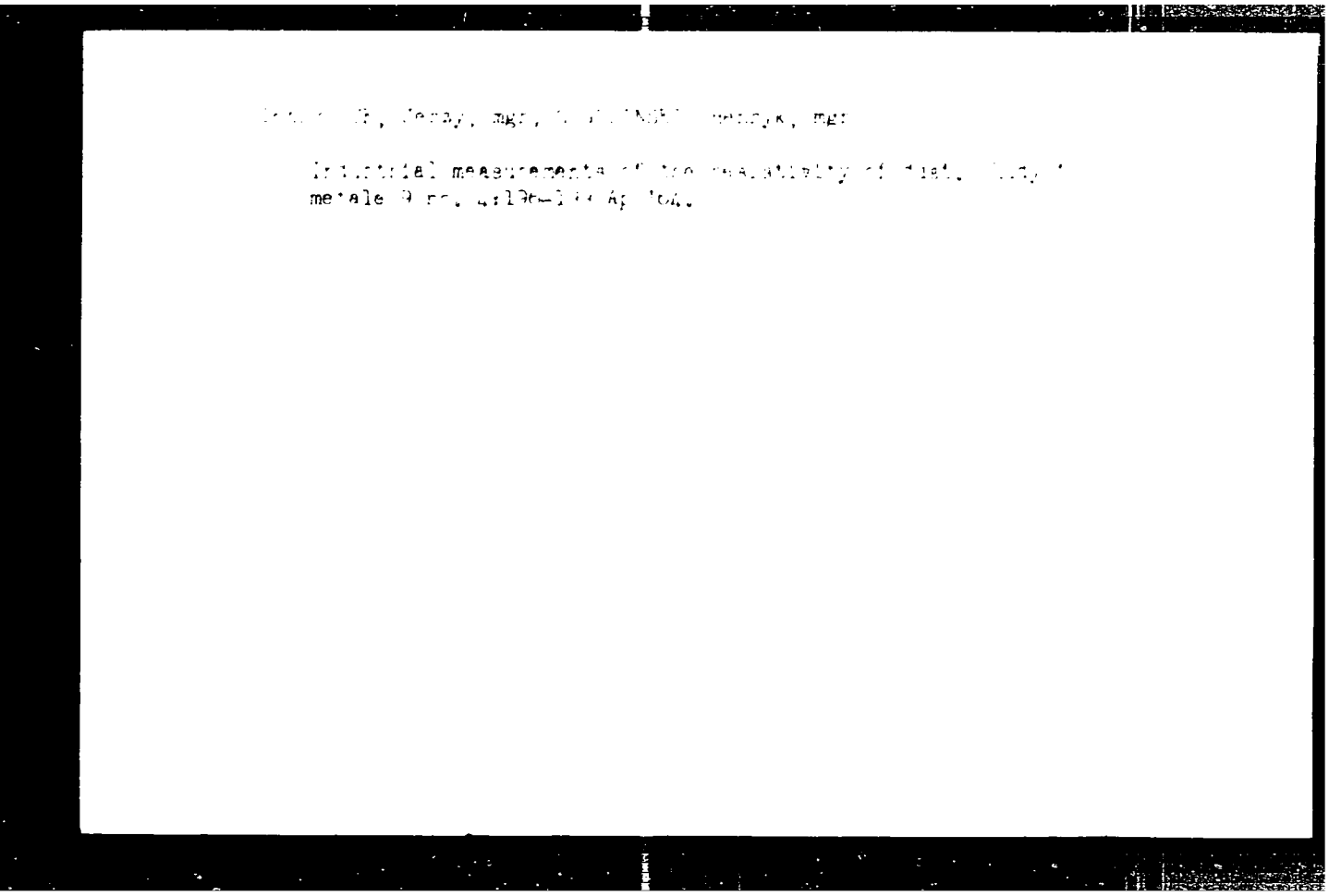
PIEKARA, Arkadiusz

The Thirteenth Colloquium Ampere, Louvain September 1-5, 1964.
Postepy fizyki [illegible].

PIEKARA, B.

Electric and magnetic properties of plasma of low-power pulse discharges. Bul Ac Pol mat 7 no.12:741-744 '59. (EEAI 9:10)

1. 2nd Department of Physics, Technical University, Gdansk. Presented by A.Jablonski.
(Plasma (Ionized gases))
(Electric discharges through gases)



L 45767-65 EWP(b)/EWP(t) IJP(c) JD

ACCESSION NR: AP5014871 GE/0029/64/000/012/0725/0726

(P) 17 B

AUTHOR: Piekarczyk, J. (Gliwice)

TITLE: Problems of dust removal in non-ferrous metallurgy

SOURCE: Neue Hutte, no. 12, 1964, 725-726

TOPIC TAGS: metallurgic industry, industrial waste, waste disposal

Abstract: Data on waste-gas composition, quantity, and dust content for waste gases in Polish non-ferrous metallurgical installations (copper and zinc) were presented and the problems of dust removal from the waste gases was discussed in the light of LOHRBERG's paper. Outstanding problems in this field were briefly discussed. 27

ASSOCIATION: none

SUBMITTED: 10Aug64 ENCL: 00 SUB CODE: MM

NO REF SOV: 000 OTHER: 000 JPRS

Card 1/1