volume v of the H_2O_2 solution evaporated within one minute was found to be 0.218 mg/cm^{2}min for H_2O_2 concentrations between 0.05 - 2 %. According to G. Skatchard (Ref. 7), the molar fraction y_h of the H_2O_2 vapor over the H_2O_2 solution was calculated, and from $n'_{H_2O_2} = vy_hN/M_h$ (3) (N = Avogadro number, M_h = molecular weight of H_2O_2), the number n' of the evaporated H_2O_2 molecules was calculated. The effect produced by the distance between plate and surface of the solution was taken into account by $n'_{H_2O_2} = n^0_{H_2O_2} \exp(-0.417 \cdot 2)$ (4) and, accordingly, the curves D = D(n') were drawn (Fig. 2). Agreement among the values obtained by means of the photographic and optical method respectively proves that between H_2O_2 separation and thickness of the oxide layer there exists linear dependence. This interrelation was more closely studied in consideration of the true surface of the metal. Investigation of the polished

Card 4/6

metal surfaces by means of a profilometer of the type "Kalibr" - VEI (All-Union Electrochemical Institute) showed that unevennesses of 0.01 - 2μ cause an increase of the true surface as compared with the geometrical surface by a maximum of only 3%. In consideration of the unevenness coefficient 2.5 determined by O. Erbacher (Ref. 9), the following was found: $1H_2O_2$ —— $11.5Al_2O_3$; $1 H_2O_2$ —— 27.5 MgO (5). Herefrom the conclusion was drawn that a considerable part of H_2O_2 disintegrates again on the metal surface. There are 2 figures and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Odesskiy tekhnologicheskiy institut im. I. V. Stalina (Odessa Technological Institute imeni I. V. Stalin)

PRESENTED: September 5, 1960, by A. N. Frumkin, Academician

SUBMITTED: September 5, 1960

Relation between separated...

S/020/61/137/001/018/021
B101/B204

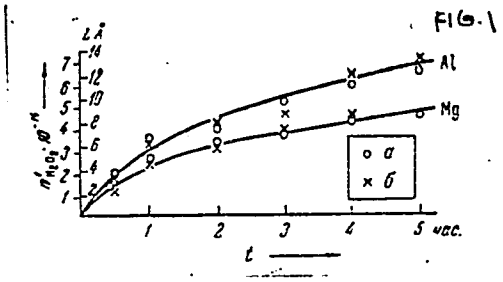

FIG. 1

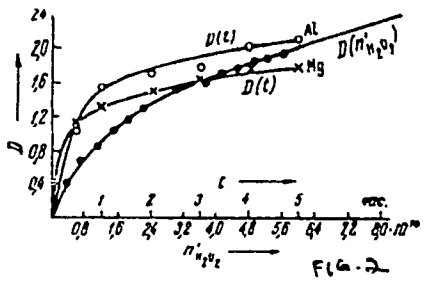

FIG. 2

Card 6/6

S/020/62/146/006/008/016
B104/B186

AUTHORS: Roykh, I. L., Ordynskaya, V. V., Bolotich, I. P.

TITLE: The influence of machining on the finish size of metal surfaces

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 6, 1962, 1316-1317

TEXT: The influence of different machining methods (cutting, shaping, milling and grinding) on the true surfaces of Mg, Al, steel Ст-3 (St-3), steel Ст-45 (St-45), bronze and cast iron is investigated using a profilometer of the type Kalibr-VEI. With this instrument, surfaces of the 6th and up to the 14th class of surface finish can be examined. The enlargement varied between the limits of $2 \cdot 10^3$ and $12 \cdot 10^4$ vertically, between 116.7 and 4200 horizontally. In the instrument a diamond tip (radius of curvature 1.25 μ) exerts a pressure of 0.1 g against the metal surface. For all metals and all grades of finish the ratio of $n = S_{measured}/S_{geom} = 1/\sin(\alpha/2)$ was almost equal to unity. The angle α, defined as the apex angle of the four-faced pyramids constituting the metal

Card 1/2

The influence of machining on the...

surface, showed only small variations from 168 ± 2° in all of the test pieces. From the results of 200 profilograms it follows that the kind of machining and the degree of surface finish exert little influence on $S_{measured}$. Differences between true and measured surface values are attributed to unevennesses characteristic of surface qualities far exceeding the highest measurable classes of finish quality. There is 1 figure.

ASSOCIATION: Odesskiy tekhnologicheskiy institut im. M. V. Lomonosova (Odessa Technological Institute imeni M. V. Lomonosov)

PRESENTED: May 28, 1962, by L. A. Artsimovich, Academician

SUBMITTED: May 25, 1962

Card 2/2

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000206120010-9"

ROYKH, I.L.; ORDYNSKAYA, V.V.; BOLOTICH, I.P.

Effect of mechanical treatment on the surface area of metals.
Dokl. AN SSSR 146 no.6:1316-1317 O '62. (MIRA 15:10)

1. Odesskiy tekhnologicheskiy institut im. M.V. Lomonosova.
Predstavleno akademikom L.A. Artsimovichem.
(Surfaces (Technology)) (Metals—Finishing)

ROYKH, I.L.; BOLOTICH, I.F.; KOLTUNOVA, L.N.

Determination of the activation energy of formation of hydrogen oxide and hydrogen peroxide in the atmospheric corrosion of Mg and Al. Zhur. fiz. khim. 36 no.9,2052-2054 S '62.

(MIRA 17:6)

1. Odesskiy tekhnologicheskiy institut imeni Lomonosova.

ROYKH, I.L.; KOLTUNOVA, L.N.; BELITSKAYA, S.G.; BOLOTICH, I.P.

Investigating the atmospheric corrosion of vacuum condensates of zinc by photographic, optical and weight methods. Fiz. met. i metalloved. 17 no.5:784-786 My '64. (MIRA 17:9)

1. Odesskiy tekhnologicheskiy institut imeni Lomonosova.

ROIKH, I.L.; [illegible], L.P.; ORDYNSKAYA, V.V.; BELITSKAYA, S.G.; KOLOMOYA, L.N.

Decomposition of hydrogen peroxide vapors on the surface of metals and the role of H_2O_2 in atmospheric corrosion. Zhur. fiz. khim. 38 no.6:1588-1591 Je '64.

(MIRA 17:8)

1. Odesskiy tekhnologicheskiy institut imeni Lomonosova.

L 2619-66 EWT(m)/EPF(c)/EWP(i)/EWP(t)/EWP(b) IJP(c) JD/WB

ACCESSION NR: AP5011369 UR/0365/65/001/002/0239/0241
620.193.2

AUTHOR: Roykh, I. L.; Yefimovich, Ye. V.; Bolotich, I. P.

TITLE: On atmospheric corrosion of vacuum condensates of aluminum

SOURCE: Zashchita metallov, v. 1, no. 2, 1965, 239-241

TOPIC TAGS: metal vapor deposition, vapor plating, corrosion resistance

ABSTRACT: Atmospheric corrosion of vacuum condensates of aluminum was studied to examine the corrosion resistance of aluminum platings prepared by vacuum condensation, a technique widely used on a commercial scale. The samples, 500-5000 Å in thickness, were prepared by vacuum spraying of aluminum onto a glass gase. The extent of corrosion was measured by photographic and optical polarization techniques. The samples were oxidized for 10 min in air at 20 ± 2°C and at relative humidity of 50 ± 5%. In order to enhance the optical density, the aluminum films stretched on plates were immersed in a 4% Na_2CO_3 solution, and, then, immersed for 1 min in a 50% solution of ethyl alcohol and dried for 10 min at 100°C. The dependence of the number of evolved H_2O_2 molecules upon corrosion duration is shown

Card 1/4

L 2619-66

ACCESSION NR: AP5011369

in fig. 1 of the Enclosure. The dependence of thickness of aluminum oxide layer (in Å) upon corrosion duration is shown in fig. 2 of the Enclosure. The dependence of the number of evolved H_2O_2 molecules upon the quantity of Al_2O_3 molecules formed is shown in fig. 3 of the Enclosure. The dependence of the number of evolved H_2O_2 molecules on the logarithm of corrosion time is shown in fig. 4 of the Enclosure. The correlation between the number of evolved H_2O_2 molecules and the number of Al_2O_3 molecules formed is: $n_{Al_2O_3} = 12 \cdot n_{H_2O_2}$. The linear dependence of the number of evolved H_2O_2 molecules upon the logarithm of corrosion duration is in agreement with data in the literature. Orig. art. has: 3 figures.

ASSOCIATION: Odesskiy tekhnologicheskiy institut (Odessa Institute of Technology)

SUBMITTED: 14Nov64 ENCL: 02 SUB CODE: MM, GC

NO REF SOV: 003 OTHER: 003

Card 2/4

L 2619-66

ACCESSION NR: AP5011369

ENCLOSURE: 01

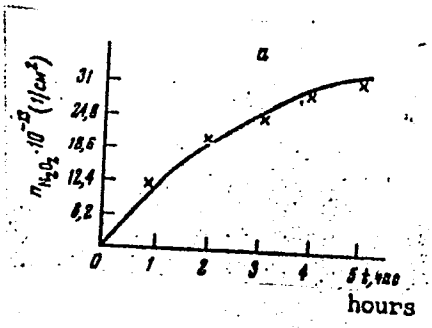

Fig. 1.

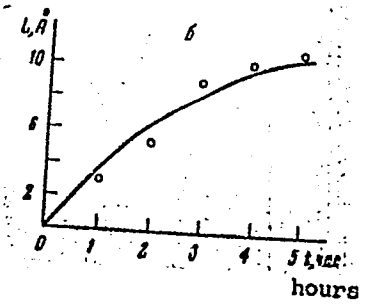

Fig. 2.

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L 2619-66

ACCESSION NR: AP5011369

ENCLOSURE: 02

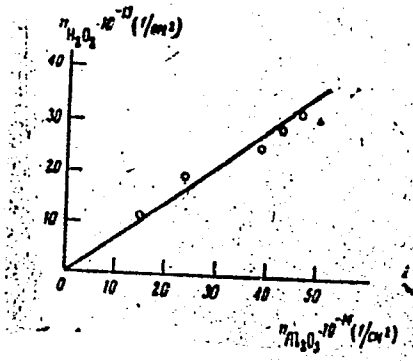


Fig. 3.

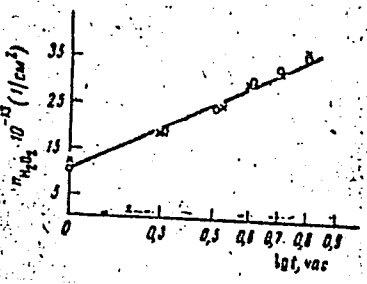


Fig. 4. O--aluminum vacuum condensate; +--massive aluminum samples.

Card 4/4

L 1143-66 EWT(1)/T IJP(c) GG

ACCESSION NR: AP5023694 UR/0076/65/039/009/2306/2308
541.17

AUTHOR: Roykh, I. L.; Belitskaya, S. G.; Bolotich, I. P.; Ordynskaya, V. V.; Nedzvedskaya, N. A.

TITLE: Study of the oxidation of silicon in air by the optical polarization and photographic method

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 9, 1965, 2306-2308

TOPIC TAGS: silicon single crystal, hydrogen peroxide, oxidation kinetics

ABSTRACT: The oxidation of the surface of an n-type silicon single crystal oriented in the [111] plane was studied at 70-73% humidity and 28-30°C. The kinetic results representing a three-hour growth of the oxide layer showed that this growth obeys the parabolic law $L^{1.8} = 54.3t$. During the first three hours following the polishing, the oxide layer grew to a thickness of 17.5 Å. It was found that the freshly cleaned silicon surface has an effect on a photographic film, and the photographic density D was plotted as a function of the exposure time. Chemical analyses showed that H_2O_2 was formed during the oxidation of silicon in air. The con-

Card 1/2

L 1143-66

ACCESSION NR: AP5023694

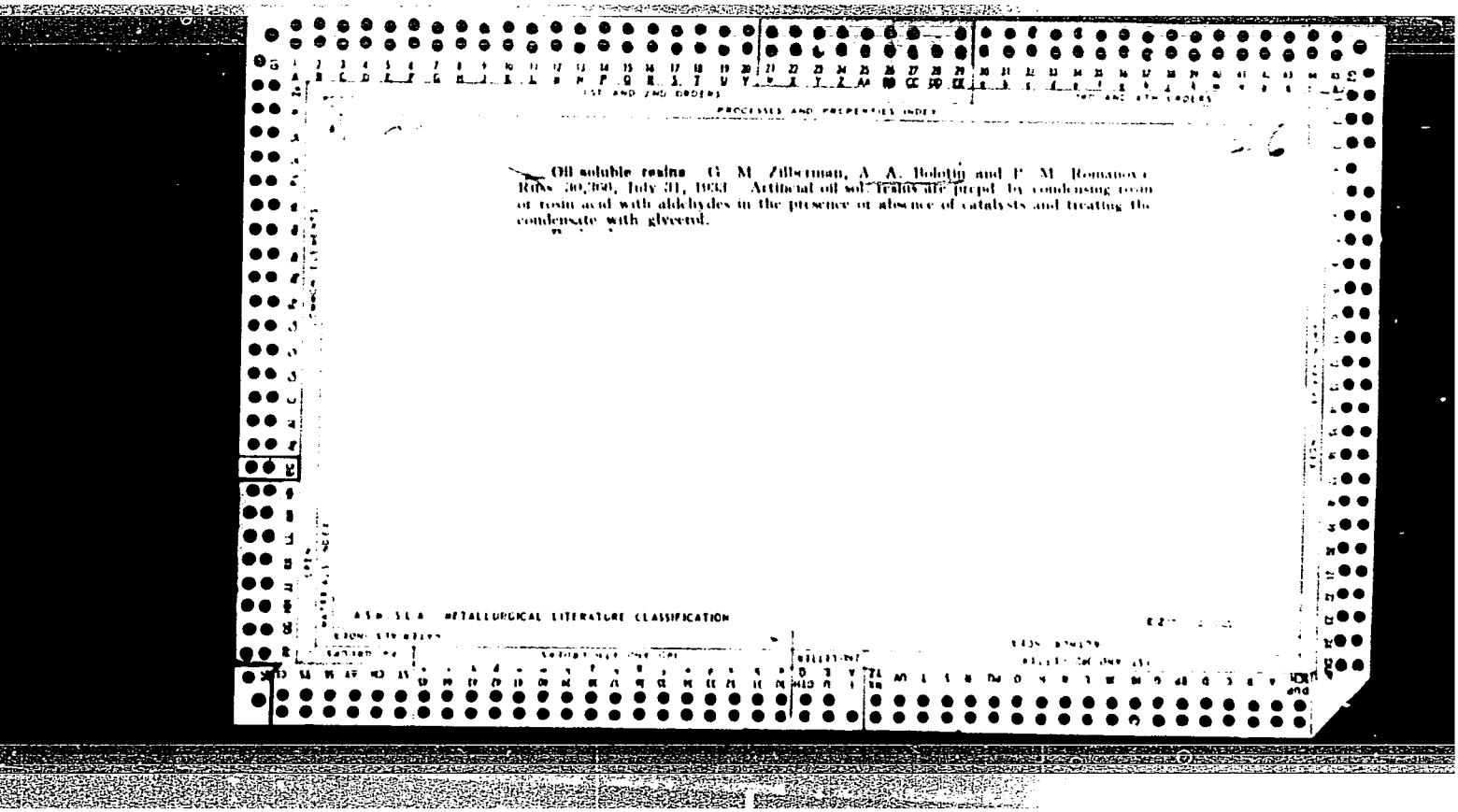
cordance between the kinetics of growth of the oxide layer and the kinetics of evolution of H_2O_2 indicates that the latter may serve as the criterion for the oxidation of silicon in air. Experiments showed that the surface of silicon under vapors of a 10% aqueous solution of hydrogen peroxide decomposes 96.2% of absorbed H_2O_2. Thus, the fraction of H_2O_2 evolved amounts to only a minute part of the H_2O_2 formed during the oxidation. Orig. art. has: 2 figures.

ASSOCIATION: Odesskiy tekhnologicheskiy institut im. M. V. Lomonosova (Odessa Technological Institute)

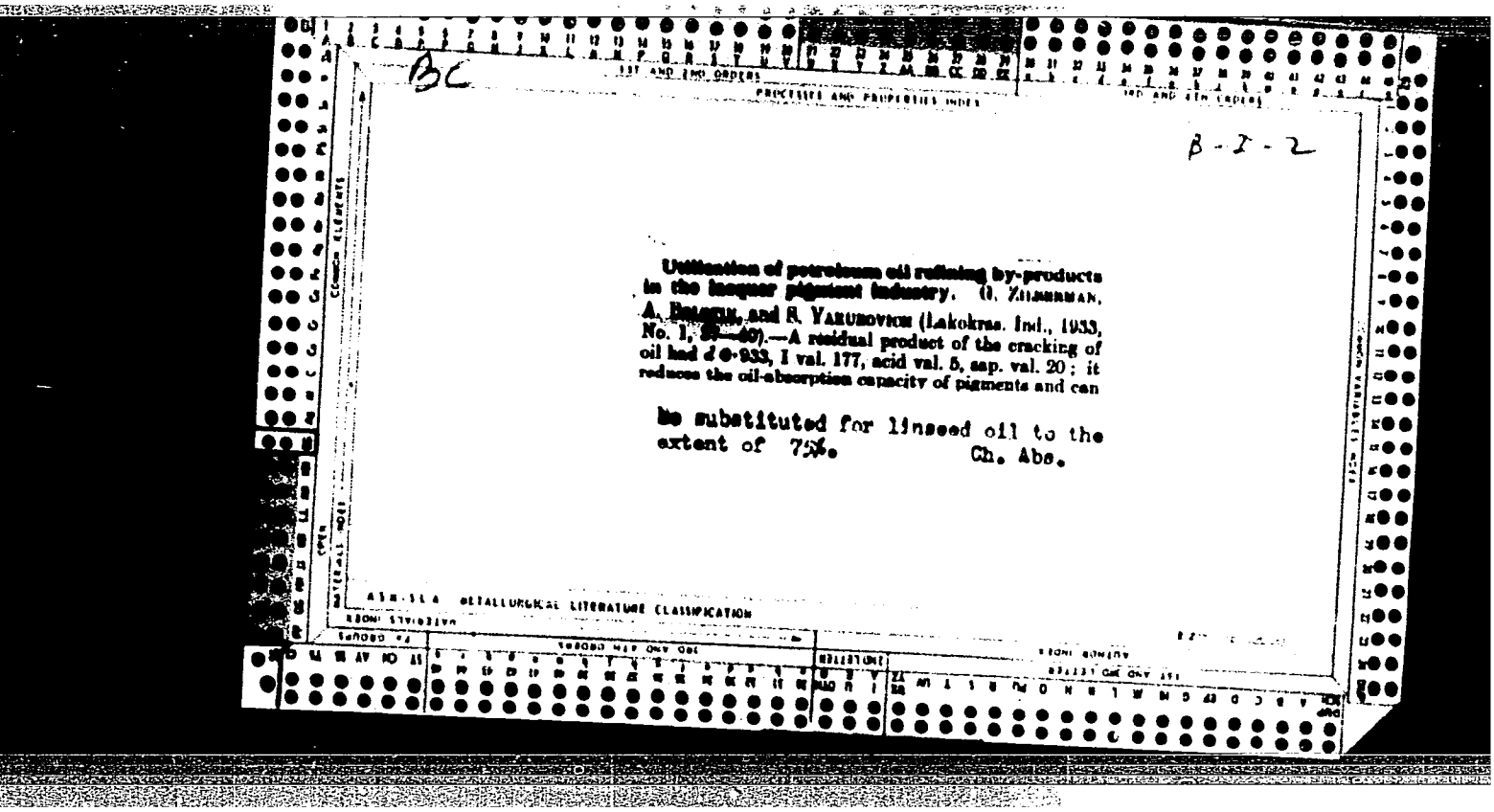
SUBMITTED: 31Jul64 ENCL: 00 SUB CODE: GC

NO REF SOV: 007 OTHER: 004

Card 2/2



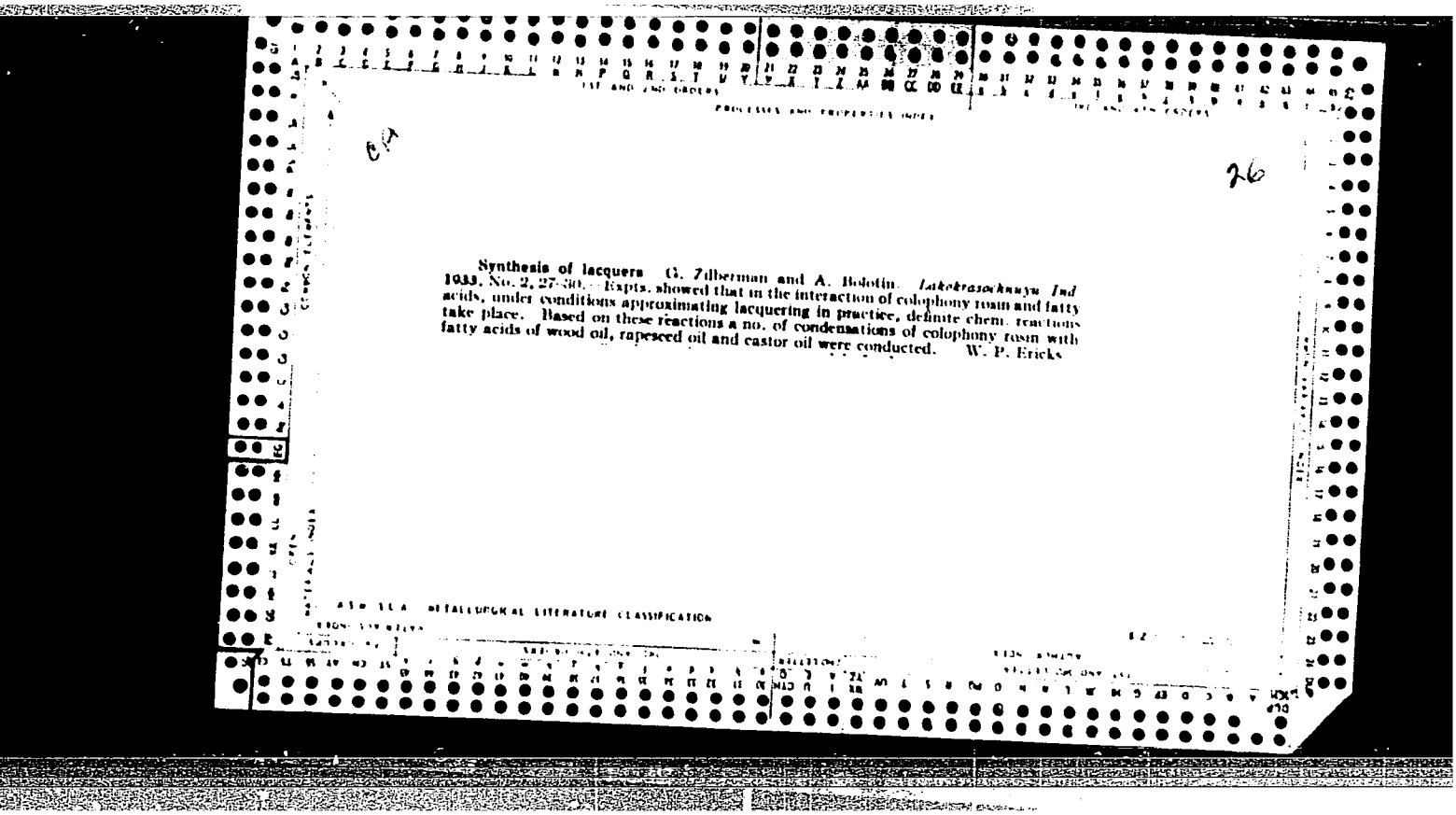
Oil soluble resins G. M. Zilberman, A. A. Bolotin and P. M. Romanova. Russ. 50,350, July 31, 1937. Artificial oil sol. resins are prepd. by condensing resin or resin acid with aldehydes in the presence or absence of catalysts and treating the condensate with glycerol.



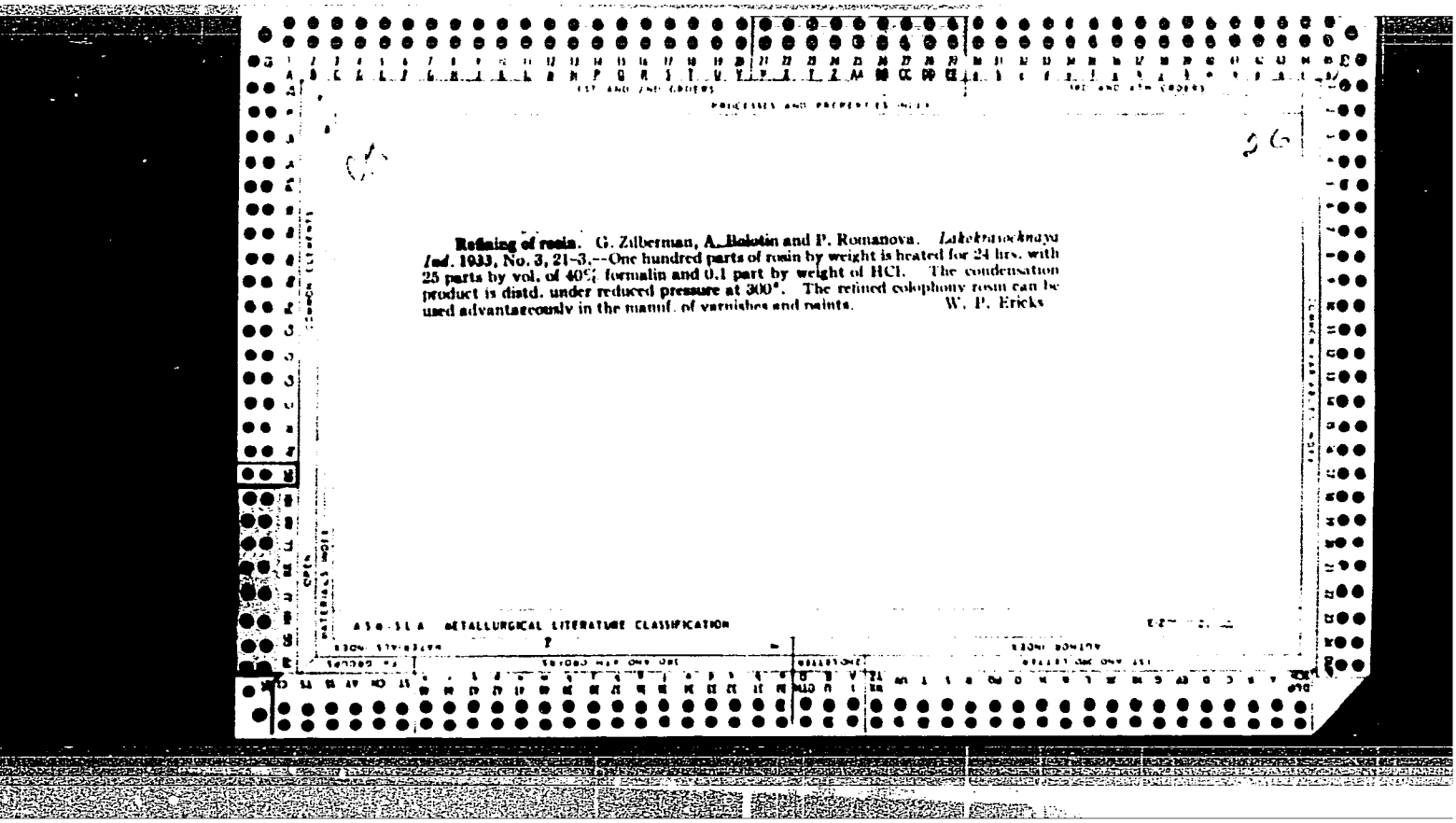
BC

B-I-2

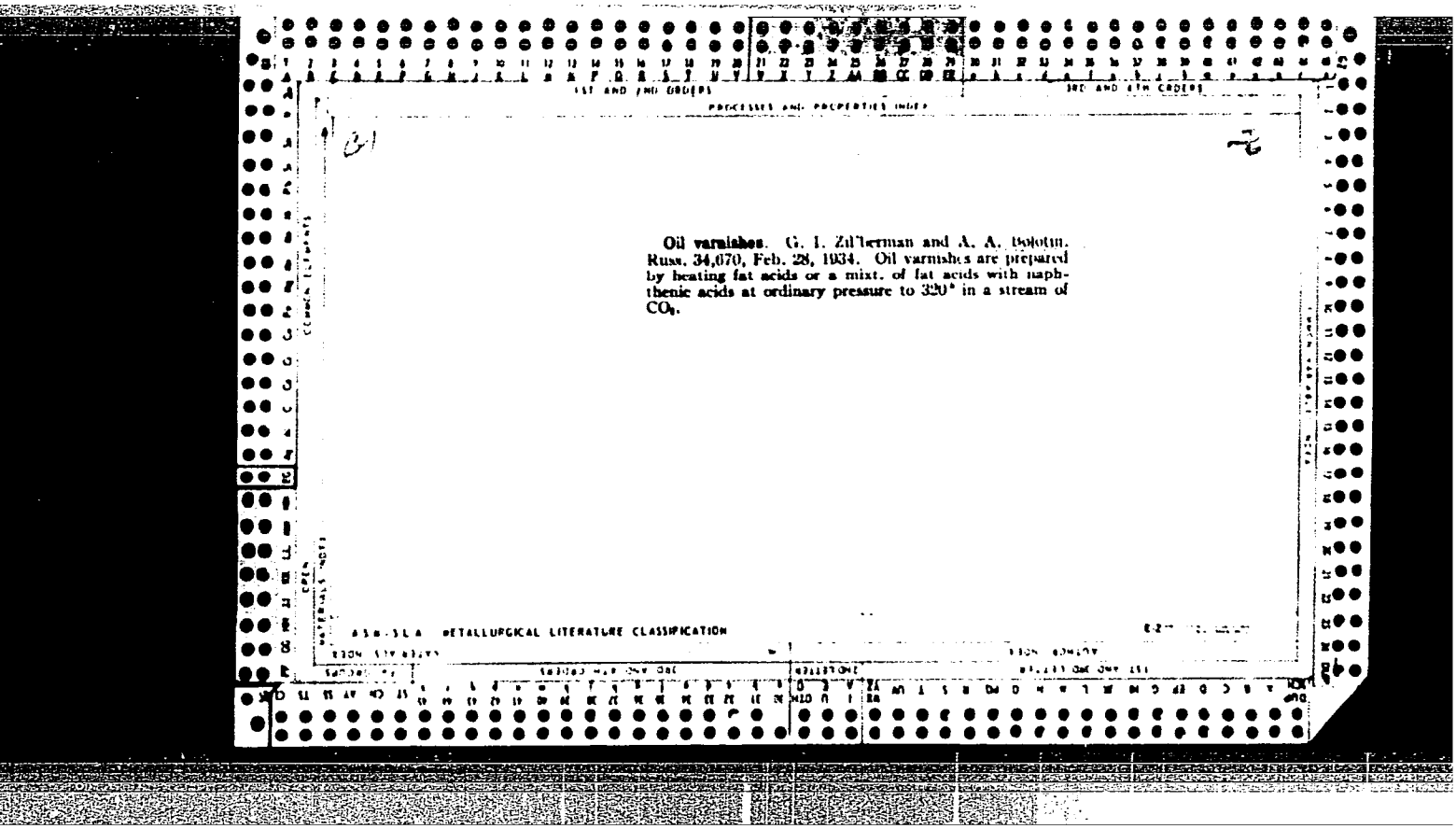
Utilization of petroleum oil refining by-products in the lacquer pigment industry. O. ZILBERMAN, A. BRAGIN, and S. YARUNOVICH (Lakokras. Ind., 1933, No. 1, 39—40).—A residual product of the cracking of oil had d 0·933, I val. 177, acid val. 5, sap. val. 20; it reduces the oil-absorption capacity of pigments and can be substituted for linseed oil to the extent of 75%. Ch. Abs.



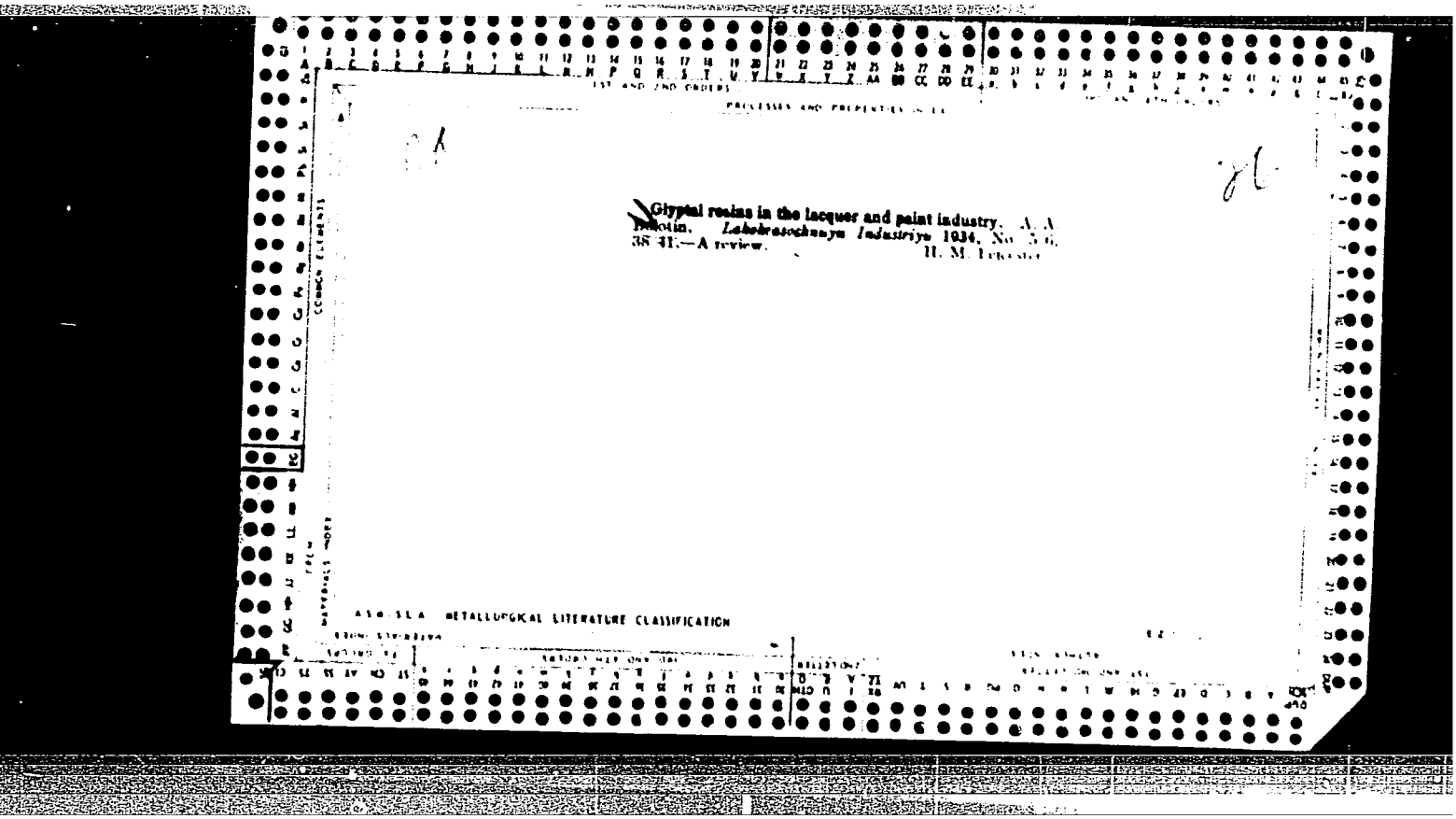
Synthesis of lacquers G. Zilberman and A. Bolotin. *Lakokrasochnaya Ind* 1933, No. 2, 27-30.—Expts. showed that in the interaction of colophony rosin and fatty acids, under conditions approximating lacquering in practice, definite chem. reactions take place. Based on these reactions a no. of condensations of colophony rosin with fatty acids of wood oil, rapeseed oil and castor oil were conducted. W. P. Ericks



Refining of resin. G. Zilberman, A. Bolotin and P. Romanova. *Lakokrasochnaya Ind.* 1933, No. 3, 21–3.—One hundred parts of rosin by weight is heated for 24 hrs. with 25 parts by vol. of 40% formalin and 0.1 part by weight of HCl. The condensation product is distd. under reduced pressure at 300°. The refined colophony rosin can be used advantageously in the manuf. of varnishes and paints. W. P. Ericks



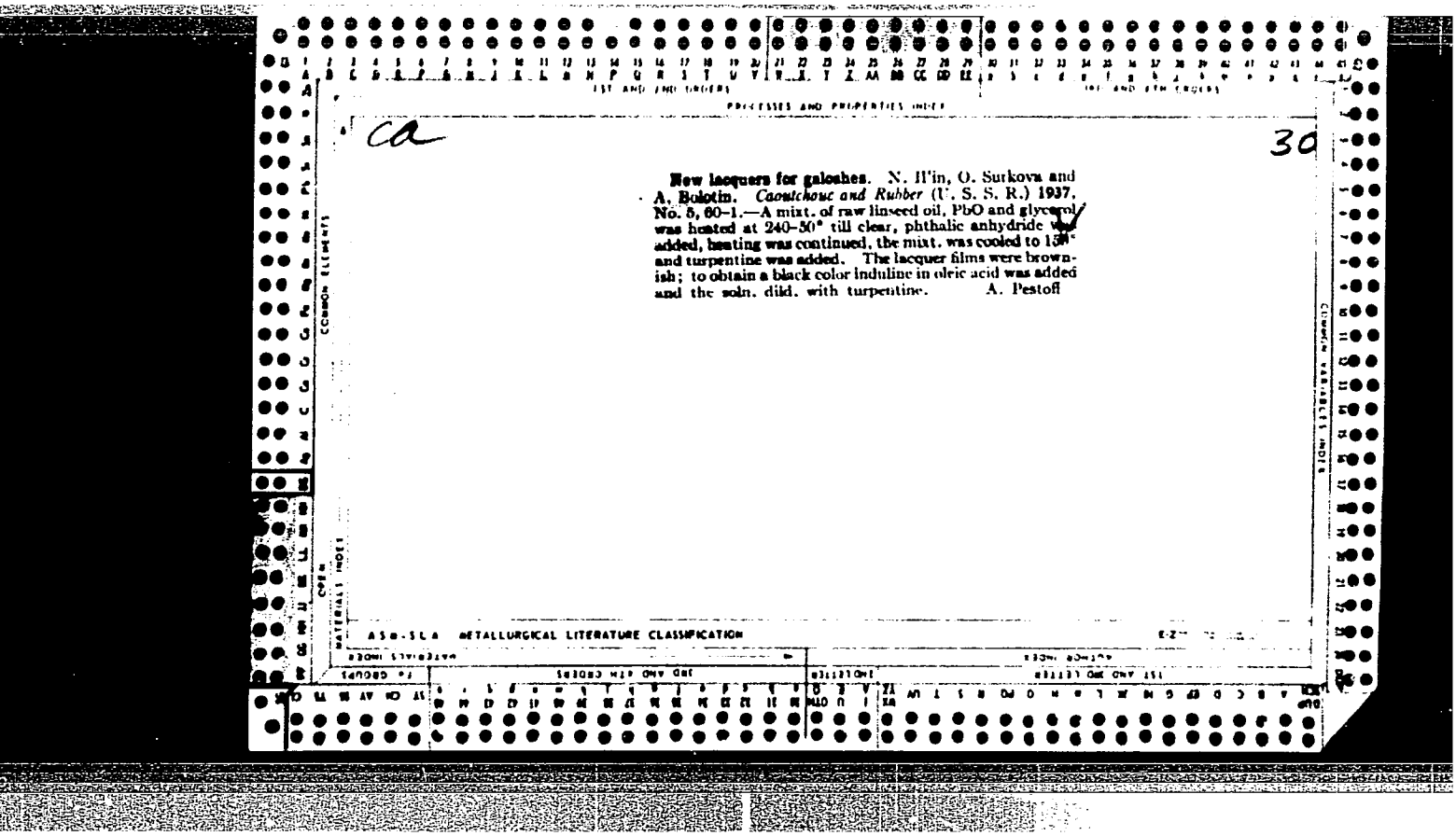
Oil varnishes. G. I. Zil'berman and A. A. Isolotin, Russ. 34,070, Feb. 28, 1934. Oil varnishes are prepared by heating fat acids or a mixt. of fat acids with naphthenic acids at ordinary pressure to 320° in a stream of CO_2.



Glyptal resins in the lacquer and paint industry. A. A. [illegible]. *Lakokrasochnaya Industriya* 1934, No. 5-6, 38-41.—A review.

H. M. [illegible]

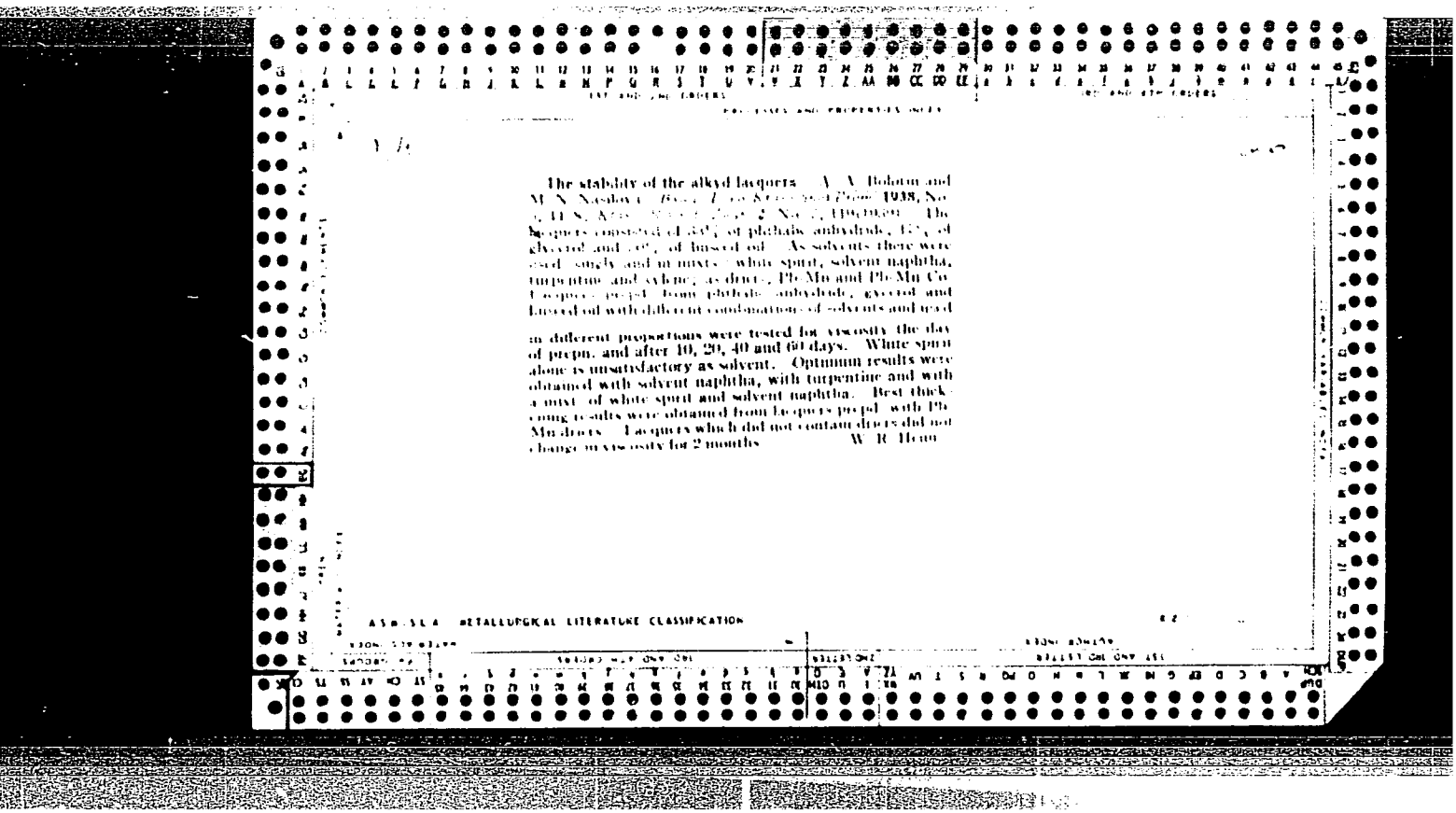
A.S.T.M. METALLURGICAL LITERATURE CLASSIFICATION



ca

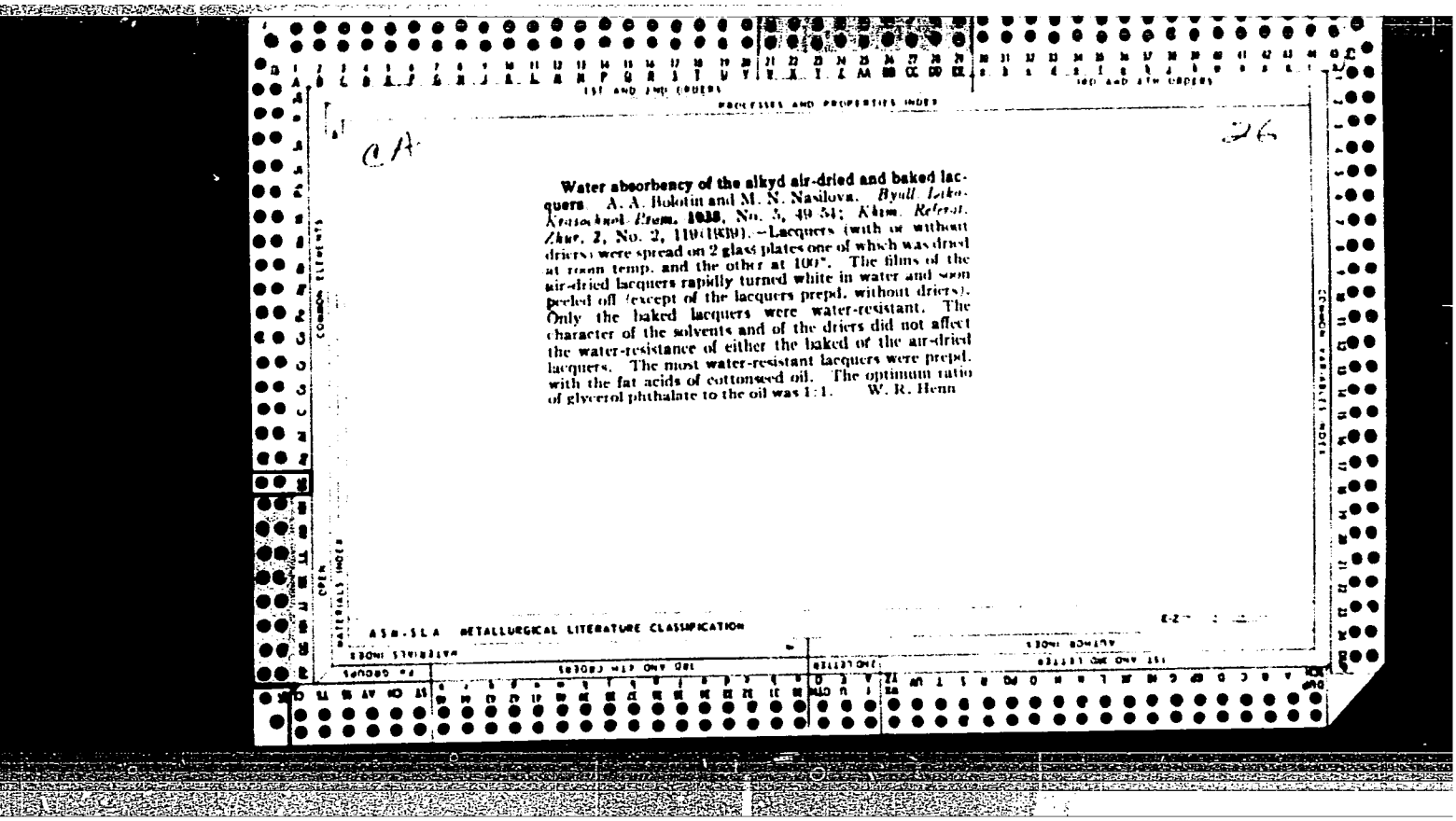
30

New lacquers for galoshes. N. Il'in, O. Surkova and A. Bolotin. *Caoutchouc and Rubber* (U. S. S. R.) 1937, No. 5, 60–1.—A mixt. of raw linseed oil, PbO and glycerol was heated at 240–50° till clear, phthalic anhydride was added, heating was continued, the mixt. was cooled to 150° and turpentine was added. The lacquer films were brownish; to obtain a black color induline in oleic acid was added and the soln. dild. with turpentine. A. Pestoff



The stability of the alkyd lacquers ... V. V. Bobrov and M. N. Nesterov ... 1938, No. ... The lacquers consisted of ... of phthalic anhydride, ... of glycerol and ... of linseed oil. As solvents there were used ... singly and in mixts. ... white spirit, solvent naphtha, turpentine and xylene, as driers, Pb-Mn and Pb-Mn-Co ... lacquers prepd. from phthalic anhydride, glycerol and linseed oil with different combinations of solvents and used in different proportions were tested for viscosity the day of prepn. and after 10, 20, 40 and 60 days. White spirit alone is unsatisfactory as solvent. Optimum results were obtained with solvent naphtha, with turpentine and with a mixt. of white spirit and solvent naphtha. Best thickening results were obtained from lacquers prepd. with Pb-Mn driers. Lacquers which did not contain driers did not change in viscosity for 2 months. W. R. Heun

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

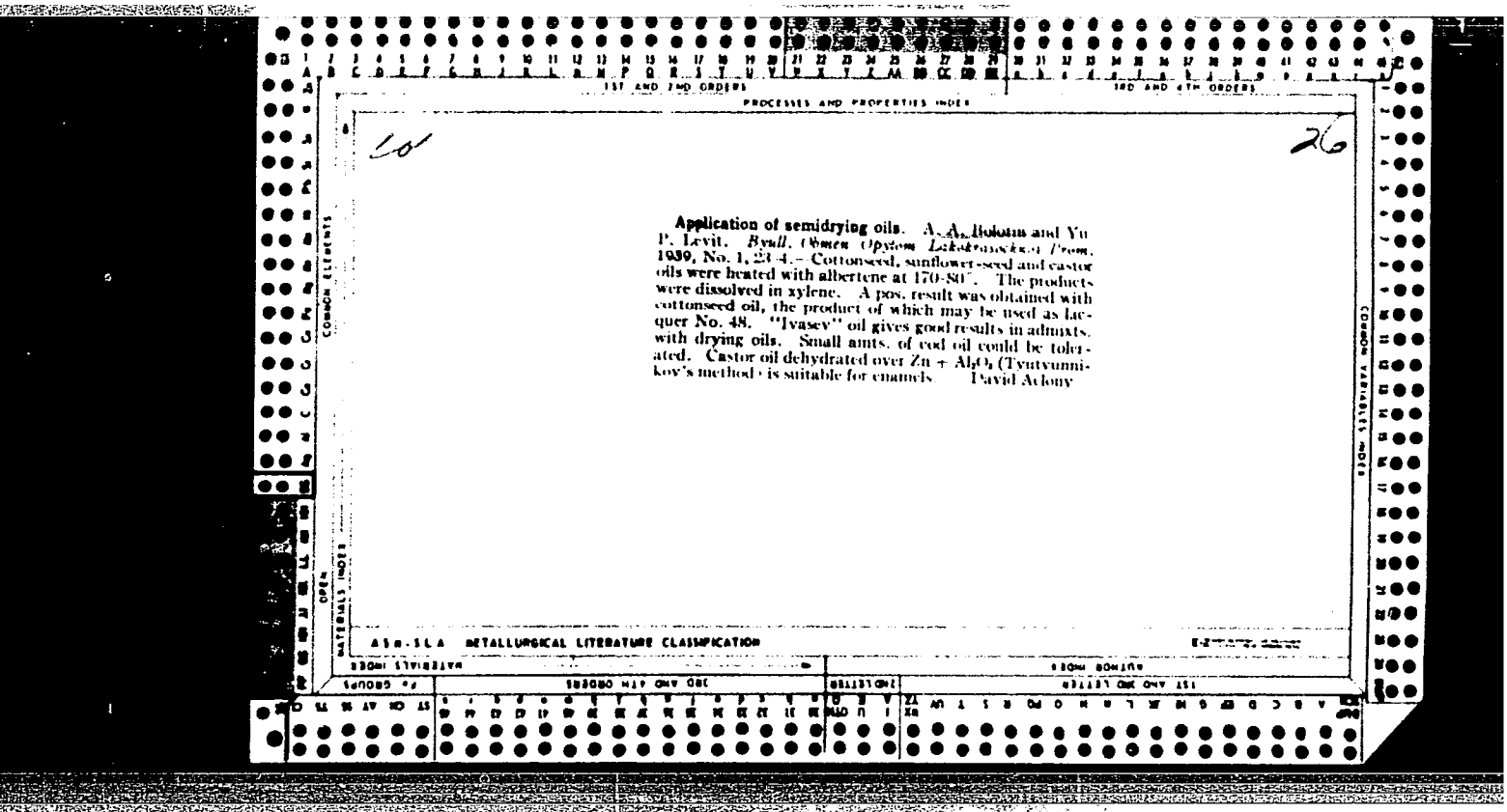


Water absorbency of the alkyd air-dried and baked lacquers. A. A. Bolotin and M. N. Nasilova. *Byull. Lako-Krasochnoi Prom.* **1938**, No. 5, 49-54; *Khim. Referat. Zhur.* **2**, No. 2, 110(1939).—Lacquers (with or without driers) were spread on 2 glass plates one of which was dried at room temp. and the other at 100°. The films of the air-dried lacquers rapidly turned white in water and soon peeled off (except of the lacquers prepd. without driers). Only the baked lacquers were water-resistant. The character of the solvents and of the driers did not affect the water-resistance of either the baked of the air-dried lacquers. The most water-resistant lacquers were prepd. with the fat acids of cottonseed oil. The optimum ratio of glycerol phthalate to the oil was 1:1. W. R. Henn

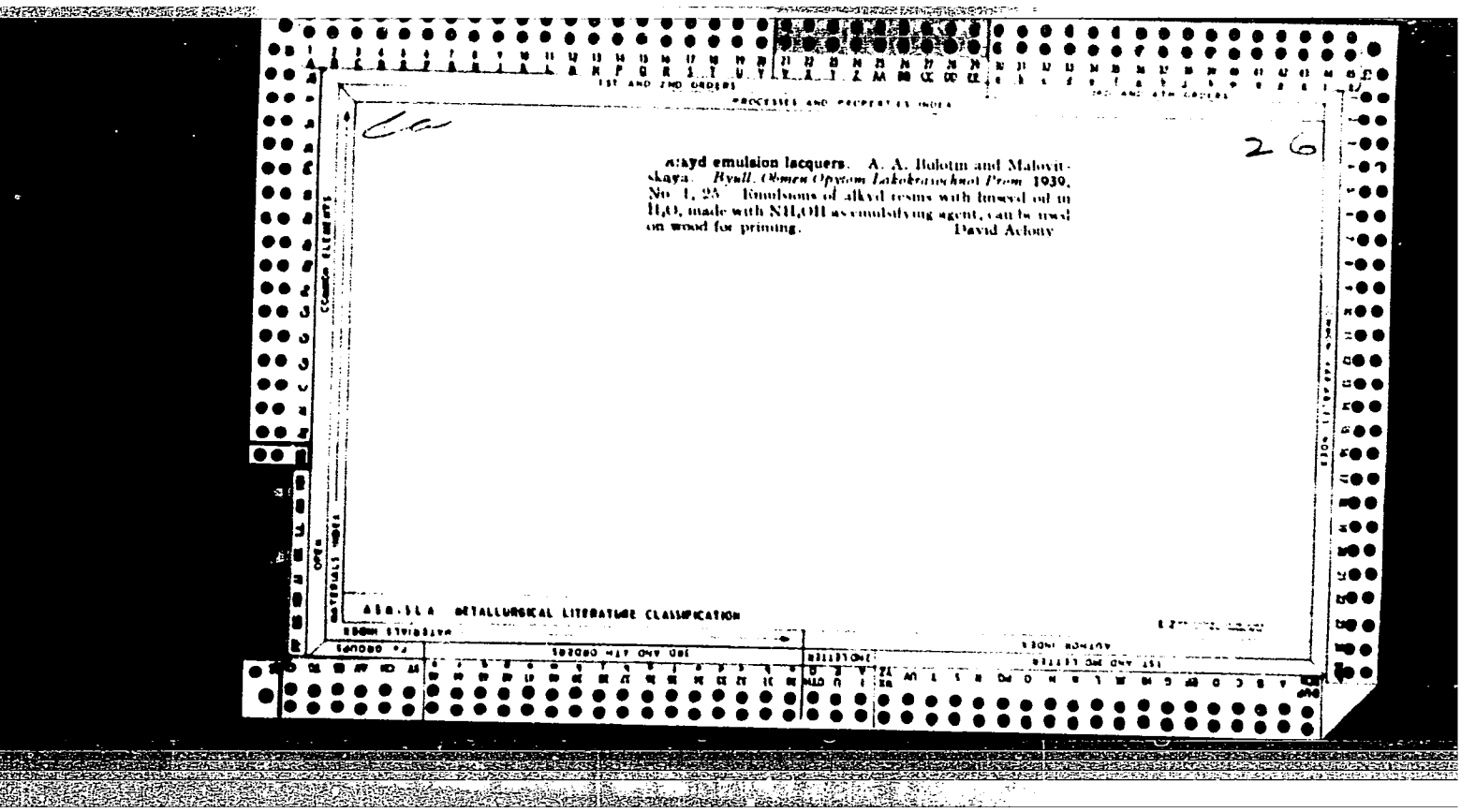
BOLOTIN, A. A.

Enamel made with cod-fish oil. A. A. Bolotin and Yu. P. Levit. *Byull. Lakal'nochnoi Prom.* 1938, No. 9-10, 31-32; *Khim. Referat. Zhur.* 2, No. 5, 112-13(1939).—The lacquer contains oxidized cod fish oil 30.4%, phthalic anhydride 7.44%, glycerol 4.66%, Harpius ester 7.0% and xylene 30.0%. Nitrocellulose solns. contg. small amts. of the acetates can be used successfully. The nitrocellulose soln. contains pyroxylin of low viscosity 10%, butyl acetate 5%, ethyl acetate 15%, butyl alc. 20%, toluene 5% and xylene 5%. An enamel was prepd. from Crystal lacquer 30.4%, PbO 18.1%, nitrocellulose soln. 48.5% and drier 7640 2.1%. The hardness of the film increased with time up to 30 days. The elasticity of the enamel did not change after 2.5 months. The enamel dried completely in 10-12 hrs.; the film was dull, but could be polished satisfactorily after 24 hrs. It had satisfactory water resistance and weather resistance after 7 months.

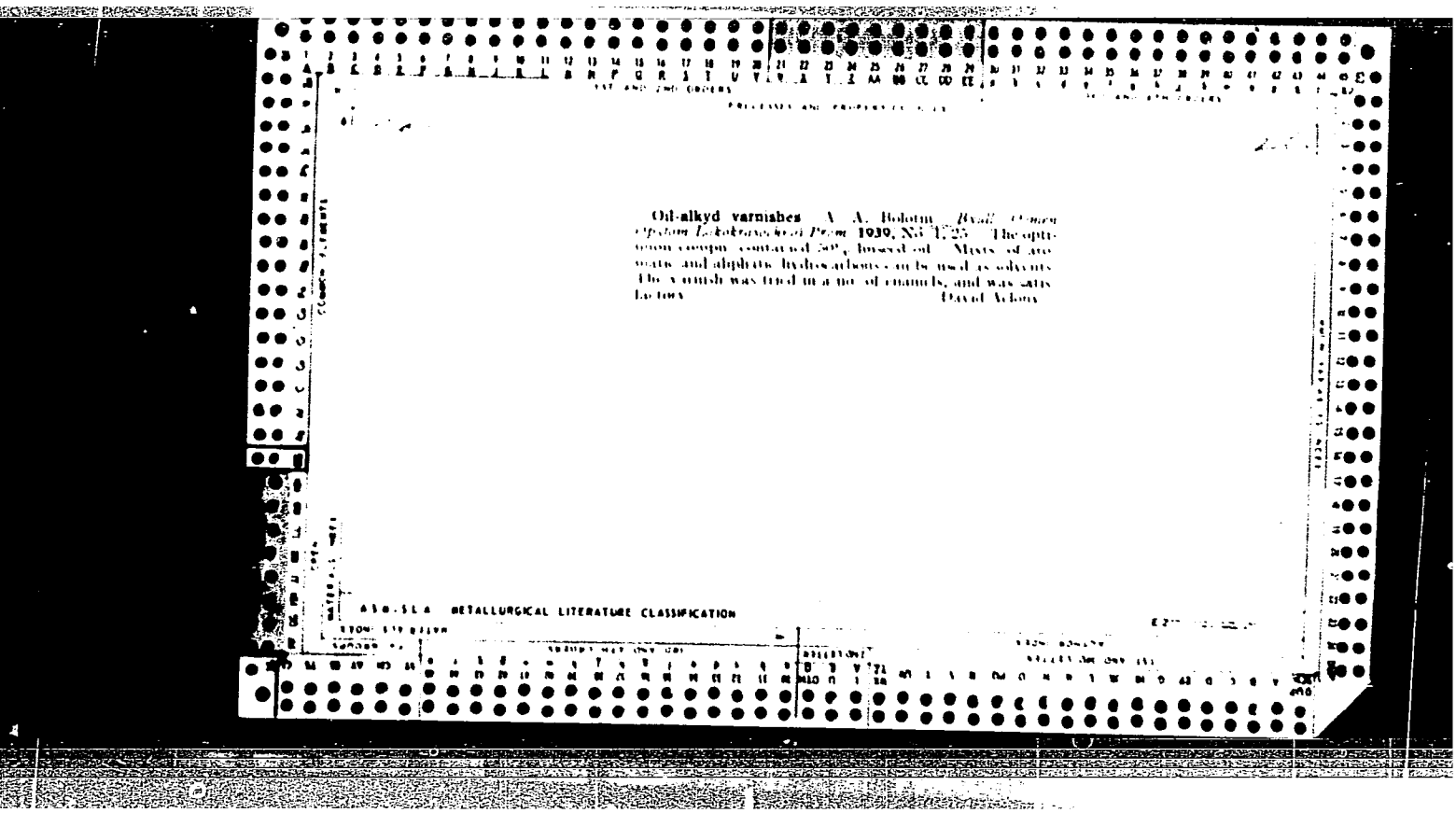
W. R. Henn



Application of semidrying oils. A. A. Bolotin and Yu P. Levit. *Byull. Obmen Opytom Lakokrasochn. Prom.* 1939, No. 1, 21-4.—Cottonseed, sunflower-seed and castor oils were heated with albertene at 170-80°. The products were dissolved in xylene. A pos. result was obtained with cottonseed oil, the product of which may be used as lacquer No. 48. "Ivasey" oil gives good results in admixts. with drying oils. Small amts. of cod oil could be tolerated. Castor oil dehydrated over Zn + Al_2O_3 (Tyutyunnikov's method) is suitable for enamels. David Aclony



alkyd emulsion lacquers. A. A. Bulotin and Malovitskaya. *Byull. Obmen Opytom Lakokrasochnoi Prom.* 1939, No. 1, 25—Emulsions of alkyd resins with linseed oil in H_2O, made with NH_4OH as emulsifying agent, can be used on wood for priming. David Achuy



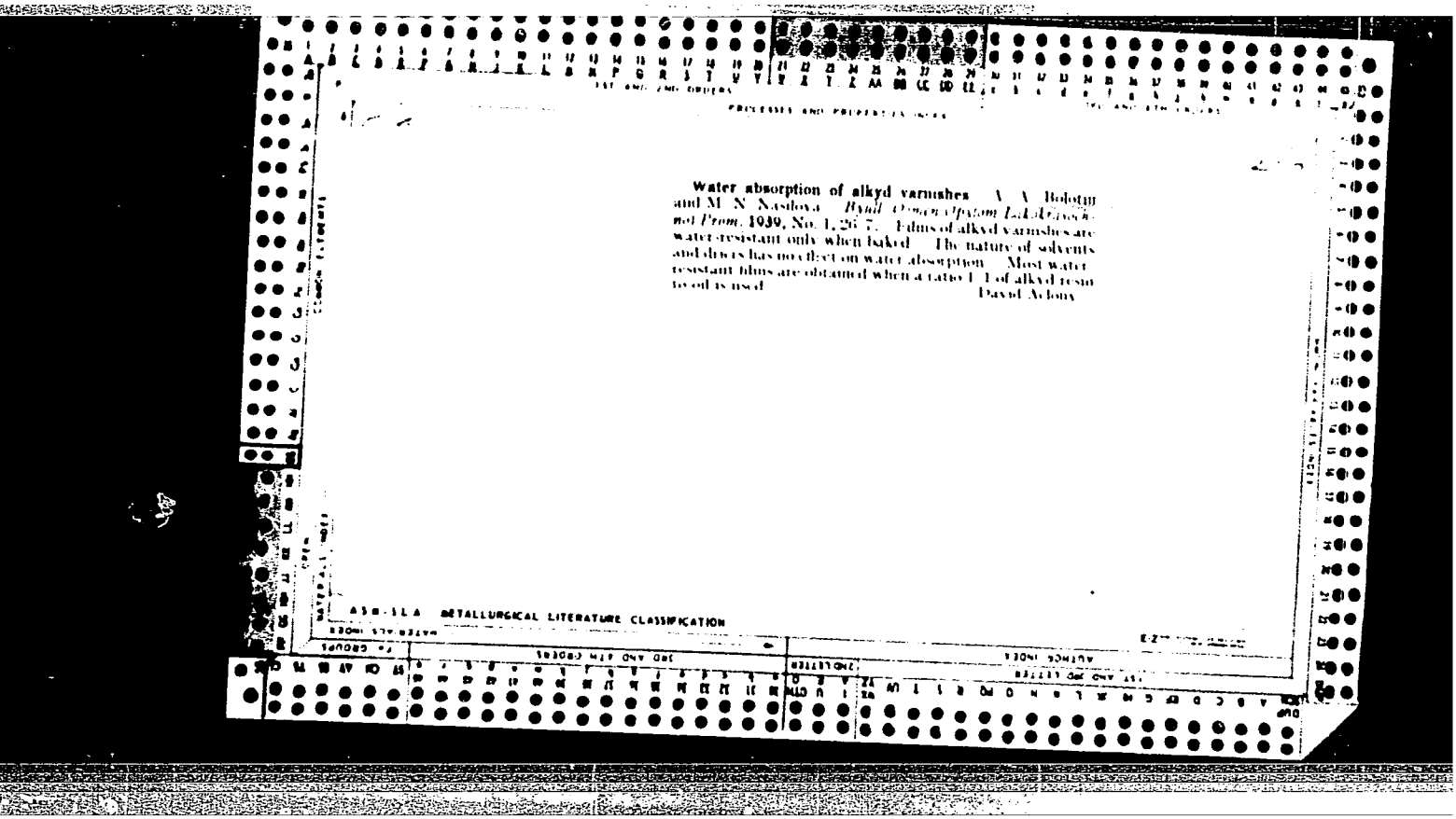
Oil-alkyd varnishes. V. A. Bolotin. *Trudy [illegible] Lakokrasochnoi Prom.* 1939, No. 1, 25. The optimum resin content of 50%, based on the mixts. of aromatic and aliphatic hydrocarbons as used as solvents. The varnish was tried in a no. of channels, and was satisfactory. David Arkush

A30-51A METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES ...

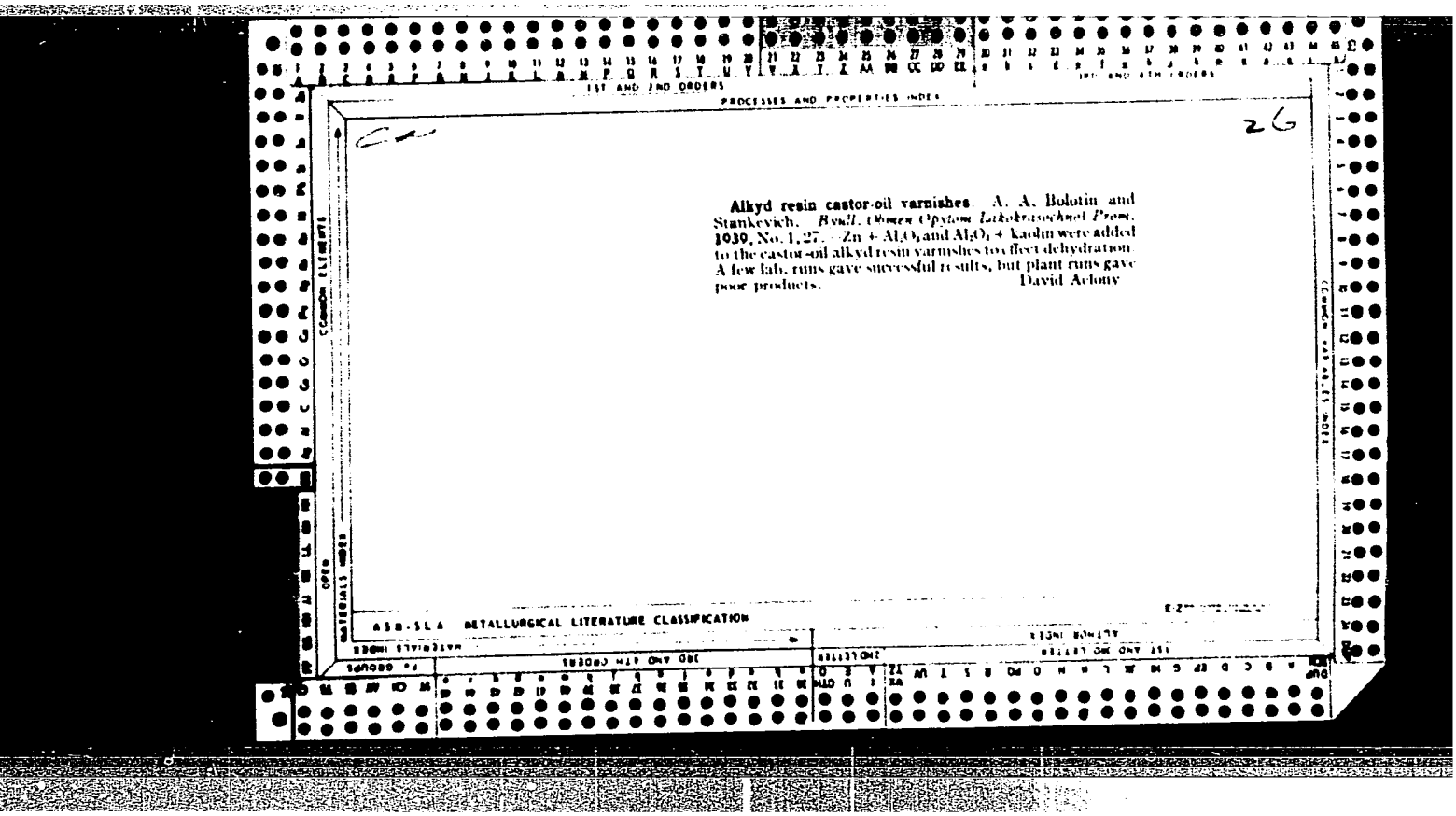
Varnishes from tung oil and artificial copal. A. A. [illegible] and Stankevich. *Byull. Obmen Opytom* [illegible] *Prom.* **1930**, No. 1, 26.—Tung oil and copal were heated at 150-70°. The viscous product was dissolved in solvent naphtha and coal oil. These varnishes dry at 20° in < 8 hrs.; a shiny waterproof film is obtained. They cannot be dried at elevated temps. owing to excessive yellowing. David Aclony

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Water absorption of alkyd varnishes V. V. Bologin and M. N. Nasilova. *Byull. Ovosch. Opytn. Lakokrasoch. Prom.* 1939, No. 1, 25-7. Films of alkyd varnishes are water-resistant only when baked. The nature of solvents and driers has no effect on water absorption. Most water-resistant films are obtained when a ratio 1:1 of alkyd resin to oil is used.
David Ackroy

A58-11A METALLURGICAL LITERATURE CLASSIFICATION

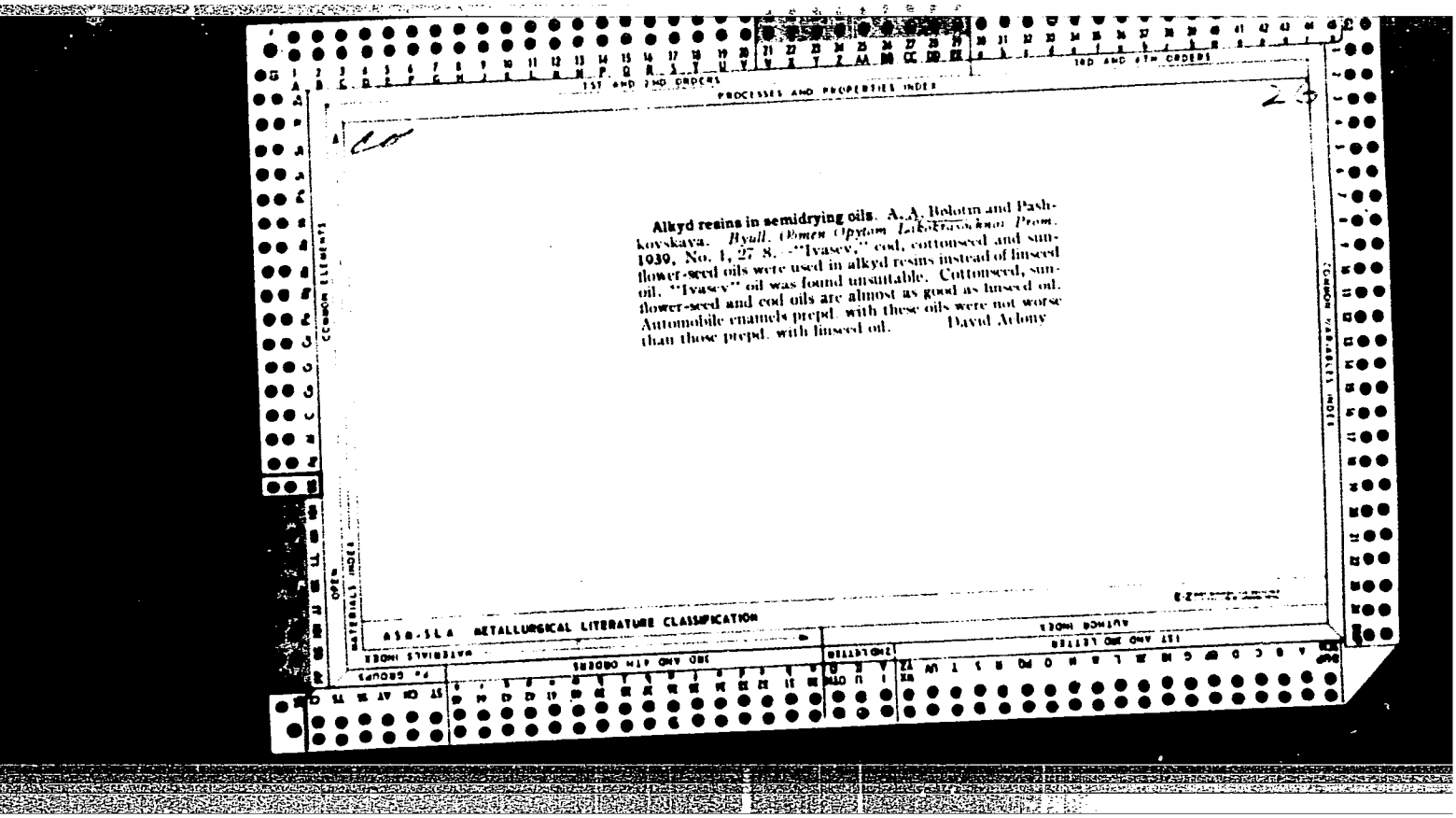


PROCESSES AND PROPERTIES INDEX

26

Alkyd resin castor-oil varnishes. A. A. Bolotin and Stankevich. *Bull. Obozr. Opytom Lakokrasochnoi Prom.*, **1939**, No. 1, 27.—Zn + Al_2O_3 and Al_2O_3 + kaolin were added to the castor-oil alkyd resin varnishes to effect dehydration. A few lab. runs gave successful results, but plant runs gave poor products. David Ackroy

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



Alkyd resins in semidrying oils. A. A. Belotin and Pashkovskaya. *Byull. Obmen Opytom Lakokrasochnoi Prom.* 1939, No. 1, 27–8.—"Ivasev," cod, cottonseed and sunflower-seed oils were used in alkyd resins instead of linseed oil. "Ivasev" oil was found unsuitable. Cottonseed, sunflower-seed and cod oils are almost as good as linseed oil. Automobile enamels prepd. with these oils were not worse than those prepd. with linseed oil. David Achmy

BOLOTIN, A., Engineer

Mbr., Krasnyy proletariy Plant (-1945-)
"Introduction of New Super-hard Alloys at the krasnyy proletariy Plant"
Stanki I instrument, 16, nos. 1-2,1945

BOLOTIN, A.A., inzh.

Nature of load on the engine and the power transmission of the tractor. Trakt. i sel'khozmash. no.11:15-19 N '59. (MIRA 13:3)

1. Moskovskiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva imeni V.M. Molotova (MIMESKh).
(Tractors--Engines) (Tractors--Transmission devices)

BOLOTIN, A.A.; SVIRSHCHEVSKIY, A.B., inzh.

Field unit for investigating operations of tractors. Mekh. i elek. sots. sel'khoz. 17 no.1:24-27 '59. (MIRA 12:1)

1.Vologodskiy molochnyy institut (for Bolotin). 2.Vsesoyuznyy nauchno-issledovatel'skiy institut mekhanizatsii sel'skogo khozyaystva.

(Tractors--Testing) (Photoelectric measurements)

BOLOTIN, A. A., Cand Tech Sci -- (diss) "Research into the nature of loading on power transmission and the engine in the operation of a tractor in agricultural production." Moscow, 1960. 23 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Moscow Inst of Mechanization and Electrification of Agriculture); 150 copies; price not given; (KL, 22-60, 135)

BALOTIN, A. B.

4/83

USSR

539.153

11335. Application of the many-configuration approximation for determining the dipole force in beryllium-type and boron-type atoms. A. B. BOLOTIN AND A. P. YUTSIS. *Zh. eksper. teor. Fiz.*, 24, No. 5, 537–44 (1953) *In Russian.*

Presents formulas for the total dipole force for the $1s^22s2p$–$1s^22s^2$ transitions in the Be-type and $1s^22s2p^2$–$1s^22s^22p$ transitions in the B-type atoms, both in two-configuration approximation. Constants of the analytical single-electron wave-functions are determined for B, C^+, N^{2+}, O^{3+} and F^{4+} atoms in $1s^23s^1$ and $1s^22s2p^2$ configurations; these functions have been used to determine the values of the total dipole force, oscillator force, and probability of transition for transitions $1s^22s2p$–$1s^22s^2$ in atoms Be, B^+, C^{2+}, N^{3+} and O^{4+}, and for transitions $1s^22s2p^2$–$1s^22s^22p$ in atoms B, C^+, N^{2+}, O^{3+} and F^{4+}. The total dipole force obtained by means of the many-configuration approximation is 1/1·7–1/1·5 times that obtained by means of the single-configuration approximation (for the ^1S–^3P transition in B-type atoms, the former is 1·5–1·7 times greater than the latter).

F. LACHMAN

BOL[illegible], A. P.

"Certain cases of application of Poisson's summation [illegible]."
Cand Phys-Math Sci, Vilnius State U, Vilnius, 1954. (RZhMat, No 5, 54)

SO: Sum 430, 29 Mar 55

BOLOTIN, A. B.

USSR/Nuclear Physics - Atomic levels FD-2906

Card 1/1 Pub. 146 - 6/19

Author : Bolotin, A. B.; Levinson, I. B.; Levin, L. I.

Title : Two-configurational approximation in the case of atoms of the carbon type

Periodical : Zhur. eksp. i teor. fiz., 29, October 1955, 449-453

Abstract : The authors present the values of the parameters of the analytic one-electron wave functions for C, N^{+}, O^{++}, F^{3+}, Ne^{4+} in the configurations $1s^2 2s^2 2p^2$, $1s^2 2s 2p^3$, and $1s^2 2p^4$. They determine the corrections to be added to the energy for the two-configurational approximation in the case of the ground configurations of the above enumerated atoms in the two-configurational approximation $1s^2 2s^2 2p^2$-$1s^2 p^4$. They compare the obtained theoretical values of the energy with experimental data. They determine the total forces of the dipoles and the probabilities of the transitions $1s^2 2s 2p^3$-$1s^2 2p^2$ both in the one-configurational and also in the two-configurational approximations. The authors thank Professor A. P. Yutsis for proposing the theme. Eight references: e.g. A. B. Bolotin and A. P. Yutsis, ibid., 24, 537, 1953; A. P. Yutsis, ibid., 19, 565, 1949.

Institution : Vilnus State University

Submitted : May 29, 1954

USSR/Atomic and Molecular Physics - Physics of the Atom, D-1

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34270

Author: Glembotskiy, I. I., Martishyus, I. T., Bolotin, A. B., Iucis, A. P.

Institution: None

Title: Theoretical Determination of the Fine Structure of Atoms of the Boron Type

Original Periodical: Lietuvos TSR Mokslu akad. darbai, 1956, B2, 15-19, Lithuanian resumé

Abstract: The doublet splitting of the terms of 4 atoms of the boron type is determined in the principal configurations both with the aid of the single-electron wave functions of the Fok self-consistent field, as well as with the aid of the analytic wave function. The theoretical results are compared with the experimental data.

/ of /

Bolotin, A.B.

USSR/Atomic and Molecular Physics - Physics of the Atom, D-1

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34266

Author: Shugurov, V. K., Bolotin, A. B.

Institution: None

Title: Fine Structure of the Terms of Atoms of the Carbon and Nitrogen Type in the Configurations $1s^2\ 2s\ 2p^3$ and $1s^2\ 2s^2\ 2p^3$

Original Periodical: Mokslo darbai. Vilniaus valst. univ. Mat., fiz. ir chem. mokslu ser., 1956, 5, 41-47; Lithuanian resumé

Abstract: The work is devoted to the determination of the fine structure of terms of atoms of the carbon and nitrogen type, respectively, in the configurations $1s^2\ 2s\ 2p^3$ and $1s^2\ 2s^2\ 2p^3$. The calculation of the splitting is carried out with allowance for the nondiagonal elements the expressions for which contain terms that give interaction with the nucleus, and which therefore should give a considerable correction to the results obtained with the aid of only diagonal elements. The correction obtained by allowance for the nondiagonal elements reaches in the case of the ^2P term of the Ne^{3+} atom in the $1s^2\ 2s^2\ 2p^3$ configuration a value of 50% of the total splitting. It follows from the results of the investigation that the Fok

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USSR/Atomic and Molecular Physics - Physics of the Atom, D-1

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34266

Author: Shugurov, V. K., Bolotin, A. B.

Institution: None

Title: Fine Structure of the Terms of Atoms of the Carbin and Nitrogen Type in the Configurations $1s^2\ 2s\ 2p^3$ and $1s^2\ 2s^2\ 2p^3$

Original Periodical: Mokslo darbai. Vilniaus valst. univ. Mat., fiz. ir chem. mokslu ser., 1956, 5, 41-47; Lithuanian resumé

Abstract: functions give a splitting that is smaller than the experimental one, and the analytical function give a smaller one than obtained with the aid of the Fok functions.

USSR/Atomic and Molecular Physics - Physics of the Atom, D-1

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34267

Author: Levinson, I. B., Bolotin, A. B., Levin, L. I.

Institution: None

Title: Two-Configuration Approximation in the Case of the Nitrogen-Type Atoms

Original Periodical: Mokslo darbai. Vilniaus valst. univ. Mat. fiz. ir chem. mokslu ser., 1956, 5, 49-55; Lithuanian resumé

Abstract: The values of the parameters of the analytic single-electron wave functions are given for the N, O^{+}, F^{2+}, and Ne^{3+} atoms in the configuration $1s^2\ 2s^2\ 2p^3$, $1s^2\ 2s\ 2p^4$, and $1s^2\ 2p^5$. The energy correction for the 2-configuration approximation $1s^2\ 2s^2\ 2p^3$ - $s^2\ 2p^5$ is determined for all the above atoms. The theoretical values of the energy obtained are compared with the experimental data. The total strengths of the dipoles and the transition probabilities $1s^2\ 2s\ 2p^4$ - $1s^2\ 2s^2\ 2p3$ were determined in both the single as well as in the 2-configuration approximations. A general expression was obtained for the total dipole strength in the 2-configuration approximation in terms of the dipole integrals in the case of transitions between the s and p shells.

/ of /

BOLOTIN A.B.

USSR/Physical Chemistry - Atom, B-3

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 54

Author: Levinson, I. B., Bolotin, A. B., and Levin, L. I.

Institution: Vilno University

Title: Two-Configuration Approximation for Atoms of the Nitrogen Type

Original Periodical: Mokslo darbai. Vilniaus valst. univ. Mat., fiz. ir chem. mokslu ser.

Abstract: Values for the parameters of the analytical single-electron wave functions for the atoms N, O^+, F^{2+}, and Na^{3+} for the configurations $1s^2 2s^2 2p^3$, $1s^2 2s 2p^4$, and $1s^2 2p^5$ are given. The energy correction for the 2-configuration approximation $1s^2 2s^2 sp^3 - 1s^2 sp^5$ has been determined for all the above-mentioned atoms. Theoretical values for the energies have been calculated and compared with experimental data. The total dipole moment and the probability of transitions of the type $1s^2 s 2sp^4 - 1s^2 2s^2 sp^3$ for both the single- and 2-configuration approximations have been calculated. A general expression has been obtained for the total dipole moment for the 2-configuration

Card 1/2

USSR/Physical Chemistry - Atom, B-3

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 54

Abstract: approximation by means of radial integrals in the case of transitions between the s- and p-orbitals.

Card 2/2

Bolotin, A.B.

USSR/ Physical Chemistry - Atom B-3

Abs Jour : Referat Zhur - Khimiya, No 3, 1957, 7132

Author : Glembotskiy, I.I., Martishyus, I.T., Bolotin, A.B., and Yutsis, A.P.

Inst : Academy of Sciences Lithuanian SSR

Title : Theoretical Determination of Fine Structure of Atoms of B Type

Orig Pub : Lietuvos TSR mosklu akad. darbai, Tr. AN LitSSR, 1956, Vol B2, 15-19 (Lithuanian summary)

Abstract : The doublet splitting of the ground state terms of four B type atoms has been calculated both on the basis of one-electron wave functions derived from Fock's self-consistent field and on the basis of analytical wave functions. The theoretical results are compared with experimental data.

Card 1/1

BOLOTIN, A.B.; LEVINSON, I.B.

Utilization of the symmetry of molecules in a simple method of molecular functions. Liet ak darbai B no.3:21-32 '60. (EEAI 10:3)

1. Vilnyusskiy gosudarstvennyy universitet im. V.Kapsukasa i Institut fiziki i matematiki Akademii nauk Litovskoy SSR.
(Molecules)

BOLOTIN, A.B.

Utilization of alternation and symmetry of molecules in a simple method of molecular functions. Liet ak darbai B no.3:33-41 '60. (EEAI 10:3)

1. Vilyusskiy gosudarstvennyy universitet im. V.Kapsukasa i Institut fiziki i matematiki Akademii nauk Litovskoy SSR.
(Molecules)

L 18858-63 EWT(1)/FCC(w)/BDS AFFTC/ASD/IJP(C)

ACCESSION NR: AT3002108 S/2910/61/001/01-/0101/0117

AUTHORS: Bolotin, A. B., Gensayte, Ye. B., Kurakevich, V. A.

TITLE: Application of two-center functions in calculations of diatomic molecules

SOURCE: AN Lit SSR. Litovskiy fizicheskiy sbornik. v.1, no.1-2, 1961, 101-117

TOPIC TAGS: wave function, single-electron wave function, two-center wave function, Schroedinger equation, biatomic, molecule, ion, H, hydrogen

ABSTRACT: This theoretical paper deals with the two-center single-electron wave functions which have been obtained by others as the result of a solution of the Schroedinger equation for the positive ion of the Hydrogen molecule. The primary task of this paper is an application of the Bates functions (Bates, D. R., et al., Roy. Soc., Proc., v. A234, 1956, 207) to the calculation of biatomic molecules for the case when the wave function of the system is constructed in the form of determinants, consisting of said functions, on the premise that a single type of equivalent electrons exists. The effective charge is determined from the condition of minimum energy of the system. The general equation is obtained for the energy of a molecule in the form of a sum of integrals of the elliptical coordinates, λ,

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which can be calculated by numerical integration; in a particular case, they are reduced to tabulated integrals. All ultimate equations appear in two forms: The first affords a possibility of employing Bates' tables, recomputed for suitable values of the effective charge, wherein the matrix element of the interaction operator of the electrons is determined by numerical integration. The second affords a possibility of reducing all integrals of the theory to the tabulated ones; the full employment of the Bates tables, of course, is thereby excluded. With further reference to the two possible methods for the calculation of biatomic molecules with identical nuclei by means of the two-center functions, it is noted that the first of them, that is, the method employing the tables of the parameters, the energy, and the coefficients of the Bates wave functions, conceives of the energy of a system rationally in the form of the sum of the energy of the electrons relative to the nucleus and the energy of interaction between the electrons. The first term of this sum can be calculated with the aid of Bates' tables as recomputed for suitable values of the effective charge (see above). The second term of the sum is found by numerical integration. Consequently, for the calculations undertaken, it is advisable to tabulate the integrals in terms of which the matrix elements of the interaction operator between equivalent and nonequivalent electrons can be expressed. The second method, in which the effective charge is varied for specified R and 2σ in integers, leads to the integrals tabulated by M. Kotani et al.,

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ACCESSION NR: AT3002108

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Phys. Mat. Soc. Japan, Proc., v. 20, extra no. 1, 1938. This variant eliminates the employment of the Bates tables for the parameters and for the energy. The maximum accuracy of this method does not exceed the accuracy of the graphs employed. The first variant can achieve almost any desired degree of accuracy. "The authors express their cordial gratitude to M. G. Veselov and M. I. Petrashen' for their attention and valuable advices proffered in the course of this work. The authors also thank A. P. Yutsis, N. D. Sokolov, and I. B. Levinson for comments and observations on the work." Orig. art. has 90 numbered formulas.

ASSOCIATION: Vil'nyusskiy gosudarstvenny*y universitet imeni V. Kapsukasa (Vilnyus State University)

SUBMITTED:	03Nov60	DATE ACQ:	23Apr63	ENCL:	00
SUB CODE:	PH, MM	NO REF SOV:	001	OTHER:	008

Card 3/3

L 18585-63 EWP(j)/EPF(c)/EWT(1)/EWT(m)/BDS AFFTC/ASD/ESD-3 Pc-4/Pr-4
RM/WW/MAY
ACCESSION NR: AT3002109 S/2910/61/001/01-/0119/0128

75
69

AUTHOR: Bolotin, A. B.

TITLE: Results of a quantum-mechanical investigation of molecules with conjugate bonds

21

SOURCE: AN Lit SSR. Litovskiy fizicheskiy sbornik. v.1, no.1-2, 1961, 119-128

TOPIC TAGS: electron, jump, probability, anisotropy, diamagnetic, susceptibility, aromatic, molecule, triphenylene, MO LCAO method, molecular orbit, molecular function, MF LCAF method

ABSTRACT: This theoretical paper investigates problems relating to the calculation of the probabilities of electron jumps and the anisotropy of the diamagnetic susceptibility in aromatic molecules exhibiting point symmetry. The study employs the method of molecular functions expressed in linear combinations of atomic functions (MF LCAF) which has been adopted widely in quantum-mechanical investigations of symmetric molecules with conjugate bonds and which is better known in scientific literature under the term MO LCAO (molecular orbit - linear combination of atomic orbits). The author prefers the term "function" to the term "orbit" as being physically more meaningful. The present paper expands the

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ACCESSION NR: AT3002109

b

initial development of the MO LCAO method previously set forth by the author and a co-author (I. B. Levinson) in Akad. nauk, LitSSR, Trudy, B, v. 3(23), 1960, 21; and by the author (ibid., page 33). In the present investigation the general problem is solved by the MO LCAO method with π-electron approximation. The general formulas are illustrated on the example of triphenylene molecules, $C_{18}H_{12}$.

"The author expresses his gratitude to Prof. A. P. Yutsis for his review of the manuscript and his remarks. Some of the calculations were performed by P. P. Pipirayte, L. P. Bastite, and V. K. Oginskayte, to whom the author expresses his thanks." Orig. art. has 33 numbered formulas and 2 figures.

ASSOCIATION: Vil'nyusskiy gosudarstvennyy universitet imeni V. Kapsukasa (Vilnyus State University)

SUBMITTED: 25Apr61 DATE ACQ: 23Apr63 ENCL: 00

SUB CODE: PH, MM NO REF SOV: 005 OTHER: 003

Card 2/2

L 12618-63 EWT(d)/FCC(w)/BDS AFFTC IJP(C)
ACCESSION NR: AP3001108 S/0208/63/003/003/0560/0564

AUTHOR: Bolotin, A. B.; Shugurov, V. K. (Vilnius) 52

TITLE: Transformation of a many-center integral to one center

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 3, no. 3, 1963, 560-564

TOPIC TAGS: electronic states of molecules, molecular orbitals, many-center integrals, Fourier transform

ABSTRACT: A method is presented for computing the many-center integrals (which arise in determining the electronic state of molecules) by reducing all atomic orbitals to one center by means of Fourier transform. Thus, one of the difficulties in sequential theoretical computation of electronic states of molecules is eliminated. Orig. art. has: 28 formulas and one graph.

ASSOCIATION: none

Card 1/2

L 29610-66 EWP(j)/EWT(m) IJP(c) RM
ACC NR: AT6012818 SOURCE CODE: UR/2910/65/005/001/0095/0104

AUTHOR: Rakauskas, R. I.; Rakauskas, R.; Balyavichyus, M. Z.; Bolotin, A. B.; Balevicius, M.; Bolotinas, A.

ORG: Vilnius State University im. V. Kapsukas (Vil'nyusskiy Gosudarstvennyy universitet)

TITLE: Use of the self-consistent field method for aromatic molecules. 1. The case of the asymmetric molecule

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v. 5, no. 1, 1965, 95-104

TOPIC TAGS: aromatic hydrocarbon, Hamiltonian, electron, ground state

ABSTRACT: The authors solve self-consistent field equations for the ground state of the 1,2-benzanthracene molecule for π-electrons in the "zero differential overlap" approximation. The eigenfunctions of the effective single-electron Hamiltonian for the molecular calculations are given in the form of a linear combination of atomic orbitals. The resultant functions were used for studying the excited state of the molecule in the mono- and multiconfigurational approximations. The numerical

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results are tabulated for the 1,2-benzanthracene molecule. The theoretical results are compared with experimental data where possible. All calculations were done on a *BESM-2M* computer. The comparison indicates that the choice of numerical values for the empirical parameters is essentially correct. However, the process of calculating the single-electron functions and corresponding energy levels showed that the numerical values of the energy levels are extremely sensitive to the selection of these parameters. In conclusion the authors consider it their pleasant duty to thank Professor A. P. Yutsis for examining the manuscript and for his helpful comments, and I. V. Batarunas for his cooperation in bringing the work to a rapid conclusion. Orig. art. has: 2 figures, 4 tables, 26 formulas.

SUB CODE: 20/ SUBM DATE: 06Jun64/ ORIG REF: 002/ OTH REF: 008

ACC NR: AT6023217 SOURCE CODE: UR/2910/65/005/003/0305/0313

46
43
34

AUTHOR: Rakauskas, R. I. -- Rakauskas, R.; Bolotin, A. B. -- Bolotinas, A.

ORG: Vil'nyus State University im. V. Kapsukas (Vil'nyusskiy Gosudarstvennyy universitet)

TITLE: Calculation of multicenter integrals in the theory of complex molecules. I. Transformation of the atomic function to another center

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik. v. 5, no. 3. 1965, 305-313

TOPIC TAGS: complex molecule, molecular theory, molecular structure

ABSTRACT: A formula is derived which makes it possible to represent the atomic orbitals localized at one of the centers in terms of quantities pertaining to another center. This result permits reducing any multicenter integral encountered in the theory of complex molecules to one center and the angular variables will be separated from the radial variables in this integral. Furthermore, the quantities characterizing the arrangement of the centers, i.e., the structure of the molecule, is presented in explicit form in the formulas of the multicenter integrals. There is no need to examine separately the problems of the conversion of an infinite series determining the function. However, when calculating the matrix elements of various operators these problems should be examined without fail. It is natural that the con-

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L 355[illegible]

ACC NR: AT6023217

vergence of the derived series depends both on the distance between centers and on the transformed atomic orbitals. Using the Fourier transformation and plane wave expansion in spherical harmonics, the Slater atomic wave function about another center is expanded. On the basis of the proposed method a program is set up for calculating the numerical values of the Slater-type wave functions transformed to another center on an electronic computer. The authors thank Prof. A. P. Yutsis for his attention to the work and Docent V. K. Shuguroy and Candidate of Physico-Mathematical Sciences A. A. Bandzaytis for useful discussions. Orig. art. has: 38 formulas.

SUB CODE: 20/ SUBM DATE: 12Nov64/ ORIG REF: 007/ OTH REF: 016

Card 2/2 mcp

BULYGIN, A.D. (stantsiya Rossosh')

Andrei Fedorovich Shmatko. Put' i put.khoz. no.12:35 D '57.
(MIRA 10:12)
(Shmatko, Andrei Fedorovich, 1898-)

PHASE I BOOK EXPLOITATION SOV/4754

Vsesoyuznoye soveshchaniye po gruppovym tekhnologicheskim protsessam v mashinostroyenii i priborostroyenii. 1st, Leningrad, 1959

Gruppovaya tekhnologiya v mashinostroyenii i priborostroyenii (Group-Processing Methods in the Machine and Instrument Industries) Moscow, Mashgiz, 1960. 378 p. Errata slip inserted. 7,000 copies printed.

Ed. (Title page): S.P. Mitrofanov, Lenin Prize Winner, Candidate of Technical Sciences; Eds.: A.B. Azarov, Candidate of Technical Sciences, N.G. Gutner, Engineer, P.V. Kaznev, Candidate of Technical Sciences, A.K. Kutay, Candidate of Technical Sciences, R.A. Reznikov, Engineer, and G.N. Chalgin, Candidate of Economic Sciences; Managing Ed. for Literature on Machine-Building Technology (Leningrad Department, Mashgiz): Ye.P. Naumov, Engineer; Ed. of Publishing House: N.Z. Simonovskiy; Tech. Ed.: O.V. Speranskaya.

PURPOSE: This collection of articles is intended for technical personnel in machine plants, designing organizations, and scientific-research institutes. It may also be useful to skilled workers.

COVERAGE: The collection consists of papers presented at the [illegible] Conference on Group Processing in the Machine and Instrument Industries, held November 24-28, 1959 in Leningrad. The conference was called by scientific and technical societies of the machine and instrument industry, GNTK RSFSR, and Lensovnarkhoz. The articles are based on the experience of industry in introducing the grouping principle in processing. They discuss basic trends in development, and group machining as the basis of mechanized continuous production. The designing of automatic production lines, construction of accessories, and modernization and specialization of equipment are discussed. Problems dealing with the introduction of group-machining methods into processing on various machine tools and into production of blanks (casting, pressworking, pressing of plastics) are considered. Planning, standardization, and methods for calculating the economic effectiveness of group processing are also treated. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

ANUFRIYEV, V.A.; KHITRUN, N.M.; OL'KHOVSKIY, N.V.; BOLOTIN, A.I., inzh., retsenzent; VLADIMIROV, V.M., inzh., red.

[Large-lot production of milling machines] Krupnoseriinoe proizvodstvo frezernykh stankov. Moskva, Mashinostroenie, 1965. 206 p. (MIRA 18:4)

BOLOTIN, A. I.

20745. Bolotin, A. I., i Petrenko, P. D. Elektromekhanicheskiy limb dlya tokarnoy obrabotki stupenchatykh valikov. Stanki i instrument, 1949, No. 6, s. 19-20.

SO: LETOPIS ZHURNAL STATEY - Vol. 28, Moskva, 1949

DIMOV, Lyubomir, professor, inzhener; DITTS, O.G., professor, redaktor [translator]; BOLOTIN, A.I., dotsent [translator]; KAPLAN, M.Ya., redaktor izdatel'stva; PUL'KINA, Ye.A., tekhnicheskiy redaktor

[Using the method of the least squares for determining the most suitable level and plane; for the vertical cross-section of building sites] Primenenie sposoba naimen'shikh kvadratov k opredeleniiu naibolee podkhodiashchikh oformliaiushchikh priamykh i ploskostei; pri vertikal'noi planirovke stroitel'nykh ploshchadok. Perevod s bolgarskogo O.G.Ditts i A.I.Bologina. Pod red. O.G.Ditts. Leningrad, Gos. izd-vo lit-ry po stroit. i arkhitekture, 1956. 34 p.
(Building) (MLRA 9:12)

BOLOTIN, A.I., dots., kand. tekhn.nauk

Using the theory of minimum sums of absolute values in solving problems in vertical leveling of an area. Sbor. nauch trudov LISI no.26:239-260 '57. (MIRA 12:1)
(Civil engineering)

3(4)

AUTHOR: Bolotin, A. I., Docent, Candidate of Technical Sciences SOV/154-58-5-3/18

TITLE: Application of the Least Squares Integration Method to the Determination of the Plane Nearest to a Given Section of Ground Surface (Primeneniye integral'nogo sposoba naimen' - shikh kvadratov dlya opredeleniya ploskosti, naiboleye blizkoy k dannomu uchastku poverkhnosti)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka, 1958, Nr 5, pp 33 - 37 (USSR)

ABSTRACT: Firstly the different cases in which such a problem arises are described. In 1952 the Bulgarian scientist Lyubomir Dimov suggested a method of solving such a problem. His method is based upon the principle of least square deviations of distinctive points of ground surface from the wanted plane (Ref 1). In this paper the least squares integration method is applied. The Hungarian scientist Milasovzky Bela (Ref 4) used the same method, obtaining a considerable simplification of procedure in solving

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Application of the Least Squares Integration Method to the Determination of the Plane Nearest to a Given Section of Ground Surface

SOV/154-58-5-3/18

a similar problem of profile rectification. The procedure is described in detail. The formulae (2) obtained permit to determine the static moments of the volumes of right prismatic and cylindric frustums with different base contours. This method provides a reliable and simple means of determining the parameters of the plane nearest to a given section of ground surface. There are 1 figure and 4 references, 3 of which are Soviet.

ASSOCIATION: Leningradskiy ordena Trudovogo Krasnogo Znameni Inzhenerno-stroitel'nyy institut (Leningrad Order of the Red Labor Banner, Institute of Building Engineers)

SUBMITTED: December 13, 1957

Card 2/2

BOLOTIN, A.I., dotsent, kand.tekhn.nauk

Theory of the efficient adjustment of the precision of measurable and determinable elements of the trigonometrical system. Sbor. nauch. trud. LISI no.3:59-76 '59. (MIRA 13:7)
(Geodesy)

S/123/61/000/009/001/027
A004/A104

AUTHOR: Bolotin, A.I.

TITLE: Multi-item (gang) setting of special and multipurpose machine tools. (From the working practice of the "Krasnyy Proletariy" im. Yefremov Plant)

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 9, 1961, 4, abstract 9B13 (V sb. "Gruppovaya tekhnol. v mashinostr. i priborostr.", Moscow - Leningrad, Mashgiz, 1960, 201 - 223)

TEXT: The author cites the working practice employed at the "Krasnyy Proletariy" im. Yefremov Plant (Moscow) in using a gang method of setting special and multipurpose machine tools in the flow production of the 1K62 machine. The basis for this method is: the grouping of several parts according to overall dimensions, material and technological features; assigning these parts to one machine tool and equipping it with quick-change setting devices making it possible to set and reset the machine tool within the shortest time. The author presents examples of gang setting on vertical turning semi-automatics of transfer machines

Card 1/2

Multi-item (gang)...

of various models, on milling and drilling machines stating their setting layout. He cites designs of quick-change fixtures and numerical data on the time necessary for the setting and resetting of machine tools when switching over to the tooling of other items. There are 25 figures.

I. Bernshteyn

[Abstracter's note: Complete translation]

Card 2/2

BOLOTIN, A.I., dotsent, kand.tekhn.nauk

Ways of improving the effectiveness of the principle of least squares in the elimination of systematic errors. Izv. vys. ucheb. zav.; geod. i zerof. no.4:39-42 '61. (MIRA 15:1)

1. Leningradskiy inzhenerno-stroitel'nyy institut.
(Least squares)

GAVRILOV, N.I.; BOLOTIN, A.S., dots., otv. red.; MAVERGOZ, Ye.I., tekhn. red.

[Asymptotic law of distribution of prime numbers; a textbook for university students] Asimptoticheskii zakon raspredeleniia prostykh chisel; uchebnoe posobie dlia studentov universiteta. Odessa, Odesskii gos.univ.,1962. 76 p. (MIRA 17:3)

Math

Bolotin, A. S. The inverse boundary problem for biharmonic functions. Kišinev. Gos. Univ. Uč. Zap. 11 (1954), 3–6. (Russian)

The author considers the problem of finding a domain bounded by a curve C and satisfying the following conditions. A biharmonic function defined in the domain has prescribed boundary values together with its Laplacian, and the normal derivative of the Laplacian also takes on prescribed values. The problem is reduced to a similar problem for analytic functions discussed by Nužin [Kazan. Gos. Univ. Uč Zap. 109 (1949)]. *L. Bers.*

[redacted], A. S. and SHCHERBAKOV, L. M.

"Dependence of Surface Tension on Radius of Drop".
Uch. Zap. Kishinevsk. un-ta, 11, pp 153-156, 1954

Semiempirical approximate equation of dependence of surface tension of the radius of the drop r is derived: $\sigma = C\ (1 - 2/\lambda_0 r\ \ 2/\lambda_0^2 r^2)$. Where C is the surface tension of flat liquid surface; is a constant of the order of magnitude of 10^7 to 10^8 CGS units. Concrete values for various liquids are not specified. (RZhFiz, No 10, 1955)

SO: Sum No 812, 6 Feb 1956

S/044/60/000/008/013/035
C111/C222

16.3400

AUTHORS: Bolotin, A.S., and Dubolar', V.K.

TITLE: The application of the method of the small parameter for equations of higher order

PERIODICAL: Referativnyy zhurnal. Matematika, no.8, 1960, 86-87 abstract no.8870. Uch. zap. Kishenevsk. un-t, 1959, 39, 253-260

TEXT: The author investigates the question on the critical movable points of the integrals of the equations

$$w^{(n)} = R(w^{(n-1)}, \ldots, w', w, z), \qquad (1)$$

where R is a rational function of $w, w', w'', \ldots, w^{(n-2)}, w^{(n-1)}$ and analytic in z. By generalizing the method of Painlevé which is based on the theorem on the series development of integrals in terms of powers of the small parameter, the author obtains conditions for the absence of critical movable points for this equation. These conditions read as follows:

1) R must be a polynomial with respect to $w^{(n-1)}$, where its degree is not higher than two, i.e. (1) must have the form:

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S/044/60/000/008/013/035
C111/C222

The application of the method...

$$w^{(n)} = A_0(w^{(n-2)}, \ldots, w, z)(w^{(n-1)})^2 + A_1(w^{(n-2)}, \ldots, w, z)w^{(n-1)} + A_2(w^{(n-2)}, \ldots, w, z);$$

2) the coefficient A_0 has only simple poles with respect to $w^{(n-2)}$ and has no entire part, i.e. $A_0(w^{(n-2)}) = \sum \frac{1 - \frac{1}{N_k}}{w^{(n-2)} - a_k}$, where N_k are natural numbers.

[Abstracter's note: The above text is a full translation of the original Soviet abstract.]

Card 2/2

SOKOLOV, Ye.I. (Kishinev); BOLOTIN, A.S. (Kishinev)

Study of a singular integral. Izv. vys. ucheb. zav.; mat. no.2:108-119 '63. (MIRA 16:3)
(Integrals, Generalized)

L 27220-66 EWT(d)/T IJP(c)

ACC NR: AP6007755 SOURCE CODE: UR/0021/66/000/001/0027/0032

AUTHOR: Karmazin, V. S.; Bolotin, A. S.

ORG: Odessa State University (Odes'kyy derzhavnyy universytet)

TITLE: First boundary value problem for a polyharmonic function of p-th order in a sphere

SOURCE: AN UkrRSR. Dopovidi, no. 1, 1966, 27-32

TOPIC TAGS: boundary value problem, harmonic analysis, polynomial

ABSTRACT: The authors solve the problem of finding on a sphere (V) a polyharmonic function U of order p satisfying the equation $\Delta^p U = 0$, and subjected to the boundary conditions

$$\Delta^l U|_{(S)} = f_l(Q),\ Q \in (S),\ l = 0, 1, 2, \ldots p-1.$$

The functions $f_i(Q)$ are assumed to be continuous and to have finite changes on an arbitrary arc of the great circle of the spherical surface. The problem is solved with the aid of spherical functions and a system of polynomials in terms of Legendre functions. The solution is obtained in the form

$$U(M) = \sum_{k=0}^{p-1} \sum_{m=0}^{\infty} \sum_{n=-m}^{m} A_{kmn} F_m^k(r^2)\, W_m^{(n)}(M) =$$

$$= \sum_{k=0}^{p-1} \sum_{m=0}^{\infty} \left(\frac{r}{R_i}\right)^m F_m^k(r^2) \iint_{(S)} f_k(\theta^*; \varphi^*) \left[\sum_{n=-m}^{m} \frac{Y_m^{(n)}(\theta; \varphi) \cdot Y_m^{(n)}(\theta^*; \varphi^*)}{\|Y_m^{(n)}\|^2}\right] dS$$

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L 27520-66

ACC NR: AP6007755 O

and it is stated as a corrolary that any polyharmonic function in the sphere (V) can aslo be expanded in this series. This report was presented by Academician AN UkrRSR Yu. O. Mytropol's'kyy (Yu. A. Mitropol'skiy). Orig. art. has: 14 formulas.

SUB CODE: 12/ SUBM DATE: 18Nov64/ ORIG REF: 003/ OTH REF: 002

Card 2/2 BLG

BOLOTIN, A.Ya.; YERIKHEMZON, I.Yu.; LEONTIOV, N.K.; MARKOV, A.V.

Processing and removal of blast furnace slags without ladles.
Stal' 24 no.2:116-118 F '64. (MIRA 17:9)

BOLOTIN, B.I., inzh.; KONDRAT'YEV, V.V., inzh.

Drainage in railroad yards. Zhel.dor.transp. 40 no.10:58 O '58.
(MIRA 11:12)

(Drainage) (Railroads--Yards)

PETERMANN, A.; VINETSKAYA, A.Yu.[translator]; BOLOTIN, B.M. [translator]; SAFARYAN, M.K., kandidat tekhnicheskikh nauk, redaktor; YERSHOV, P.R., vedushchiy redaktor; TROFIMOV, A.V., tekhnicheskiy redaktor

[Reinforced concrete tanks for the storage of petroleum and petroleum products. Translated from the German] Zhelezobetonnye rezervuary dlia khraneniia nefti i nefteproduktov. Perevod s nemetskogo A.IU. Vinetskoi i B.M.Bolotina. Pod red. M.K.Safariana. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1956. 130 p.
(Petroleum--Storage) (MLRA 10:1)

BOLOTIN, B.M.

Pipeline for liquid gases. Stroi. truboprov. 6 no. 2:31-32 F '61.
(MIRA 14:5)
(United States—Liquified petroleum gas—Pipelines)

L 9861-63 EWP(j)/EPF(c)/EWT(1)/EWT(m)/BDS--AFFTC/ASD/ESD-3--Pc-4/Pr-4--
RM/WW/MAY/IJP(C)
ACCESSION NR: AP3001353 S/0048/63/027/006/0754/0757

AUTHOR: Terskoy, Ya. A.; Bolotin, B. M.; Brudz', V. G.; Drapkina, D. A. 75 73

TITLE: Effect of the substituent on the luminescence of azomethynes [Report of the Eleventh Conference on Luminescence held in Minsk from 10 to 15 September 1962]

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v. 27, no. 6, 1963, 754-757

TOPIC TAGS: luminescence of azomethynes, salicylaldehyde derivatives, hydroxynaphthandehyde derivatives

ABSTRACT: A number of substances containing an azomethyne group are known to exhibit strong luminescence in the crystalline state. Hence investigation of crystalline azomethynes and factors intensifying luminescence is of practical and theoretical interest. The authors synthesized and investigated 44 azomethynes: derivatives of salicyl- and beta-hydroxynaphthaldehydes, using procedures described in the literature, and five derivatives of para-dimethyl-aminobenzaldehyde. The spectra of the former in the powdered state were recorded

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ACCESSION NR: AP3001353

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on an ISP-51 spectrograph with an FEP-1 attachment and an FEU-17 photomultiplier at room temperature; the spectra of the latter were studied in the crystalline state and in frozen dimethylformamide solutions at 77°K. Former investigators (Nurmukhametov, R. N.; Shirogin, D. N.; Kozlov, Yu. I.; Pukhkov, V. A. - Optika i spektroskopiya, 11, 606, 1961 and Doklady AN SSSR, 143, 1145, 1962) inferred that the luminescence of azo compounds and azomethynes is connected with hydrogen bond association leading to formation of a quasi-aromatic six-membered ring. The present results indicate that this factor, while favorable, is not decisive; strong luminescence persists in frozen solutions where intermolecular H-bonding is impossible. The authors attribute the intense luminescence of crystalline azomethynes to inductive or field action of the substituents. The data may prove useful in guiding the choice of substituents to obtain bright luminescence in the series of meta-substituted derivatives. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chisty*kh khimicheskikh veshchestv (All-Union Scientific Research Institute of Chemical Reagents and High-Purity Substances)

Card 2/3

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B124/B206

AUTHORS: Vayser, V. L., Ryabov, V. D., Bolotin, B. M.

TITLE: Synthesis of polycarbonates and epoxy resins on the basis of 1, 1-(4, 4-dioxy)-diphenyl ethane

PERIODICAL: Khimicheskaya promyshlennost', no. 7, 1961, 24 - 25

TEXT: For the manufacture of epoxy resins, polycarbonates etc., the authors propose, instead of diphenylol propane, another diphenol, i. e., 1,1-(4,4-dihydroxy)-diphenyl ethane (D), which had already been produced in good yield in 1904 by condensation of phenol with acetaldehyde. In previous papers (Ref. 2: DAN SSSR, 97, No. 4 (1954); Ref. 3: DAN SSSR, 103, No. 5 (1955); Ref. 4: Sbornik trudov 9-y nauchno-tekhnicheskoy konferentsii Moskovsk, neft. inst. 1954) the authors described the synthesis of this compound by condensation of phenol with acetylene in aqueous or alcoholic solution in the presence of an acid catalyst: $2C_6H_5OH + HC{\equiv}CH \longrightarrow HO\text{-}C_6H_4\text{-}CH(CH_3)\text{-}C_6H_4\text{-}OH$. In aqueous solution this reaction proceeds over acetaldehyde (Ref. 5: V. L. Vayser, V. D. Ryabov, DAN SSSR, 100, No. 2 (1955)). A number of cationites and aluminum silicates are being

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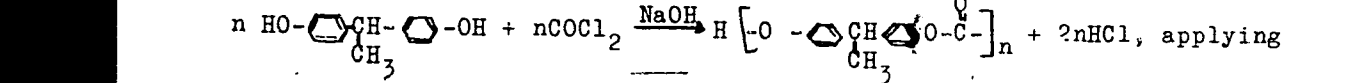
Synthesis of polycarbonates...

investigated as catalysts for this reaction. It was the author's aim to find out whether the dihydroxy-diphenyl ethane obtained from acetylene and phenol can be used for the synthesis of polycarbonates and an epoxy resin. The polycarbonates were synthetized by condensation of D with phosgene:



direct phosgenization in the presence of NaOH or pyridine, or phosgenization at the interface of two phases. D, twice recrystallized from benzene, with a melting point of 123°C, was used for the experiments. Direct phosgenization was carried out in a three-necked flask with a mercury seal, mixer and reflux condenser. An alkaline solution of D, methylene chloride, and a catalyst were added into the flask, and phosgene was passed through. After termination of the reaction, the reaction mass is mixed for another hour, methylene chloride is removed by steam distillation, the polycarbonate obtained is rinsed with hot water up to neutral reaction, and dried at 80°C. The experimental results are given in Table 1, which shows that the mean molecular weight and the melting point of the polycarbonate rise with decreasing reaction temperature. Phosgenization in the presence of pyridine was carried out as follows: 11 g of D, dissolved in methylene

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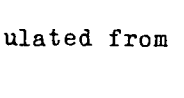
Synthesis of polycarbonates...

chloride, and 24 g of pyridine were treated with phosgene for one hour at 20-35°C, nitrogen was blown through after termination of the reaction, pyridine hydrochloride was decomposed by aqueous lye, the polycarbonate obtained was treated with steam and rinsed with hot water up to neutral reaction. A total of 8 g of polycarbonate with a molecular weight of 4100 was obtained from 11 g of D. No positive results were obtained by phosgenization at the interface of the phosgene solution in chloro benzene and the basic solution of D. For polycarbonates obtained by direct phosgenization in the presence of NaOH, melting point, molecular weight (viscosimetric) and hydroxyl number were determined; they were submitted to elementary analysis and fractionated. The hydroxyl number of the polycarbonates was determined by acetylating with acetic anhydride in the presence of pyridine and titration of the acetic acid formed with 0.5 N aqueous alkali against phenol phthalein; the hydroxyl content amounted to 3.26%. The results of the elementary analysis (73.76%C, 5.16%H; and 73.98%C, 5.86%H) are very close to those calculated from the formula  (75% C and 5% H). The polycarbonates were fractionally precipitated by methanol from

a 1.5% solution in methylene chloride, two fractions with molecular weights of 29500 and 43600 being obtained. The ЭА-1 (EA-1) epoxy resin was also synthetized from D, with the same polycondensation degree as the Э-40 (E-40) resin produced from diphenylol propane, and the properties of the two resins were compared. For the resin obtained, the molecular weight was determined according to Rast to be 455, the epoxy number to be 19.8%, and the droplet-forming temperature according to Ubbelohde to be +32°C. Comparative tests of varnish coatings obtained from the EA-1 and E-40 resins were made at the institut ГИПИ-4 (Institute GIPI-4); the results are given in Table 2. There are 2 tables and 5 Soviet-bloc references.

TERSHOY, Ya.A.; BOLOTIN, B.M.; BRUDZ', V.G.; DRAPKINA, D.A.

Effect of substitutes on the luminescent properties of azomethine compounds. Izv. AN SSSR. Ser. fiz. 27 no.6:754-757 Je '63. (MIRA 16:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

(Schiff bases--Spectra)

KRASOVITSKIY, B.M.; BOLOTIN, B.M. NURMUKHAMETOV, R.N.

Azomethine bases. Part 1: Structure and absorption spectra of salicylalanilines. Zhur. ob. khim. 34 no.11:3786-3791 N '64
(MIRA 18:1)

ACCESSION NR: AP4043944 S/0108/64/019/008/0009/0014

AUTHOR: Bolotin, D. N. (Active member)

TITLE: Using oriented normalized graphs for calculating transfer coefficients

SOURCE: Radiotekhnika, v. 19, no. 8, 1964, 9-14

TOPIC TAGS: graph, oriented graph, normalized graph, transfer coefficient

ABSTRACT: Using a bloc' diagram of an amplifier stage with several feedback circuits as an example, C. L. Coates' rules for constructing an oriented normalized graph (IRE Trans. on Circuit Theory, v. CT-6, no. 2, 1959) are demonstrated. Another set of rules is set forth for eliminating the input apices in the graph, which permits computing the transfer coefficient of a multi-input electronic circuit subjected to noise. In the case of a wideband amplifier with a significant interelectrode capacitance, the admittance matrix is of the square type; such a matrix has no oriented normalized graph. A special technique

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ACCESSION NR: AP4043944

(generator-load scheme) is suggested to obviate this difficulty and to obtain an artificial nonsquare matrix which obeys the above rules. Orig. art. has: 5 figures and 15 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 09Jun63 ENCL: 00

SUB CODE: EC NO REF SOV: 002 OTHER: 002

Card 2/2

L 36715-65

ACCESSION NR: AP5004419 S/0108/65/020/001/0018/0023

6
B

AUTHOR: Bolotin, D. N. (Active member)

TITLE: Generalized graph and its use in calculating electronic circuits

SOURCE: Radiotekhnika, v. 20, no. 1, 1965, 18-23

TOPIC TAGS: graph, generalized graph, electronic circuit

ABSTRACT: Based on Y. Chow's and E. Cassignol's work ("Linear Signal Flow Graphs and Application," 1962), the article tries to develop a representation of a complicated electronic circuit by a graph that would have these features: (a) includes all internal points of the circuit; (b) its branches represent the transfer factors; (c) its loops have a weight factor of -1; (d) possesses the properties of structural diagrams. In such a graph, the number of nodes is equal to the number of actual circuit nodes. This graph permits imposing noise limitations and is convenient for analyzing electronic circuits in several, including

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L 36715-65

ACCESSION NR: AP5004419

reliability, aspects. An algorithm for calculating the transfer factors with respect to any node of the graph is developed. Orig. art. has: 5 figures and 10 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 18Apr64 ENCL: 00 SUB CODE: EC

NO REF SOV: 002 OTHER: 002

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PHASE I BOOK EXPLOITATION SOV/5303

Nauchno-tekhnicheskoye soveshchaniye po dempfirovaniyu kolebaniy.
Kiyev, 1958.

Trudy Nauchno-tekhnicheskogo soveshchaniya po dempfirovaniyu kolebaniy, 17 - 19 dekabrya 1958 g. (Transactions of the Scientific and Technical Conference on the Damping of Vibrations, Held 17 - 19 December, 1958) Kiyev, Izd-vo AN UkrSSR, 1960.
178 p. 2,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut metallokeramiki i spetsial'nykh splavov.

Editorial Board: I. N. Frantsevich, G. S. Pisarenko (Resp. Ed.), G. V. Samsonov, V. V. Grigor'yeva, and A. P. Yakovlev; Ed. of Publishing House: I. V. Kisina; Tech. Ed.: A. A. Matveychuk.

COVERAGE: The book contains 27 articles dealing with principal results of theoretical and experimental investigations of energy dissipation in mechanical vibrations carried out in the Soviet Union from 1956 to 1958. Problems of energy dissipation in materials and factors affecting it are discussed. Purportedly new methods of experimental investigation of damping of vibrations are presented. Attention is given to the recently developed nonlinear theory of calculating vibrations in elastic systems, taking energy dissipation into account. Attempts to analyze internal energy dissipation in materials using methods of mathematical statistics are discussed. Some articles deal with engineering problems in dynamics, in which damping is claimed to play a highly substantial part. Aspirant N. I. Nikhin, of the Kiyev Polytechnic Institute, is mentioned. References accompany some of the articles.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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E032/E514

AUTHORS: Bolotin, G.A. and Sokolov, A.V.

TITLE: Optical properties of a gyroelectric medium
I. The structure of tensors describing the forced anisotropy in the electrical and magnetic properties of an isotropic medium

PERIODICAL: Fizika metallov i metallovedeniy, v.12, no.4, 1961, 493-498

TEXT: The authors discuss the dielectric constant and the magnetic permeability tensors of an isotropic medium in the presence of a magnetic field. An invariant representation for these tensors is derived. The invariant form of the tensor $\hat{\varepsilon}'$ is obtained as follows. Consider the complex conductivity tensor

$$\hat{\sigma}' = \hat{\sigma} + i\omega\hat{\alpha},$$

where $\hat{\alpha}$ is the polarizability tensor. If the dispersive medium has a conductivity $\sigma'(\omega)$ in the absence of a magnetic field then as soon as the magnetic field is introduced and a special direction is thereby defined the conductivity becomes

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different in different directions: it remains the same as before in the direction of the magnetic field but is different in the perpendicular direction. The electric field $\underline{E}$ (light wave) can be expanded as follows:

$$\underline{E} = \underline{b}\cdot\underline{b}\underline{E} - \frac{1}{2}(1 - i\underline{b}^{x})\underline{b}^{x}\underline{b}^{x}\underline{E} - \frac{1}{2}(1 + i\underline{b}^{x})\underline{b}^{x}\underline{b}^{x}\underline{E}.$$

where $\underline{b}$ is the unit vector in the direction of the magnetic field (gyrotropic axis). In this formalism the generalized Ohm's law takes the form

$$\underline{j}_{t} = \sigma_{o}\underline{b}\cdot\underline{b}\underline{E} - \frac{1}{2}\sigma_{-}(1 - i\underline{b}^{x})\underline{b}^{x}\underline{b}^{x}\underline{E} - \frac{1}{2}\sigma_{+}(1 + i\underline{b}^{x})\underline{b}^{x}\underline{b}^{x}\underline{E}. \qquad (1)$$

and the conductivity tensor for an arbitrary orientation of the gyrotropic axis is given by

$$\hat{\sigma} = \sigma_{o}\underline{b}\cdot\underline{b} - \frac{1}{2}\sigma_{-}(1 - i\underline{b}^{x})\underline{b}^{x}\underline{b}^{x} - \frac{1}{2}\sigma_{+}(1 + i\underline{b}^{x})\underline{b}^{x}\underline{b}^{x} \qquad (2)$$

Assuming that the motion of the electrons in the medium is

described by

$$m\dot{\underline{v}} = -e\underline{E} - \frac{e}{c}\left[\underline{v}\underline{H}_{3\phi}\right] - m\gamma\underline{v}. \qquad (3)$$

where γ is the relaxation frequency and $H_{3\phi}$ is the effective magnetic field "seen" by the conduction electrons, it is shown that the dielectric constant tensor is given by

$$\hat{\varepsilon}' = \varepsilon' + i\varepsilon' Q\underline{b}^{x} + (\varepsilon_o' - \varepsilon')\underline{b}\cdot\underline{b}. \qquad (11)$$

where

$$\varepsilon' = \frac{1}{2}(\varepsilon_+' + \varepsilon_-'), \quad Q = \frac{\varepsilon_+' - \varepsilon_-'}{\varepsilon_+' + \varepsilon_-'} \qquad (10)$$

In the above relation

$$\varepsilon_o' = 1 - i\frac{\Omega^2}{\omega}\frac{1}{\gamma + i\omega},$$

$$\varepsilon_\pm' = 1 - i\frac{\Omega^2}{\omega}\frac{1}{\gamma + i(\omega \pm \omega_c)} \qquad (8)$$

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$\Omega^2 = \frac{4\pi e^2 N}{m}$ and $\omega_c = \frac{eH}{mc}$. The corresponding expression for the magnetic permeability tensor is shown to be

$$\hat{\mu} = \mu + i\mu \underline{M}\hat{b} + (\mu_o - \mu)\underline{b}\underline{b}. \quad (23)$$

where

$$\mu = \frac{1}{2}(\mu_+ + \mu_-), \quad \underline{M} = \frac{\mu_+ - \mu_-}{\mu_+ + \mu_-} \quad (22)$$

$$\mu_o = 1 + 4\pi\chi_o \frac{\gamma}{\gamma + i\omega}, \quad (21)$$

$$\mu_\pm = 1 + 4\pi\chi_o \frac{\gamma \pm i\omega_p}{\gamma - i(\omega \pm \omega_p)}$$

and ω_p is the ferromagnetic resonance frequency. There are 5 references: 4 Soviet and 1 non-Soviet. The English-language reference reads as follows: Ref.5: Wangsness R.K. Phys.Rev.,1955, 98, No.4, 927.

Card 4/5

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: March 2, 1961

X

Card 5/5