

1. 21701-65

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ACOMBONR No. A0500073

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SUB CODES: ME, AC SUBMITTED: OO NO REF SOV: OXJ

OTHER: OXJ

Class 5/5

PHASE I BOOK EXPLOITATION SOV/4567

Nekrasov, Boris Borisovich

Gidravlika (Hydraulics) Moscow, Voenizdat, 1960. 263 p. No. of copies printed not given.

Ed.: A.N. Shil'tsev; Tech. Ed.: M.A. Strel'nikova.

PURPOSE: This textbook is intended for use in a course in hydraulics at aeronautical schools of higher education.

COVERAGE: In addition to basic problems of general hydraulics, the book discusses topics from the theory of hydraulic machines, such as pumps and hydraulic transmissions used in aircraft and airfield installations. The author also presents examples of simple hydraulic calculations from the fields of aeronautical engineering and non-Soviet rocket engineering to show the practical application of points of theory. The author thanks Professor G.F. Burago, Doctor of Technical Sciences; Professors K.F. Kosourov, N.Ya. Fabrikant, and S.S. Rudnev; Candidate of Technical Sciences V.V. Shulgin, and Engineer G.I. Badikov. There are 35 references, all Soviet (1 translation).

CARD 1/7

NEKRASOV, B. D.

Separation of arsenopyrite and pyrite by flotation. B. I. Krochin and B. D. Nekrasov. *Izvestiya Vsesoyuznogo Nauchno-Issledovatskogo Instituta Tsvetn. Metallurgii*, Moscow, 1956, No. 903. On the basis of lab. expts. a system is developed for sepn. of pyritourzenical concentrate (I) obtained on treatment of polymetallic As-contg. ore. It is shown that on treatment with Na₂S with solid:liquid ratio in pulp = 1:1, removal of excess Na₂S by 2-fold thickening and diln. with fresh water and subsequent oxidation with K₂MnO₄, depression of arsenopyrite occurs. Arsenical I obtained as a result of sepn. of collective I contains 7.0% As with 96.6% extn. On substitution of expensive K₂MnO₄ with finely ground MnO₂ arsenical I is obtained contg. 13.7% As with 79.8% extn. of As. It is shown that oxidation of mill pulp with O₂ by aeration for 30 min. gives poorer selection results of mill I than oxidation with K₂MnO₄ or MnO₂. High extn. of As is obtained on immediate cyanidation of finely ground pyrite I and on cyanidation of arsenical I with preliminary stepwise roasting and fine grinding of ash. V. N. Bodnaraki

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NEKARSON, B.D.

8
1-4E2C

18 18
~~Flotation separation of pyrite and arsenopyrite. B. D. Nekeason. Minerals 1956, No. 2, 23-6. cf. U.S. Geol. Surv. 1925. — A concentrate contg. Cu 1.16, Pb 0.6-0.8, and As 3.73% was ground to a CaO medium and, after sep. Cu and Pb by flotation, was thickened and activated with Na₂SO₄ to a liquid/solid ratio of 1:1. 3-15 kg. of Na₂SO₄/ton of thickened tailings were used. The excess Na₂SO₄ was removed with fresh water and the thickened pulp at a solid/liquid ratio of 1:2 was oxidized for 2 hrs. with pyroul-
 site (1.3 kg./ton) and by aeration; decreasing the period of aeration diminished sel. ability. The proportion of arsenopyrite in the froth was increased. Increasing the period of aeration decreased the flotability of pyrite without increasing the recovery of As. Flotation after oxidation was made with 50-100 g. Bu xanthate and 20-40 g. pine oil/ton of pulp. A product contg. 10-30% As was obtained by this method.
 1. Benevise~~

RE
MT

SOV 137-58-12-23935

Translation from Referativnyy zhurnal Metallurgiya, 1958, Nr 12, p 4 (USSR)

AUTHORS: Krokhin, S I . Nekrasov, B D

TITLE: Flotation Separation of a Copper-cobalt Concentrate (Flotatsionnoye razdeleniye medno-kobal'tovogo kontsentrata)

PERIODICAL: Tr Sev-Kavkazsk gornometallurgich in-ta, 1957, Nr 15, pp 166-175

ABSTRACT: Selection of bulk concentrate by the following flowsheet: 2 thickenings and washings, fine grinding, primary copper-pyrite flotation and one secondary, yields copper-pyrite concentrates containing 0.166% Co and 0.93% losses. Cu extraction is 80%. The reactants are 10 g xanthate and 40 g DS frothers per ton. Separation of cobaltite from pyrite involves high Co losses.

A. I.

Card 1/1

18.5000

7/5/51
SOV 100-2000

AUTHOR: Nekrasov, B. D.

TITLE: Processing of Arsenic Cakes in Oil Tailings of Quartz Plants

PERIODICAL: Izvestiya vysshikh uchebnykh zavcheniy. Tsvetnaya metallurgiya, 1959, Vol 2, No 5, pp 37-44 (USSR)

ABSTRACT: Processing of arsenic cakes containing gold is done by flotation and cyanidation. The arsenic cakes consist of semioxide sulfides containing 10-15 grams of gold per ton. Extraction of gold from the cakes is complicated by the presence of gold which resisted cyanidation. A long storage of arsenic cakes causes considerable oxidation of the surface and impairs the flotation properties of arsenopyrite. However, a different flotation activity of pyrite as compared to arsenopyrite permits the transfer into the foam product of 80% of the pyrite with only a 0.5% As admixture. This is done by a brief flotation followed

Card 1/5

Processing of Arsenous Cakes in Old Tailings of
Cyanide Plants

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SCV 140-1-1-7 3

by two repeated separations of the concentrate. One can obtain a rich foam product containing 1.5 g gold ton and 18% As by treating the tailings of pyrite flotation. The yield of this product is 20%, and it picks up 70% of As and 53% of Au content of the tailings. Such a flotation of the arsenopyrite with the gold contained in it is possible after eliminating the sludge of pyrite flotation. Elimination of sodium salts and intensive rubbing of the grain surface in hydrocyclones are also necessary. The extraction of gold from cyclone overflow is done by cyanidation. A product rich in arsenic must be roasted to extract the latter, while the ciner must be smelted in a pyrometallurgical plant to extract the refractory gold. The total extraction of gold into the As concentrate and into the cyanide solution amounts to about 79%. The following table contains data on different products of the refining operation:

Card 2/5

Processing of Arsenous Cakes in Old Tailings of
Cyanide Plants

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COV-10-1-2-3-1-3

CHEMICAL COMPOSITION OF ENRICHMENT PRODUCTS
CONTENT (%)

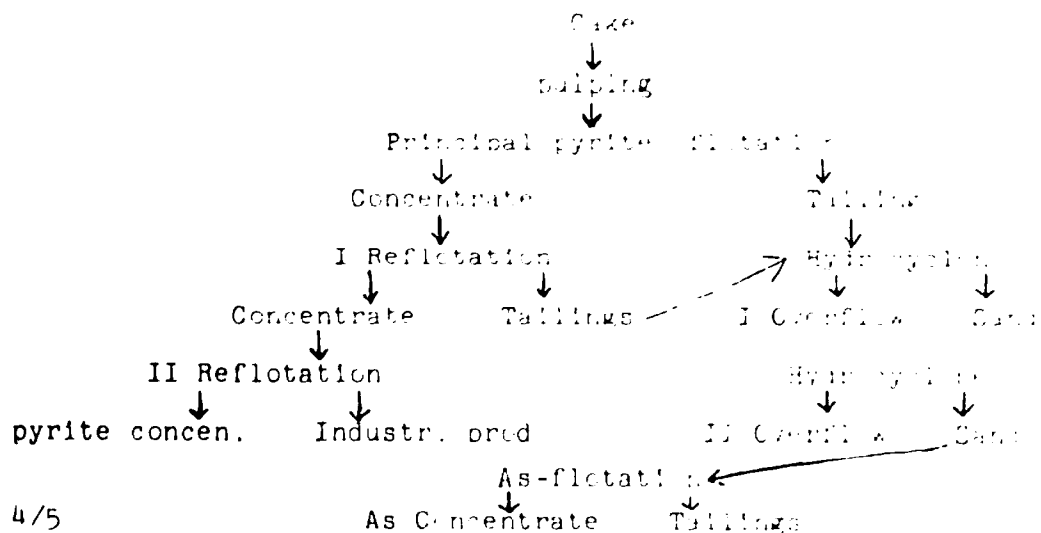
PRODUCTS	CONTENT (%)											
	Au z.m	Ag z.m	Zn	Pb	Cu	Fe	CaO	MgO	Al ₂ O ₃	SiO ₂	As	S _{total}
ARSENIOUS CONCENTRATE	19.4	11.4	0.22	0.106	0.163	30.68	2.51	0.77	4.53	12.70	18.20	27.07
PYRITE CONCENTRATE	5.2	15.6	0.44	0.106	0.186	44.97	0.44	0.036	4.39	2.60	0.50	41.15
CYCLONE OVERFLOW (SLUDGE)	5.5	—	0.33	0.480	0.14	15.52	2.06	2.64	18.47	40.62	2.52	7.00

Card 3/5

Processing of Arsenous Cakes in Old Tailings of
Cyanide Plants

1981
SOV 14-11-1981

The flow diagram of the process can be represented as follows:



Card 4/5

Processing of Arsenous Cakes in Old Tailings of Cyanide Plants 1959

SOV-1959-05-10

There are 4 tables; and 13 references, 4 Soviet, 1 U.S. The U.S. reference is: Marsh, M., Engng. Minnes. J., Nr 6, 1947.

ASSOCIATION: North Caucasian Mining Metallurgical Institute, Chair of Useful Mineral Enrichment (Sever'kavkazskiy vnedrometallicheskiy institut. Kafedra obgasheniya i obzasheniya znykh iskopayemykh)

SUBMITTED: January 21, 1959

Card 5/5

ANISIMOV, S.M.; NEKRASOV, B.D.; PETRENKO, V.I.

Stage flotation of unyielding gold-bearing ores. Izv. vys. shkol
zav.; tsvet. met. 5 no.2:50-55 '62. (MIRA 1583)

1. Severokavkazskiy pomometallurgicheskiy institut, kafedra
metallurgii redkikh i blagorodnykh metallov.
(Gold ores) (Flotation)

PHASE I BOOK EXPLOITATION

539

Nekrasov, B. M., Glebov, L. V., Engineers

Tekhnologiya tochechnoy svarki peresekayushchikhsya sterzhney armaturnoy stali
(Technology of Spot Welding Intersecting Steel Reinforcing Rods) Leningrad,
1955. 15 p. (Series: Leningradskiy dom nauchno-tekhnicheskoy propogandy.
Information-tekhincheskiy listok, no. 72 /760/) 7,000 copies printed.

Ed.: Ryzhik, Z. M.; Tech. Ed.: Freger, D. P.

PURPOSE: This booklet is designed to give information on the joining of meshed concrete reinforcement rods by spot welding, as practiced in the USSR.

COVERAGE: The authors explain the advantages of the new method of welding and give basic data on its application. They point out that extensive industrialization of fabricating steel reinforcements in the USSR has been made possible solely through the use of spot welding for joining together the reinforcement structures. The old method of using tie wire, it is stated, has proved too time-consuming and has been replaced by the more efficient spot-welding method. During 1955 and 1956, according to the authors, 402 plants and 200 yards for the manufacture of prefabricated reinforced concrete members were scheduled to be put into operation. There are 7 references, all Soviet.

Card 1/2

Technology of Spot (Cont.)

539

TABLE OF
CONTENTS:

Special Features of Spot Welding Intersecting Steel Rods	2
Technology of the Resistance Welding of Cross Joints	4
Selection of Operating Conditions	9
Conclusion	16
Bibliography	16

AVAILABLE: Library of Congress

Card 2/2

GO/eag

9/25/58

112-2-3167

Translation from: Referativnyy Zhurnal, Elektrotehnika, 1955, Nr 2, p. 93 (USSR)

AUTHOR: Nekrasov, B.M., Bykhovskiy, D.G.

TITLE: A Device for Splicing and Making Joints in Aluminum Cable Conductors, Conductors and Cables by Contact Heating (Ustanovka dlya soyedineniya i okontsevaniya alyuminiyevykh zhil, provodov i kabeley kontaktnym razogrevom)

PERIODICAL: Inform.-tekh. sb. M-vo elektrotekhn. prom-sti SSSR, 1955, Nr 24, pp. 25-29

ABSTRACT: Bibliographic entry

Card 1/1

PHASE I BOOK EXPLOITATION

566

Nekrasov, B. M., Radashkovich, I. M., Engineers

Elektrosvarka kontaktov puskoreguliruyushchey apparatury (Electric Welding of Contacts for On-off Controls) Leningrad, 1956. 7 p. (series: Leningradskiy dom nauchno-tehnicheskoy propagandy. Informatsionno-tehnicheskii listok, no. 18. Svarka i payka metallov) 6,000 copies printed.

Sponsoring Agencies: Leningradskiy dom nauchno-tehnicheskoy propagandy, and Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy.

Author: Lyzhik, Z. M., Engineer; Tech. Ed.: Cvirts, V. L.

PURPOSE: This booklet is intended for engineers in the field of automation, specifically, with regard to electrical contact systems.

Card 1/2

Electric Welding of Contacts (Cont.)

564

COVERPAGE: The booklet describes the method of spot-welding contacts of on-off controls as developed and employed by the [Leningrad Electrical-Equipment] Plant "Elektrik" and the Vsesoyuznyy nauchno-issledovatel'skiy institut elektrovarochnogo obrudovaniya (All-Union Scientific Research Institute for Electric-welding Equipment). There are 3 references, all Soviet. No personalities are mentioned.

TABLE OF
CONTENTS:

Selection of a Machine for Welding Contacts	1
Special Features of the Contact Welding of Silver Contacts and Other Parts of On-Off Controls	3
Welding of Cermet Contacts	4
Conclusion	8
References	9

AVAILABLE: Library of Congress

Card 2/2

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8-20-58

AID P - 4574

Subject : USSR/Engineering

Card 1/2 Pub. 107-a - 8/14

Authors : Nekrasov, B. M. and I. M. Radashkovich

Title : Electrowelding of contacts of starters and control equipment.

Periodical : Svar. proizvod., 4, 18-22, Ap 1956

Abstract : The authors present experiments carried out at the "Elektrik" plant in Leningrad and the Institute of Electro-welding Equipment (VNIIESO) on the development of machinery and techniques for welding silver and cermet contacts. The MPT-75 and MTP-30 spot welding machines are fully described and illustrated, as well as various metal and ceramic contacts. An elaborate chart of welding characteristics, materials, forms, etc. is given. Two photos, 4 drawings.

AID P - 4874

Svar. proizv., 4, 18-22, Ap 1956

Card 2/2 Pub. 107-a - 8/14

Institutions: "Elektrik" plant in Leningrad and the Institute of Electro-
welding Equipment (VNIIESO).

Submitted : No date

S/O28/60/700/06/06/028
BC12/B005

AUTHORS Nekrasov, B. M., Manchinskiy, L. U., Lib: S. G.
TITLE Standardization of Electrodes for Contact Spot-welding
Apparatus

PERIODICAL Standartizatsiya, 1960 No. 6 pp. 19 - 23

TEXT: At present, every enterprise is producing electrodes according to its own drawings. In order to centralize production, the Vsesoyuznyy nauchno-issledovatel'skiy institut elektrosvarochnogo obrudovaniya (All-Union Scientific Research Institute of Electric Welding Apparatus, abbreviated: VNIIESO) selected an efficient design, and published the tentative standard "Straight Electrodes for Electric Contact Spot-welding Apparatus Construction and Exact Dimensions". Six types of forms (Fig. 1) are intended for the working part. Table p. 20 gives a classification of electrode types with respect to their fields of application. Fig. 2 shows the change in the total number of spots in dependence on the length of the active part of electrodes. The service life of the electrode increases with the reduction of the working part. Figs 3 and 4

Card 1/3

Standardization of Electrodes for Contact Spot- S/028/60/000/06.06/005
welding Apparatus B012/B005

show the dependence of the service life and cost of the electrode on its length. On the basis of investigations carried out by the VNIIESC and data of domestic enterprises and organizations as well as the Mezhdunarodnaya organizatsiya po standartizatsii (International Organization of Standardization), the following values were specified in the tentative standard: for electrodes of the types 1, 2, 5: D 12, 16 mm-h = 12 mm; D 20, 25 mm-h = 18, 20 mm; D 32, 40 mm-h = 22 mm; for electrodes of the types 3, 4, 5: D 12, 16 mm-h = 15 mm; D 20, 25 mm-h = 20 mm (D = outer diameter of electrodes, h = working part of the electrodes). It was found that the reinforcement necessary for taking the electrode out of its holder depends on the conical shape. Fig. 5 shows the results of a comparative examination of electrodes made of various materials. On the basis of investigations, the tentative standard provides the following materials: Chromium bronze of the type Br Kh C.7 (Br Kh C.7) for welding low carbon, alloyed stainless and refractory steel types; cadmium copper of the type MK (MK) for welding light alloys, low carbon and low-alloy steel types; chromium cadmium alloy of the type Mts-56 (Mts-56) for welding light alloys, carbon, and alloyed steel types; nickel silicon brass of the type Yts-2 (Yts-2) for welding

Card 1/7

Standardization of electrodes for Contact Welding Apparatus

5/21/60 10/16/60
3012/3005

stainless, refractory steel types. If the types mentioned are not available, copper of the type 1-1 (M 1) may be used. At the same time the VNIIEZO worked out a project of technical conditions for electrode materials with higher requirements. These requirements also specify the tolerances of chemical composition. The standardization of electrode materials will facilitate a centralized production of alloys and electrode materials. This will raise the quality of contact welding, and save nonferrous metals. The "Elektrik" and "Krasnyy vyborzheta" Works are also mentioned. There are 5 figures and 1 table.

Part 1/2

NEKRASOV, B.M.; MIRKIN, A.M.; FAYGENBAUM, D.S.; SHCHETANOV, D.T.

Automatic line for the assembly and welding of standard troughs
for the SKR-11 scraper-conveyers. Avtom.svar. 14 no.7:71-78 JI '61.
(MIRA 14:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrosvarochnogo
oborudovaniya.
(Conveying machinery—Welding) (Welding—Equipment and supplies)

24790

S/125/61/000/08 008/0.4
D053/D111

1 2400

AUTHORS: Nekrasov, B.M., Khazov, V.Ya.; Alekseyev, B.D., and Fridlyand, M.G. (Leningrad)

TITLE: Welding and brazing of chromium bronze

PERIODICAL: Avtomaticheskaya svarka, no. 8, 1961, 70-75

TEXT: Several welding and brazing processes were investigated to find out the most suitable process for joining Br. X 0.5 (Br. Kh0.5) bronze, and also for joining this bronze with copper, particularly M1 (M1) copper. The Br. Kh0.5 bronze, containing 0.5 to 0.8% Cr, up to 0.003% Pb and 0.02 to 0.06% Fe, is used for busses in electrical equipment because of its high mechanical strength and a sufficiently good electrical conductivity ($\gamma = 45$ to 50 m/ohm · sq mm). Its tensile strength (σ_t) is 42 to 48 kg/sq mm; Brinell hardness (H_B) - 100 to 110 kg/sq mm; yield strength (σ_y) - 35 to 38 kg/sq mm; and the elongation (δ) is 12 to 17%. The H_B can be increased to 115 - 130 kg/sq mm by cold-hardening. The investigation was carried out jointly by the VNIIESO and a machine building plant. [Abstracter's note: the plant

Card 1/3

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D051/D111

Welding and brazing...

is not identified]. The following processes were tested: (1) brazing and gas welding with an oxyacetylene flame, (2) arc welding with a carbon electrode; (3) a-c and d-c argon-arc welding with a non-consumable electrode; (4) flash butt welding; and (5) friction welding (for purposes of comparison). The minimum requirements for weld joints were σ_t not less than 45 kg/sq mm

and γ not less than 45 m/ohm · sq mm. These requirements were fulfilled by using (a) an oxyacetylene flame and a ПСр-45 (PSr-45) filler metal for brazing the bronze with copper and (b) using flash butt welding for bronze to bronze joints. The ultimate strength of the weld joints thus obtained attained 90 to 100% of the parent metal strength. The flash butt welding of busses made of Br. Kh0.5 bronze was done on an МСШ-300 (MSL-10) welder designed by the zavod "Elektrik" ("Elektrik" Plant). This welder is fitted with a pneumohydraulic drive, pneumohydraulic clamps, and a 400-KVA transformer with a 380-V primary winding. The following optimum process parameters have been found for welding bronze busses, 60 x 6 mm in cross-sectional area, on this welder: (1) secondary voltage of the welding transformer - 5.28 V; (2) power during fusion - 50 to 55 KVA; (3) power factor during fusion - 0.8; (4) power during upsetting - 250 KVA; (5) power factor

Card 2/3

2,780

S/125 61 010 04 108 014
D051/D.11

Welding and brazing...

during upsetting - 0.35; (6) welding current during upset - 10,500 to 10,500 A; (7) welding current during upsetting - 47,000 A; (8) upsetting force - 18,000 to 20,000 kg; (9) die-clamping pressure - 45,000 to 50,000 kg; (10) rate of fusion prior to upsetting - 14.4 mm/sec; (11) upsetting speed - 200 mm/sec; (12) fusion period - 5.5 sec; (13) duration of upsetting under current - 0.1 to 0.12 sec; (14) total setting length - 43 mm; (15) fused length - 20 mm; and (16) upset length - 10 mm. The ultimate tensile strength of the weld joints was 49 to 46 kg/sq mm, and the electrical conductivity 45 m/ohm · sq mm. There are 4 figures and 1 table.

ASSOCIATION: VNIIESO (Nekrasov, B.M. and Khazov, V.Ya.)

SUBMITTED: January 16, 1961

Card 3/3

AKSEL'ROD, F.A., inzh.; ZAYTSEV, M.P., kand. tekhn. nauk; ZLOBIN,
G.I., inzh.; KOCHERGIN, K.A., kand. tekhn. nauk; NEKLASOV,
B.M., inzh.; SLICZBENG, S.K., nauchnyy red.; DOLBIC, A.V.,
nauchnyy red.; DEMYANTSEVICH, V.P., nauchnyy red.; SARAFANOV,
S.G., nauchnyy red.; BONDAROVSKAYA, G.V., red.; IOGINKINA,
L.A., tekhn. red.; FERSON, M.N., tekhn. red.

[Resistance welding] Kontaknaya svarka. [By] F.A. Aksel'rod i
dr. Moskva, Proftekhizdat, 1962. 463 p. (MIRA 14:12)
(Electric welding)

43200
S/125/62/000/012/003/004
A006/A101

AUTHORS: Nekrasov, B. M., Libo, S. O.

TITLE: Optimum length of the operational section of electrodes for electric spot-resistance welding

PERIODICAL: Avtomaticheskaya svarka, no. 12, 1962, 73-76

TEXT: The investigation was made with electrodes 16 and 20 mm in diameter. The basic criterion of durability was the number of spots welded with the electrodes until regular regrinding and full wear. Changes in the diameter of the operational surface were measured every 200 spot welds from imprints on the plates. When the diameter had increased to extremal values the electrodes were reground; subsequently the length and weight of the electrodes were measured. Diagrammed data show the dependence of the electrode durability on the operational section length. The total number of spots welded with the electrodes until their full wear increases with a longer operational section; the durability of electrodes between two regrinding processes increases with a shorter operational section. To determine the optimum length of this section the following

Card 1/3

Optimum length of the...

factors were determined: the total number of spots per 1 g weight of the electrode, welded until its full wear; the cost of electrodes required to weld 1 million spots. The optimum length was found to be 12 mm for electrodes of 10 mm in diameter and 20 mm for 25 mm diameter. Table 4 shows the required length for electrodes of different diameters. There are 4 figures and 4 tables.

ASSOCIATION: VNIIESO

SUBMITTED: April 7, 1962

Card 2/3

NEKRASOV, B.M., inzh.; ZLOBIN, G.I., inzh.; RUSAKOV, Yu.A., inzh.

Using the MPR-100 machine for brazing short-circuited rotors of asynchronous electric motors. Svar.proizv. no.10:39-40 0 '64. (MIRA 18:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrosvarochnogo oborudovaniya.

NEKFIASOV, B.M.; ZLOBIN, G.I.

Resistance seam welding of copper screens and foil. Avtom.
svar. 18 no.4:64-66 Ap '65. (MIRA 18:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrosvarochnogo
oborudovaniya.

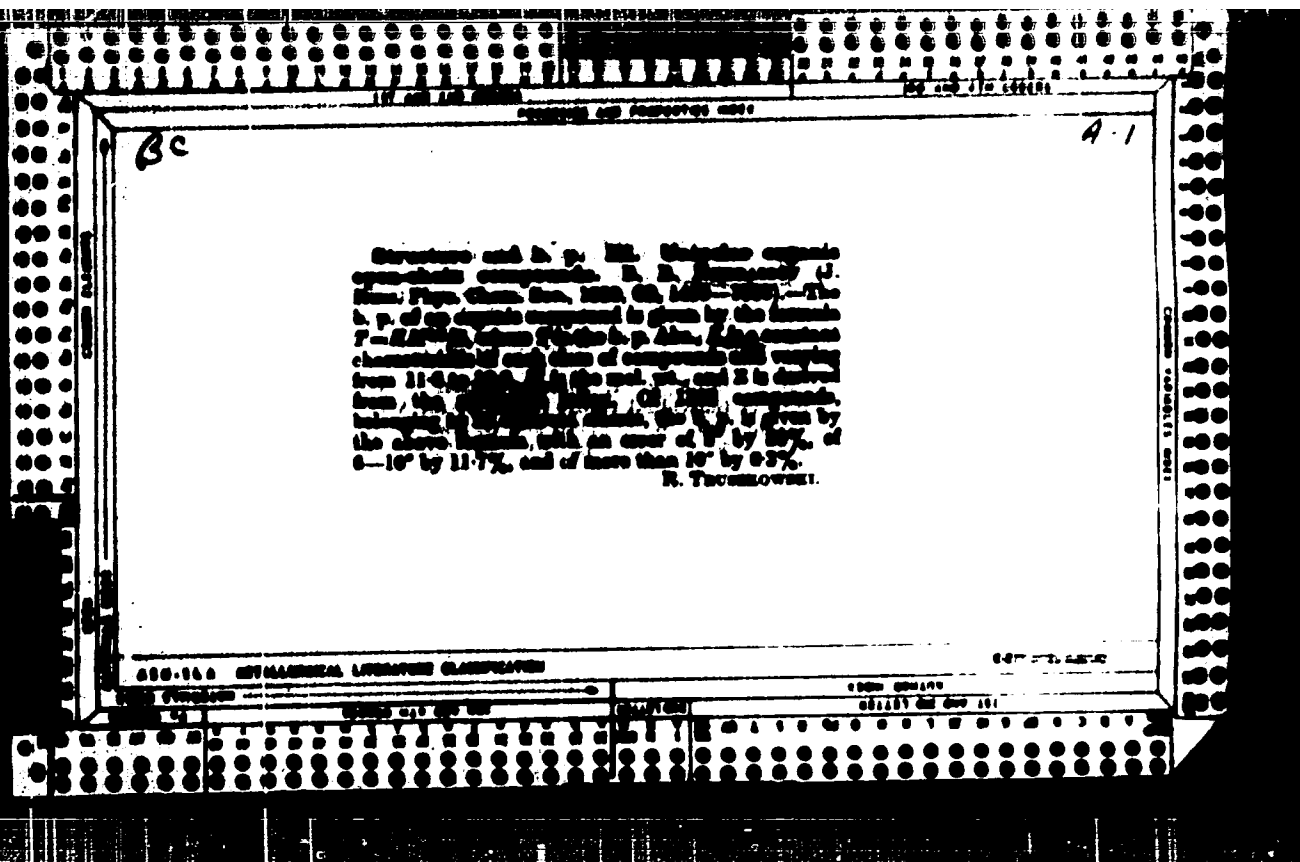
NEKRASOV, B.P.

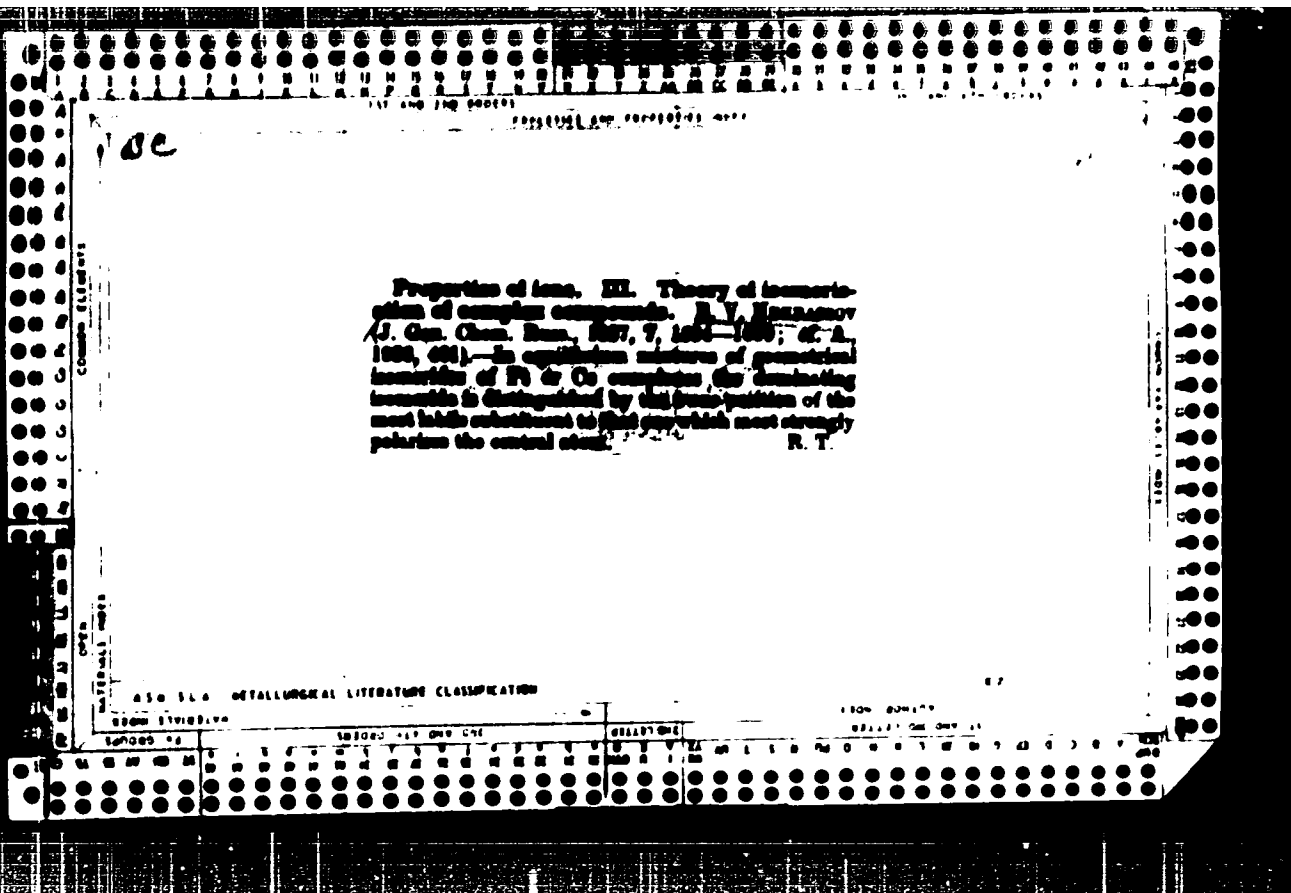
Metasomatic alkali amphiboles in the talc-carbonate rocks of
ultrabasic massif in the Central Urals. Min.syr'ie no.3:82-90 '69.
(MIRA 17:9)

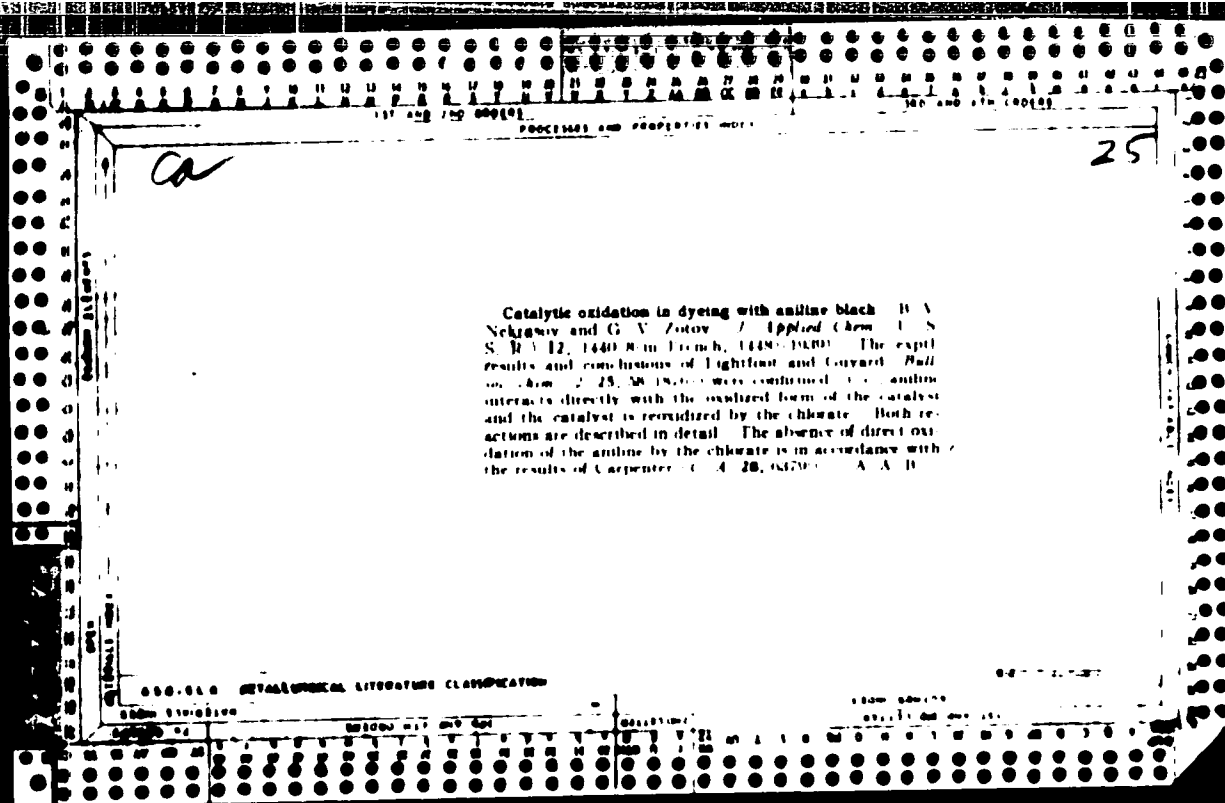
NEKRASOV, B.V.

Some structural characteristics of the tongue and the hyoid
apparatus in finches. Trudy Zool. inst. 29:213-226 '61.
(MIRA 14:6)

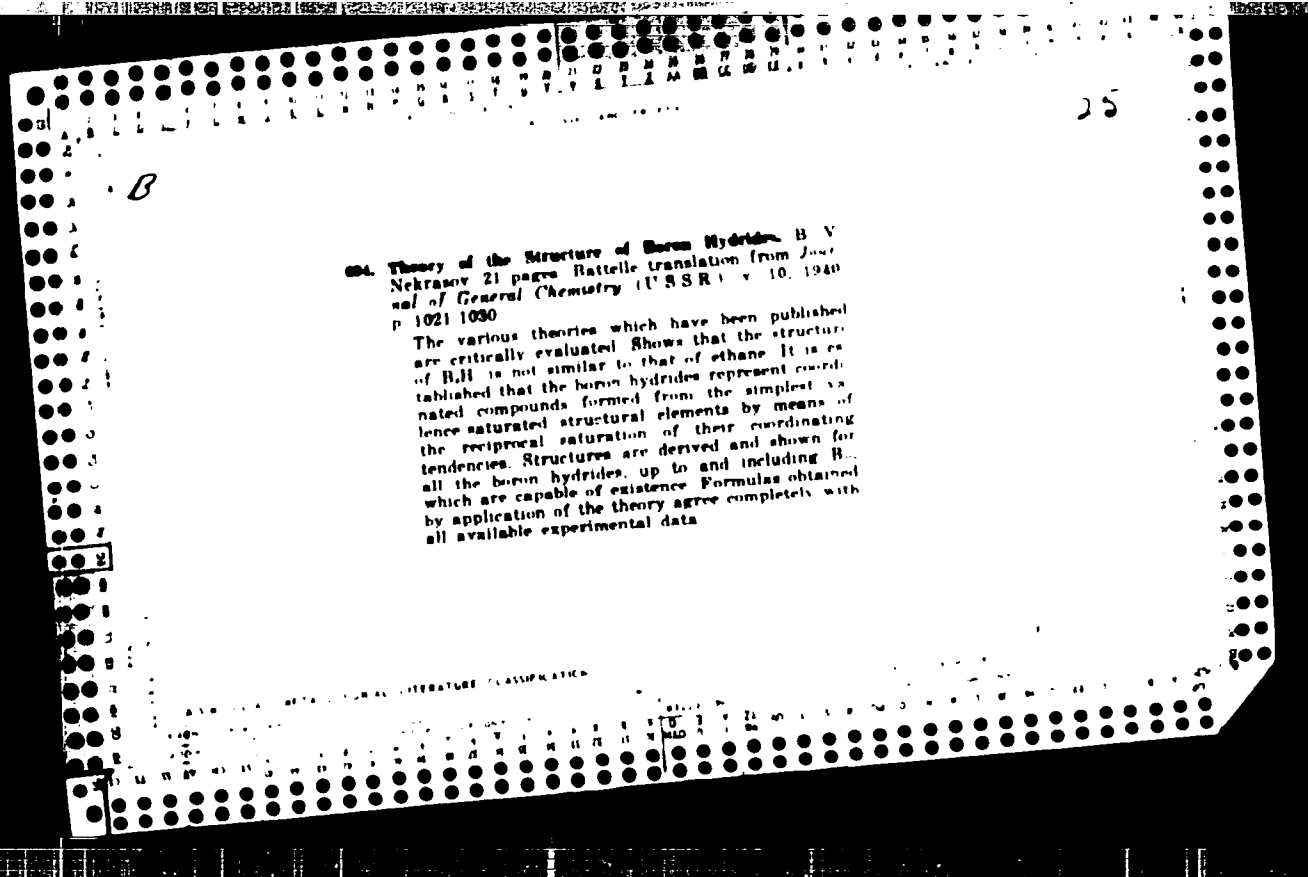
(Finches) (Tongue)







Catalytic oxidation in dyeing with aniline black B. V. Nekrasov and G. V. Zotov / *Applied Chem.* U.S.S.R. 12, 1440 (in French, 1440-1443). The exptl results and conclusions of Lightfoot and Guyard *Bull. Soc. Chim.* 25, 1818, 1819 were confirmed. Aniline interacts directly with the oxidized form of the catalyst and the catalyst is reoxidized by the chlorate. Both reactions are described in detail. The absence of direct oxidation of the aniline by the chlorate is in accordance with the results of Carpenter *J. C. A.* 20, 6470 (1954) A. A. B.



B

695. Coordination Structures and Chemical Properties of Boron Hydrides. B. V. Nekrasov. 20 pages. Battelle translation from *Journal of General Chemistry* (U.S.S.R.), v 10, 1940, p 1156-1164.

The various chemical reactions of the boron hydrides are discussed extensively and shown to agree with the coordination structure theory presented by the same author in a previous paper. (See above abstract.)

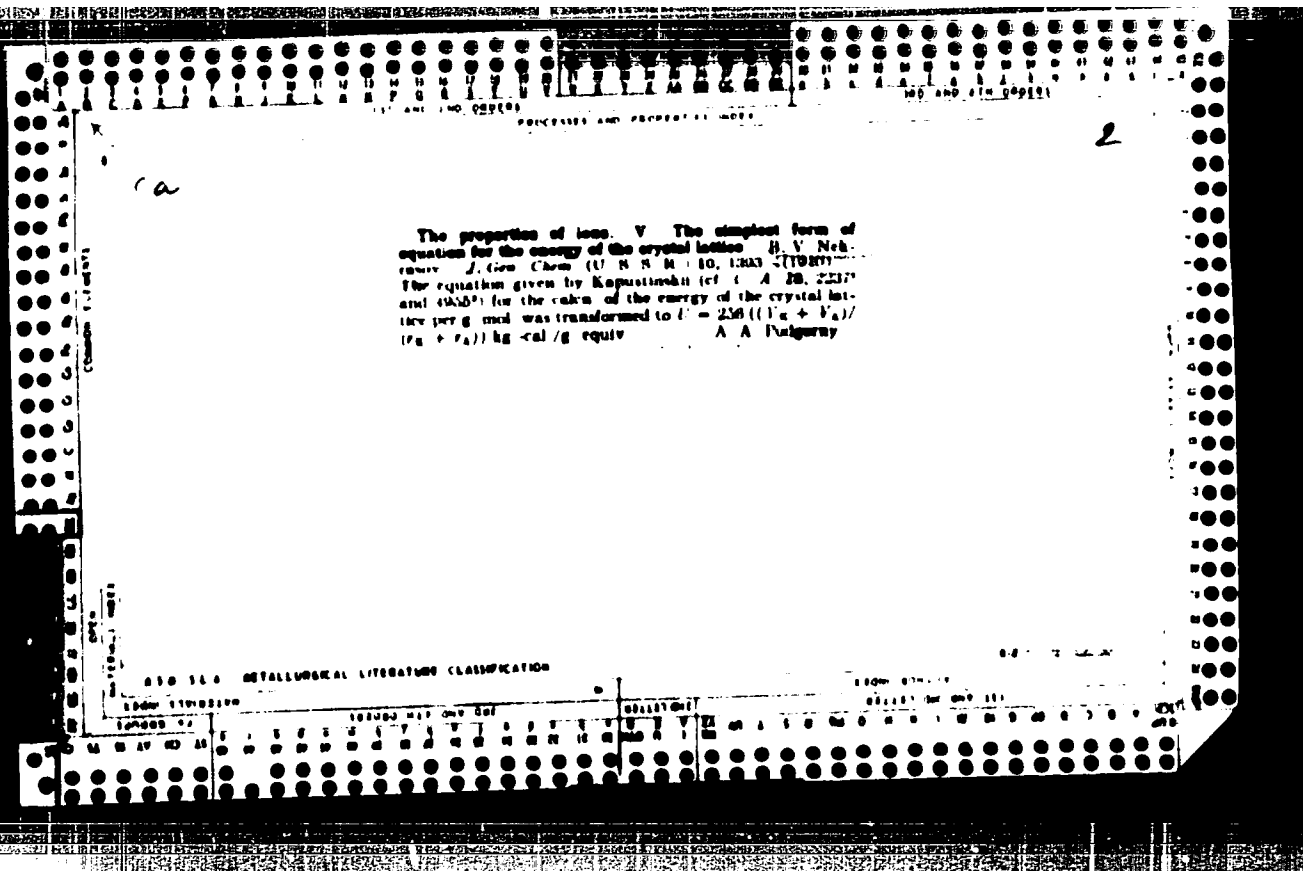
A. P. S.

Chemistry + Physics

Properties of ions: IV, ionic radii and exchange reactions of alkali halides. B. V. Novozhenov and D. A. Bockman. *Zhur. Obshch. Khim.*, 35 (15) 1283-84 (1962); *Chem. Refers. Zhur.*, 6 (4) 11 (1961).—The process of the exchange decomposition of binary salts in solutions is discussed. As a first approximation the authors compare the exchange forces involved. The ionic radii are taken as parameters determining the direction of the reaction. The authors show that exchange reactions in fused alkali halides give rise to ions formed from ions having the smallest radii on the one hand and ions made of ions with the largest radii on the other. V. Simplest formula for comparing the energy of crystalline lattices. B. V. Novozhenov. *Zhur. Obshch. Khim.*, 36 (15) 1283-84 (1963); *Chem. Refers. Zhur.*, 6 (4) 11-12 (1961).—M. transforms the A. F. Kapustin's equation ("Theory . . ." *Corum. Abs.*, 15 (6) 168 (1955)) for the energy of a crystalline lattice so that it gives the energy per gram-equivalent of the substance. The equation reads:

$$L' = 200 \frac{V_+ + V_-}{r_+ + r_-} \text{ cal / gm-equiv.}$$

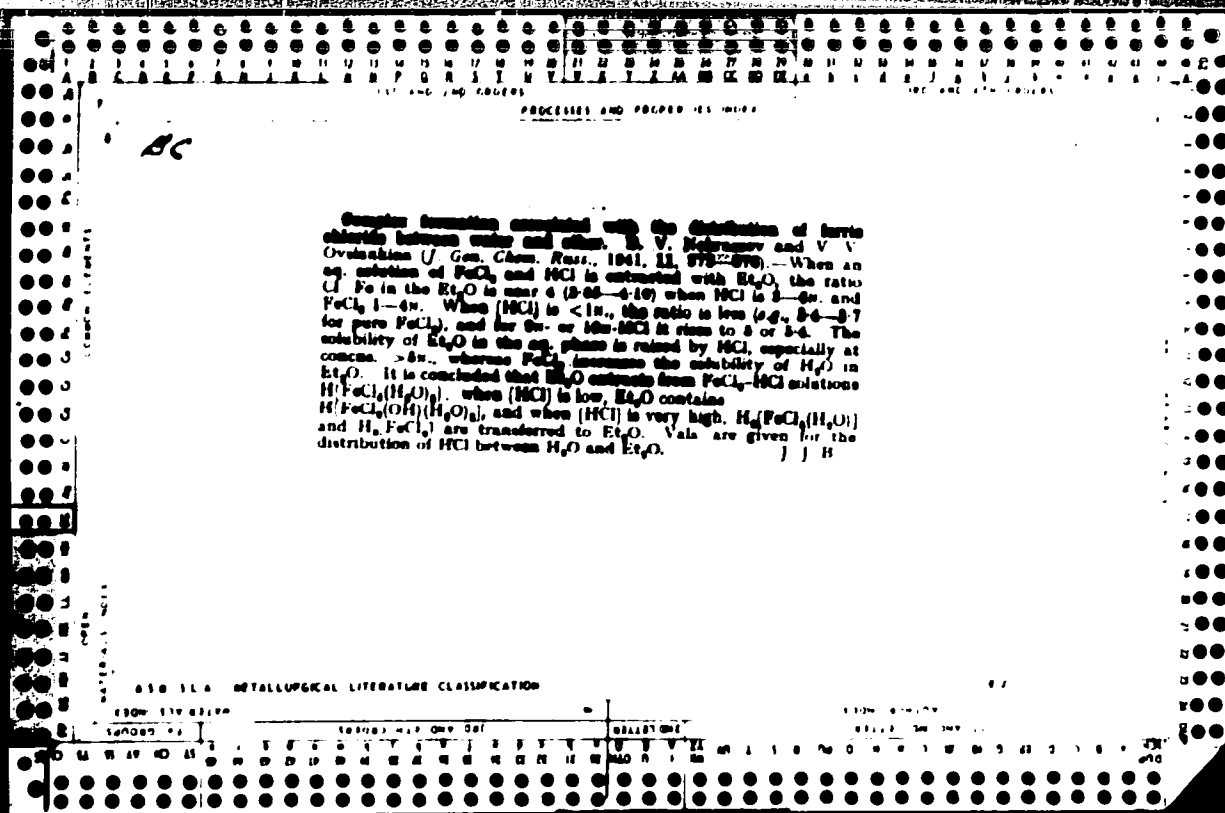
where V_+ and V_- are the valences of the cation and anion, respectively, and r_+ and r_- are the respective radii according to Goldschmidt. M. No.

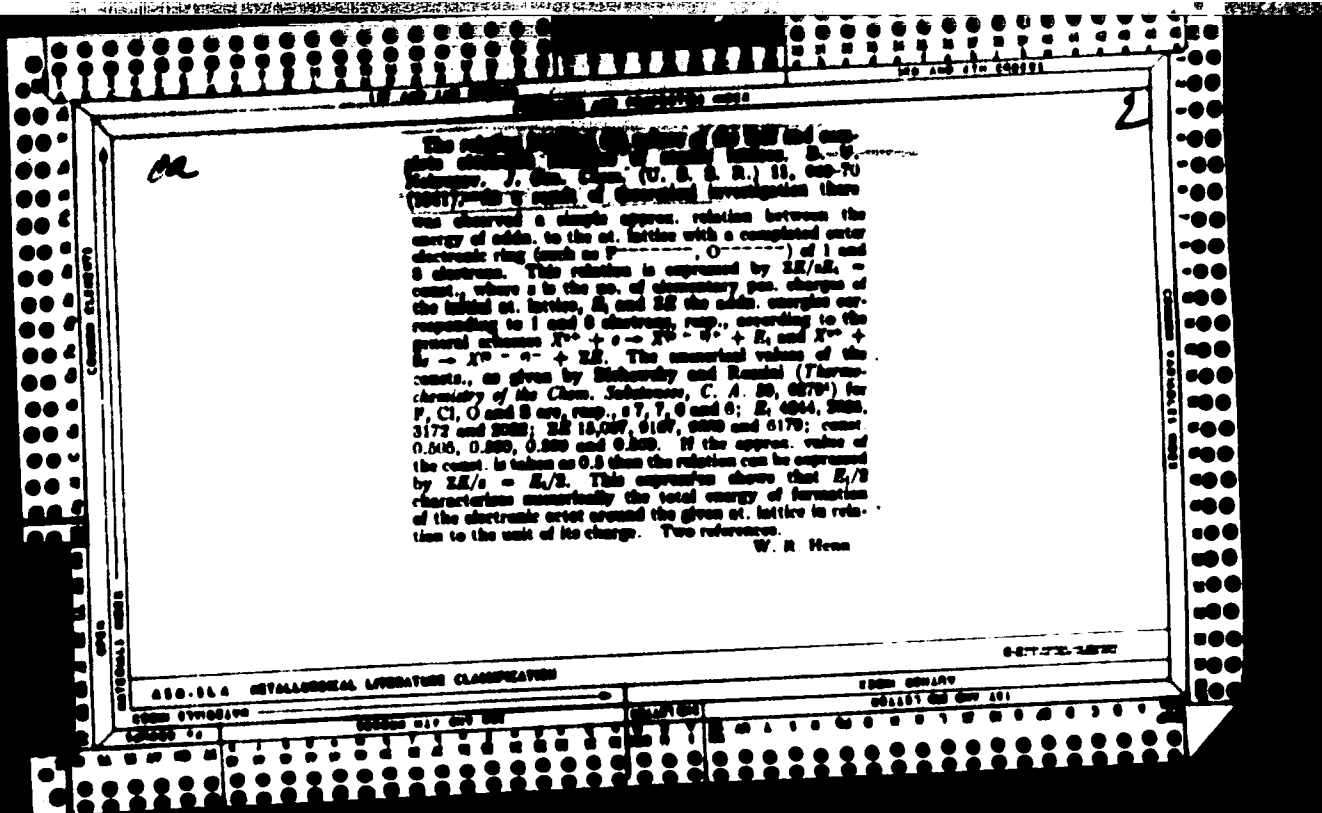


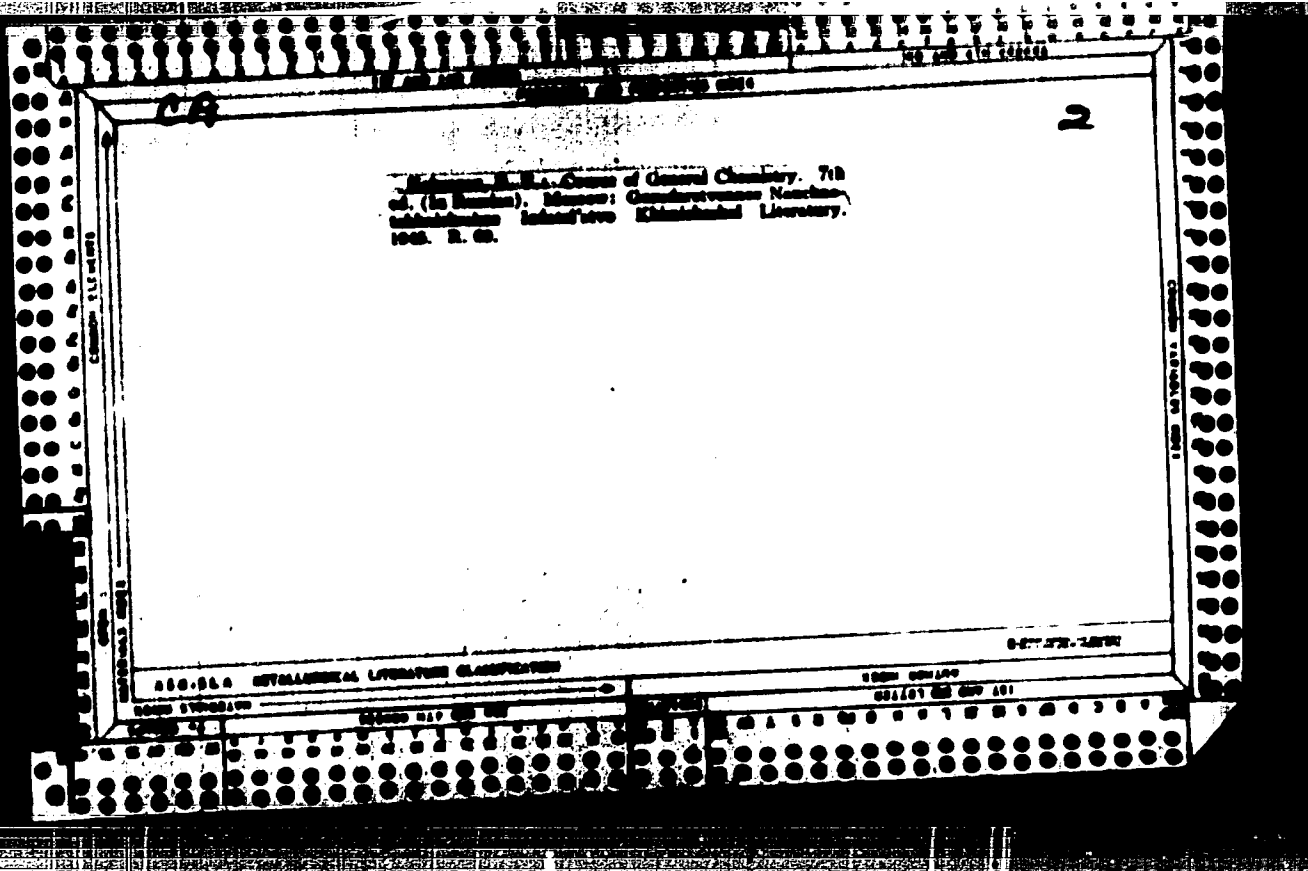
The polysubstituted salts and the structure of heteropoly acids. W. V. Nekrasov, *Zh. Obshch. Khim.* (U. S. S. R.), **11**, 373-8 (1941). N. discusses and analyzes the exper. results of Nikitina (c. A. **33**, 2615⁷) for the prepn. of poly-substituted Na salts of phosphomolybdic and phosphotungstic acids whose derivs. contain up to 7 and 11 atoms of Na for each atom of P, resp. The exper. results support indirectly the x-ray-crystallographic data of the structure of the heteropoly acids, each successive degree of the substitution was obtained by the reaction of the preceding substituted compd with a calcd amt of NaOH. The salts of all salts obtained including the 11-substituted salt of phosphomolybdic acid have an acid reaction. An attempt to introduce the 12th atom of Na produced a complete decompn of the heteropoly anion, the salt acquiring a basic reaction. One of the several possible formulas for phosphomolybdic acid corresponding to the 11-substituted Na salt is $H_{11}P(MoO_4)_6(MoO_3)_2$. But if the anion is regarded as a unit it would produce a basic reaction from hydrolysis, this is contrary to the exper. results. The formula of Keggin (c. A. **20**, 2248⁹, 2000), $H_{11}P(MoO_4)_6$, is more probable. The decompn of the phosphomolybdic anion by base takes place according to $OH^- + MoO_3 \rightarrow H_2MoO_4 \rightarrow H^+ + MoO_4^{2-}$. An excess of base produces immediately a complete decompn of the heteropoly compd. By using Keggin's formula for the 11-substituted phosphomolybdate the substitution can be expressed

by the following equation: $Na_7P(MoO_4)_6(MoO_3)_2 + 4NaOH \rightarrow Na_{11}P(MoO_4)_6 + 2Na_2O + 2MoO_3 + 2NaHMoO_4$, i. e., a gradual decompn of the heteropoly anion takes place instead of the formation of the poly-substituted salts. The products of the reaction always contain some acid Na molybdate. During the reaction such products are formed simultaneously in the form of a double compd: $Na_7P(MoO_4)_6(MoO_3)_2 + 2Na_2O + 2MoO_3 + 2NaHMoO_4$, plus water. For the 11-substituted form of the salt the formula $Na_7P(MoO_4)_6 \cdot 8NaHMoO_4$ is proposed. Since the introduction of the 12th substitution mol. leads to the complete decompn of the heteropoly anion, it is concluded that the compd is stable only in the presence of a mol. of MoO_3 ; similarly, it is expected that for $H_{11}P(MoO_4)_6 \cdot 8NaHMoO_4$ the decompn takes place at a 1:1 molar ratio of 1 mol. of the 12th mol. of NaOH. The polysubstituted salts must be regarded as double compds of the heteropoly salts with the ordinary salt of that acid whose anion is included in the heteropoly anion. Four references. (W. R. Hines)

ASD 354 METALLOXIDE LITERATURE CLASSIFICATION







NEKRASOV, B. V.

The nature of the information is classified
as Secret because it contains information
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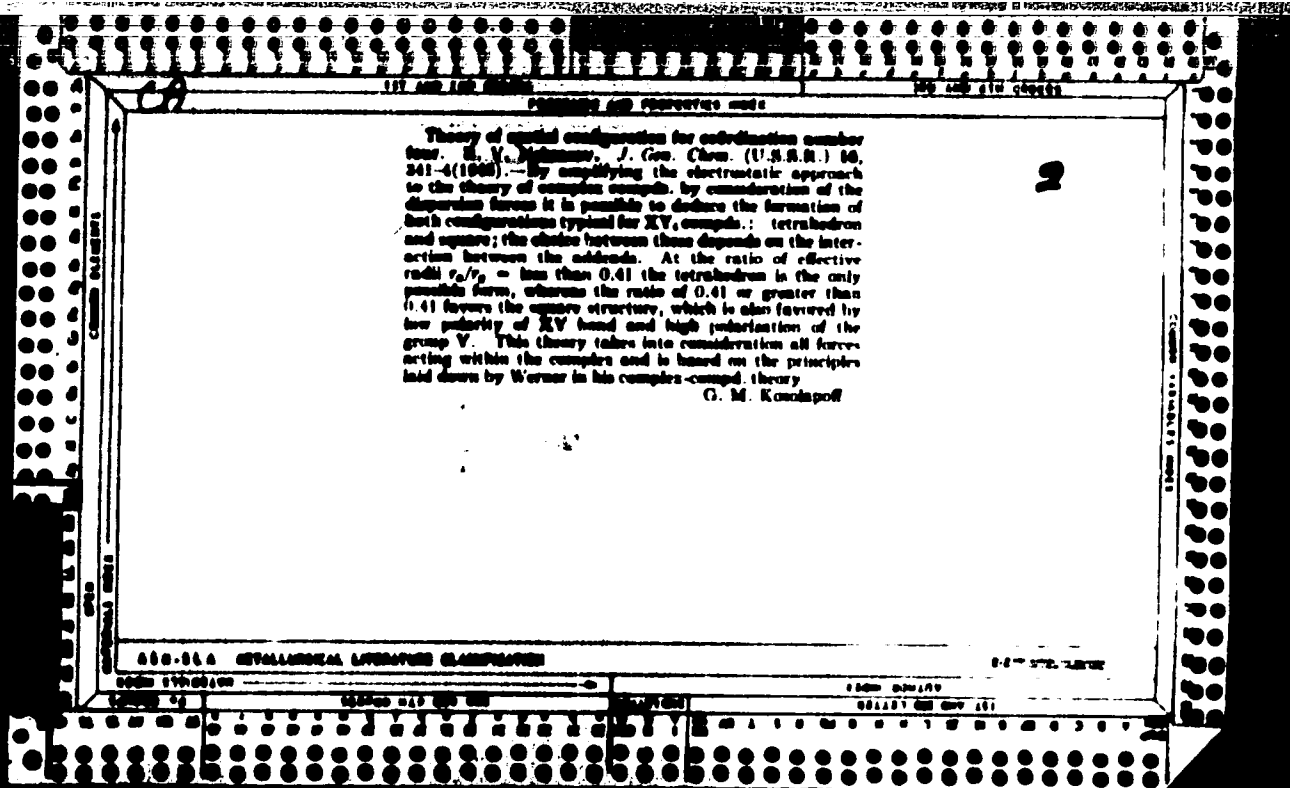
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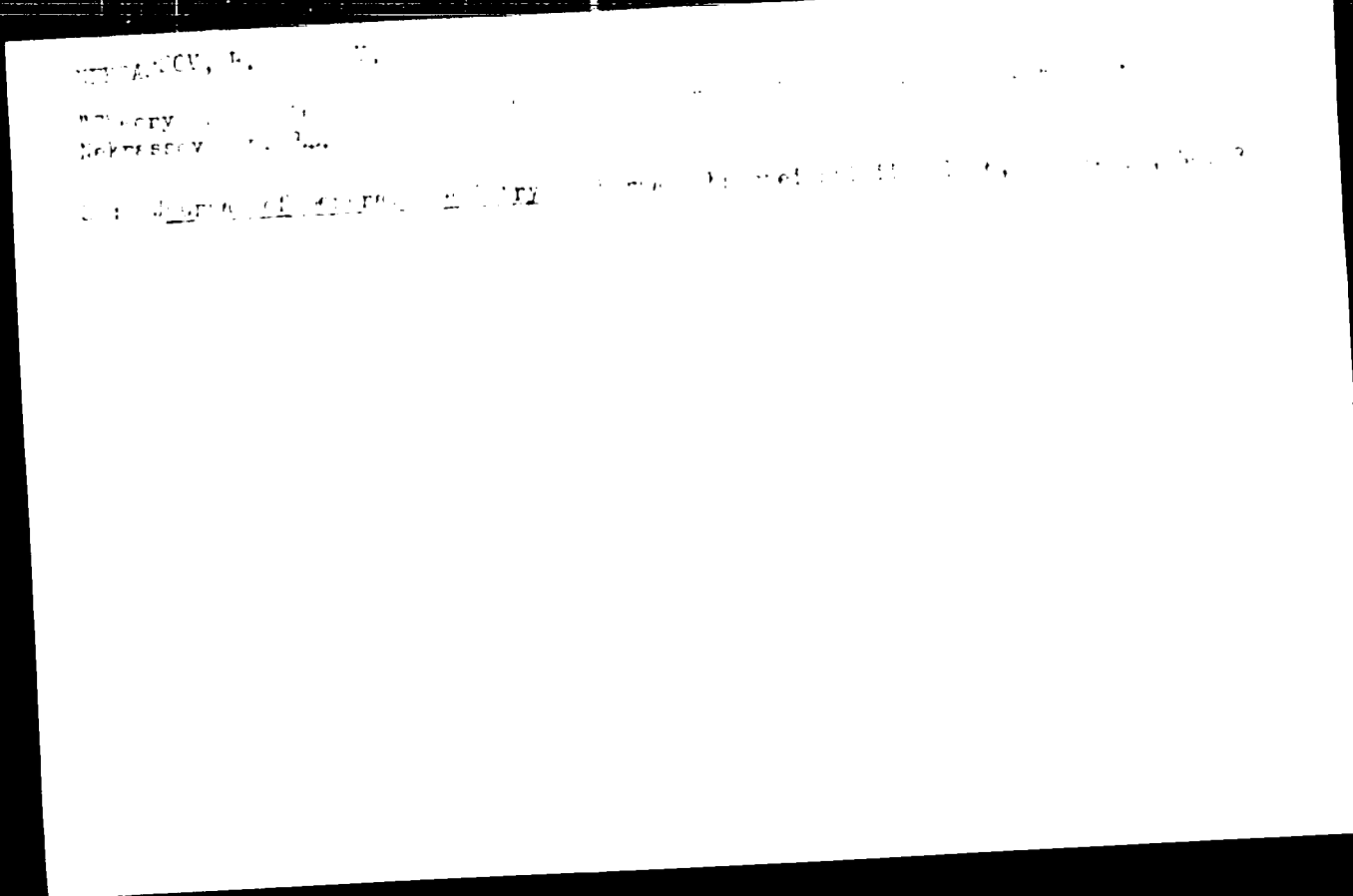
12-2

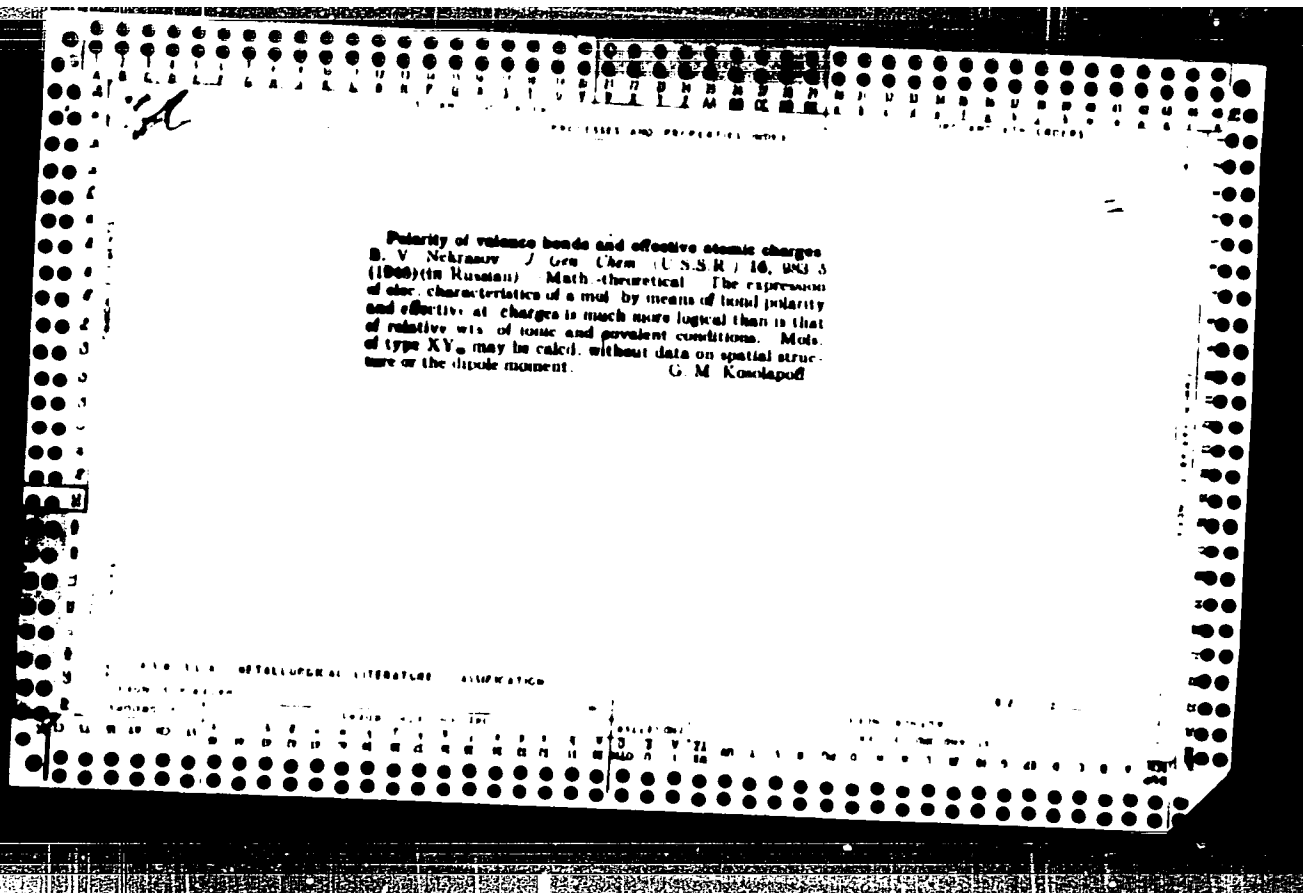
Nuclear distances and bond multiplicity. H. V. Nekrasov (*Usp. Akad. Nauk SSSR*, 1965, 17, 19). The quantitative relation between the bond multiplicity (ρ) and the nuclear distance (d) determined experimentally is given by $\rho = (d_{11}/d)^{2n-1}$, where n is the principal quantum no. of an element, and d_{11} is the internuclear distance for a single covalent bond. Vals. calc. from the equation in the cases of C, P, S, and Se are in good agreement with theory. By substituting $d_{11} = r_A + r_B$, where r_A and r_B are the corresponding radii of atoms A and B forming a covalent bond and writing the exponent of the equation in the form $(2n-1) = (2n-1)$, the equation becomes $\rho_{AB} = [(r_A + r_B)/d_{AB}]^{2n-1}$.

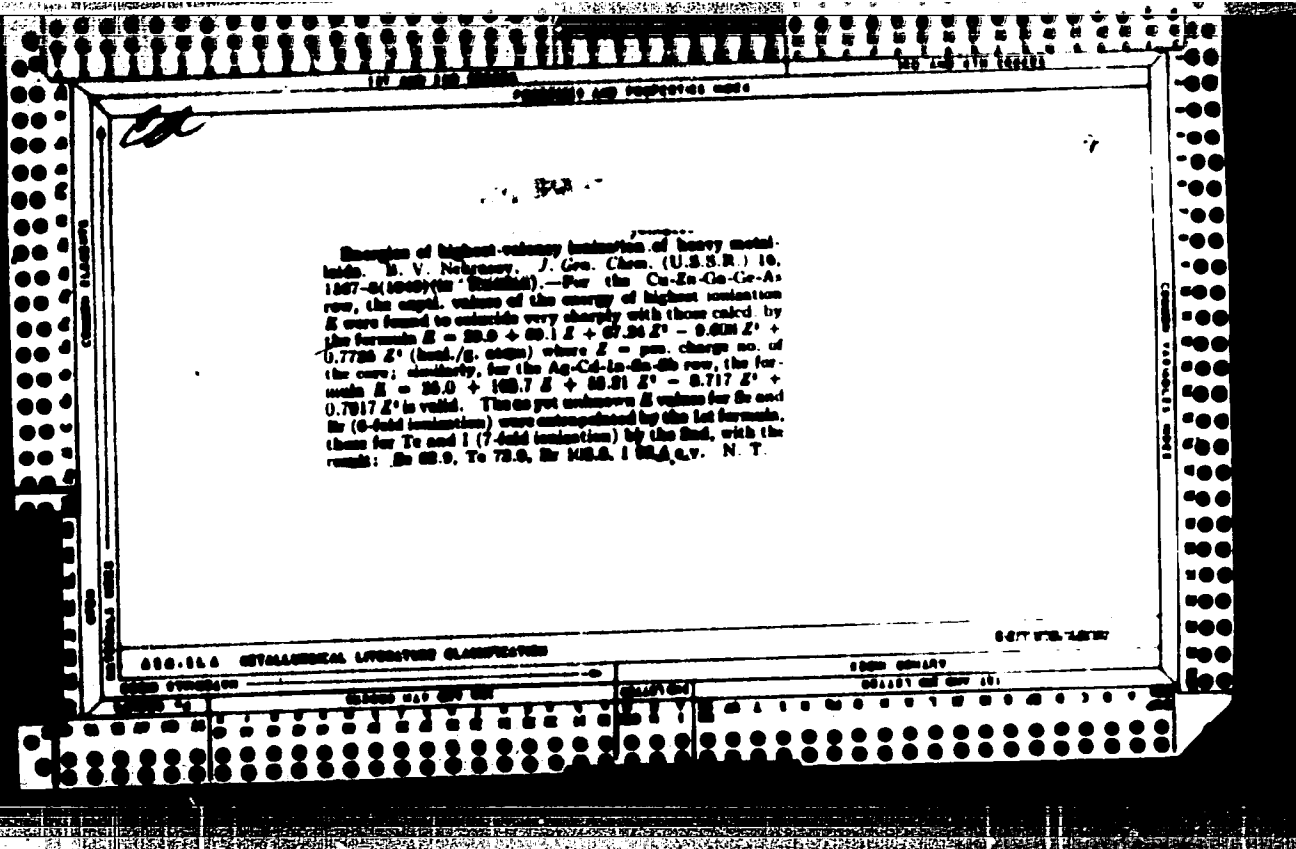
S. H. R.

ASO 114 DETAILORIAL LITERATURE CLASSIFICATION









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Handwritten number '3' in the top right corner.

Common elements

Metals

Electroaffinity of chemical elements B. V. Nekrasov

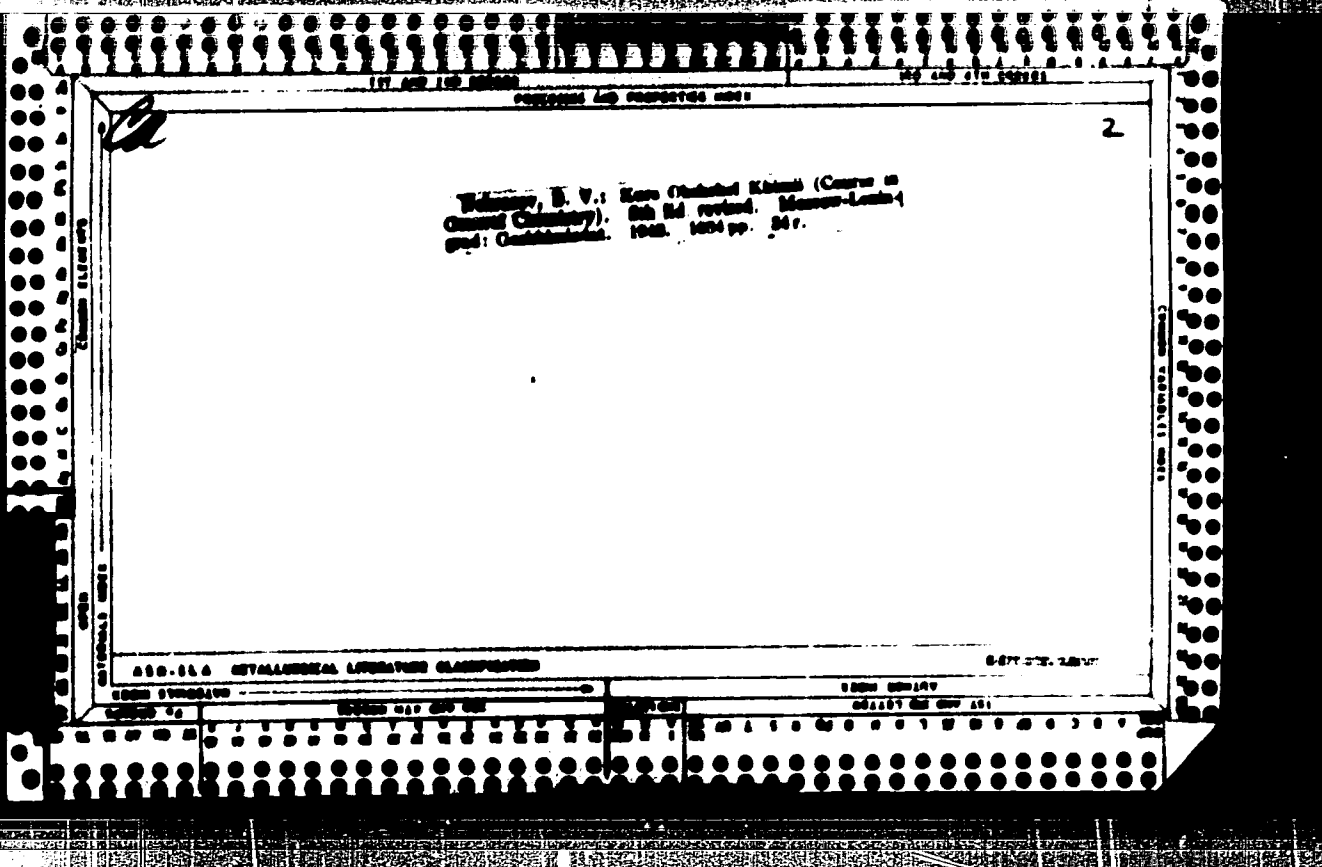
Zh. Chim. U.S.S.R. (16, 1707, 1957) (1040) (in Russian)

The "electroaffinity constant" χ of an element is defined as the work of adding of the 1st s -electron to the completed electron shell core, and the values are tabulated. The "electroaffinity" E of a core, without free electrons, around which a identical atoms have been coordinated, is $E = \chi \cdot n$. In the case of simultaneous presence around the core of a identical atoms and s -free valence-shell electrons, the semi-empirical electroaffinity equation is $E = [N(\alpha + \epsilon)] / (\epsilon + 2)$ ($\epsilon \neq 0$) valid for the valence electrons all paired. Tabulation of the E values in a scale analogous to Pauling's electronegativity scale shows, particularly when both scales are referred to $H = 1.0$, close coincidence of the figures, with marked discrepancies occurring only for the most electroneg. elements N, O, F.

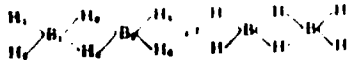
The correctness of the E values calculated for the latter can be tested by calcg. the dipole moments μ of molecules of the type XY_n from structural data. It follows from the very definition of E that the electron cloud of a covalent bond will be distributed between the two atoms in the ratio of their resp. E_X values. The fraction of the total electron cloud developing to one X , is thus $N_X = \epsilon E_X / (E_X + E_Y)$, where $\epsilon = no.$ of electrons forming one bond, the effective charge of X and of N are $q_X = (n/2) \cdot N_X$ and $q_Y = -n \cdot X_N$, resp. in units of the elementary charge; the calcd. μ (in Debye units) is $\mu = 4.803 / d_{XY}$, where d = distance between the nucleus of X and the center of

gravity of the Y atoms. For HCl and NH_3 , μ calcd. = 1.92 and 1.19, resp., as against the expl. 1.87 and 1.47 for HCl (measured), μ calcd. = 1.17, no reliable expl. figure being available for comparison other than the uncertain 1.68 extrapolated from HCl . While for KCl , HCl , HCl , KCl , KBr , KI , CaF_2 agreement is from satisfactory to very good, μ calcd. is much too low for HBr and particularly for HI , evidently owing to penetration of H^+ into the electron cloud of the anion; this effect is significant with 18-electron cores, as illustrated by the far greater discrepancy in the case of AsH_3 (0.51 against expl. 0.17) than for PH_3 (0.61 against 0.51), and can be eliminated by adoption of one single $E_H = 1.0$ for all 18 shells. The correctness of the electroaffinity equation is illustrated by the variation of E of a given element with n and ϵ , as illustrated on H_2S , SO_2 and SO_3 for which the correct μ are calcd. with $E_S = 40, 100, 66.4$ resp. In the case of an unpaired electron, as in NO , the energy of a single electron is 1/2 that of E , with the correction one double for the triple bond, $\mu = 0.15$ against 0.18 for NO , $\mu = 0.10$ against 0.18.

ADD 11.6 METALLURGICAL LITERATURE CLASSIFICATION

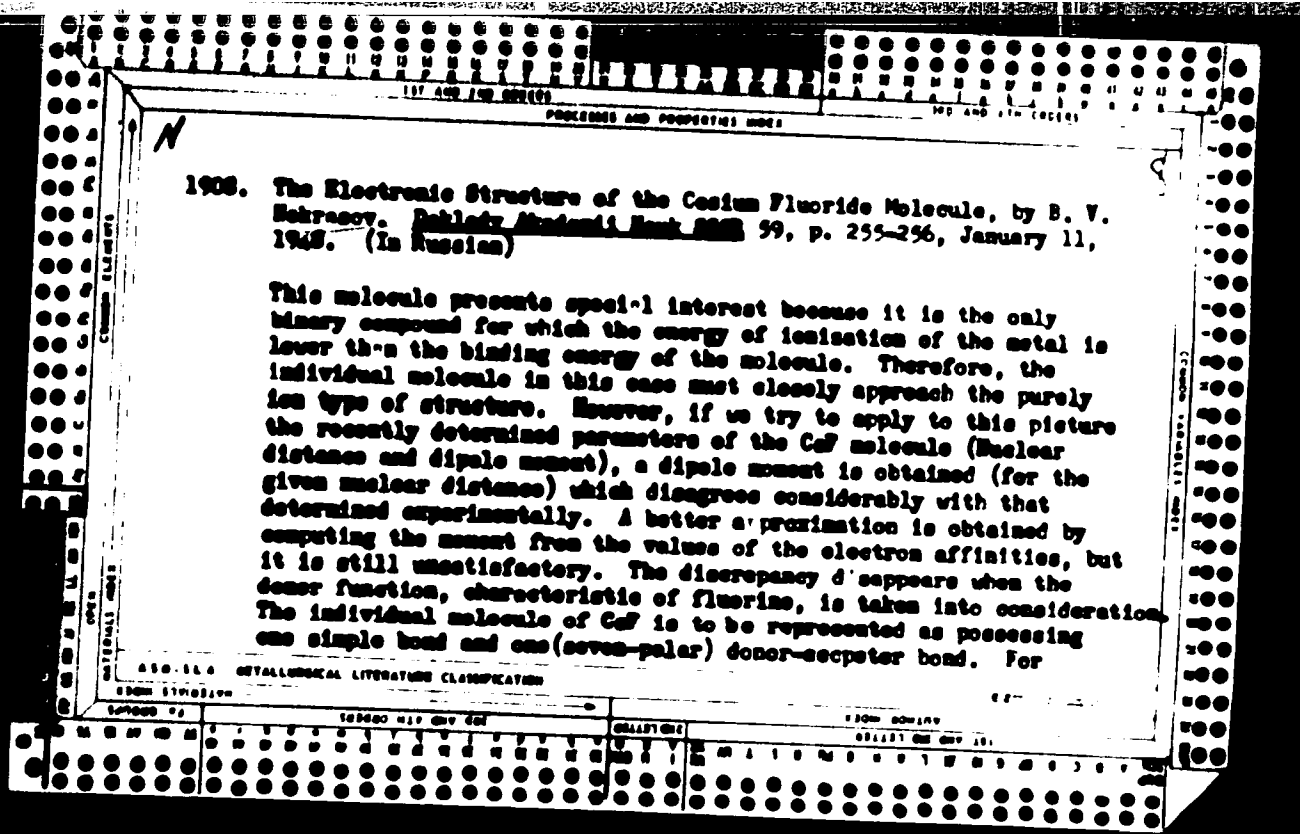


Spatial structure of diborane H₂ Nekrasov and V. V. Shitov. *Zhur (Abstr. Chem.) Gen. Chem.* 10, 822-4 (1948) - The exact electron diffraction intensities for H₂ of Bauer (C. A. 30, 642P) are in acceptable agreement (except for minor discrepancies) with a "bridge" model



with the parameters B₁-B₂ = 1.70 Å, H₁-H₁ = 1.18 Å, B₁-H₁ = 1.37 Å, < H₁B₁H₂ = 122.5° and > H₁B₁H₂ = 98°. The agreement is distinctly impaired if the value of any one of the linear parameters is changed by ±0.01 Å, or if an angle is changed by ±1°. The molecule can be described by 2 regular tetrahedrons formed by the H nuclei, with a common edge (H-H = 2.07 Å), and B nuclei shifted outward by 0.16 Å from the corresponding coordination centers. This model is in better agreement with the observed intensities than those based on the parameters of Bauer in of Dyatkina and Syrkin (*J. Phys. Chem. U.S.S.R.* 17, 2(1943)). The striking feature is that the tetrahedrons are regular, indicating equivalence of all H atoms in the sense of their electronic state. By the chem. properties of H₂ (Schlesinger and Burg, C. A. 30, 642P), it appears likely that both H atoms carry pos. charges and all H atoms neg. charges, as in BH₃.

ASB-51.6 METALLURGICAL LITERATURE CLASSIFICATION



molecules of this type a formula had been suggested by the author which, when applied to the present case, gives for the dipole moment a value $(7.1 \pm 0.5 \text{ D})$ closely agreeing with that found experimentally $(7.3 \pm 0.5 \text{ D})$.

PRIKLONSKIY, S.G.; NEKRASOV, B.V.; SAKHNO, M.V.; SAKHNOVA, L.L.

Comparative characteristics of the ... and ... of ...
(family Corvidae) in some places of the central ...
Trudy OGZ no.4:2-20-209 ...

NEKRASOV, B.V.

~~NEKRASOV, B.V.: Kurs obshchego khimii (Course in
Gen. Chem. 9th ed. Moscow: State Sci. and
Tech. Pub. House Chem. Lit. 1962. 971 pp.
Nesrednaya khimiya (Handbook of Chemistry). Edited~~

MCT

NEKRASOV, B. V.

TREASURE ISLAND BIBLIOGRAPHICAL REPORT

AID 743 - X

PHASE X

Call No.: AF621094

BOOK

Author: NEKRASOV, B. V., Lenin Prize Winner, Corr. Mem., Acad. of Sci., USSR

Full Title: COURSE IN GENERAL CHEMISTRY

Transliterated Title: Kurs obshchey khimii

PUBLISHING DATA

Originating Agency: None

Publishing House: State Publishing House of Chemical Literature

Date: 1953

No. pp.: 971

No. of copies: 25,000

Editorial Staff: None

PURPOSE AND EVALUATION:

This is both a textbook and a handbook intended simultaneously for students and specialists. The material is so arranged that the volume may be used as a handbook not only during the years of training but also in subsequent practical work. For this purpose, the fundamental textbook material is given in heavy print. The additional more extensive and thorough information of importance for chemists specializing in a particular field, is given in small print. The author is a prominent chemist, winner of the Lenin Prize, and known for his theory of the structure of boron hydrides, his investigation of the relation between structure and properties of chemical compounds, etc. (See Great Soviet Encyclopaedia, 1954, v. 29, p. 385). The textbook material in the present book attempts to give the student a thorough understanding of the theory of the subject along with the factual data.

Kurs obshchey khimii

AID 743 - X

	Pages
III Basic Principles of the Inner Structure of Matter	64-103
IV Hydrogen. Water	104-147
V Solutions	148-205
VI Mendeleev's Periodic System	206-227
VII Seventh Group of the Periodic System	228-281
VIII Sixth Group of the Periodic System	282-335
IX Fifth Group of the Periodic System	336-421
X Fourth Group of the Periodic System	422-537
XI Third Group of the Periodic System	538-599
XII Second Group of the Periodic System	600-667
XIII First Group of the Periodic System	668-748
XIV Eighth Group of the Periodic System	749-834
XV Periodic Law as the Base of the Chemical System	835-879
XVI Atomic Nucleus	880-940
Subject Index	941-971

No. of References: None
Facilities: None

3/3

The Committee on State Prizes of the Council of Ministers RSR in the fields of science and inventions announces that the following scientific works, patents, books, and textbooks are being invited for competition for the State Prizes for 1985.

Books

Texts

Patents

1985-1986

NEKRASOV B.V.

NEKRASOV, B.V.; NAGATKIN, I.G. [deceased], redaktor; BARKOV, S.A., redaktor
LORVYE, M.S., tekhnicheskiy redaktor

[Course in general chemistry] Kurs obshchei khimii. Isd. 11., stereotipnoe. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1954. 971 p.
(MLRA 7:9)

1. Chlen-correspondent Akademii nauk SSSR (for Nekrasov)
(Chemistry)

NEKRASOV, B.V.

USSR/Chemistry - Inorganic, Instruction of

Card 1/1 Pub 50-19/19

Author : Nekrasov, B. V., Corr Member Academy Sciences USSR

Title : Book reviews and bibliography

Periodical : Khim. prom., No 2, 127 (63), Mar 1955

Abstract : Reviews Voprosy i Zadachi po Obshchey Khimii [Questions and Problems in General Chemistry] by I. G. Nagatkin, Goskhimizdat, Moscow, 1954, 177 pp. According to the reviewer, this is a good problem book for students in inorganic and general chemistry which, however, contains too many misprints.

PEREL'MAN, V.I.; NEKRASOV, B.V., redaktor; ABRAMOV, V.A., redaktor;
YASHKE, Ye.V., redaktor; LUR'YE, M.S., tekhnicheskii redaktor

[Concise handbook of chemistry] Kratkii spravochnik khimika.
Pod obshchei red. B.V.Nekrasova. Izd. 5-oe, stereotip. Moskva,
Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1956. 559 p. (MLRA 9:7)

1. Chlen-korrespondent AN SSSR (for Nekrasov)
(Chemistry--Handbooks, manuals, etc.)

~~NEKRASOV~~ NEKRASOV, B. V.

4
 Unusual Valencies of Some Metals. B. V. Nekrasov (Transl. from *Dokl. Akad. Nauk S.S.S.R.*, 1964, [Ehkrp.], 12, 137-144) (In Russian). A general discussion, and a review of work in the U.S.S.R. and elsewhere, on derivatives responding to unusual states of oxidation of elements in general and metals in particular. The results have in some cases already found practical appn., as in the case of monovalent Al. These derivatives begin to play an important part in the development of rationalized methods of smelting. 140 ref. Z. N. P.

4
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NEKRASOV, Boris Vladimirovich; TSVETKOVA, N.F., red.; LUR'YE, M.S., tekh.red.

[General chemistry textbook]. Uchebnik obshchei khimii. Moskva, Gos.nauchno-tekhn.izd-vo khim.lit-ry, 1957. 486 p. (MIRA 10:12)

1. Chlen-korrespondent Akademii nauk SSSR (for Nekrasov).
(Chemistry)

BELYAYEV, Anatoliy Ivanovich; FIRSANOVA, Lidiya Alekseyevna; NEKRASOV,
B.V., retsenzent; VOL'PSON, G.Ye., inzh., retsenzent; EL'KIND,
L.M., red.isd-vs; KARASEV, A.I., tekhn.red.

[Monovalent aluminum in metallurgical processes] Odnovalentnyi
aliuminii v metallurgicheskikh protsessakh. Moskva, Gos.nauchno-
tekhn.isd-vo lit-ry po chernoi i tavetnoi metallurgii, 1959.
141 p. (MIRA 12:10)

1. Chlen-korrespondent AN SSSR (for Nekrasov).
(Aluminum--Electrometallurgy) (Chemistry, Metallurgic)

01/70-11-1-41, 45

(S)
AUTHORS: Astakhov, K. V., Dubinin, M. M.,
Chmutov, K. V., Nekrasov, P. V.

TITLE: Sergey Aleksandrovich Voznesenskiy (1892-1958) - obituary
(Sergey Aleksandr vich Voznesenskiy (1892-1958))

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol. 33, No. 1, P. 114-115
USSR.

ABSTRACT: S. A. Voznesenskiy, Doctor of Physical sciences and
Commercial Sciences, Candidate of the first degree, died on August 6,
1958. As a student, Voznesenskiy worked in the laboratory of
Professor N. A. Shilov and was occupied with active carbon for
gas masks for the elaboration of the method by N. D. Zelinskiy.
Later on, Shilov sent him to the kafedra fizicheskoy khimii
Moskovskogo vyshego tekhnicheskogo uchilishcha (Department of
Physical Chemistry of the Moscow School of Technology)
for a research study for his Ph.D. dissertation.
At the same time he worked at the Voznesenskaya sanitarnaya
stantsiya (Moscow Sanitary Station). In 1951 he became
lecturer for chemistry at the Penzenskiy institut narodnogo
obrazovaniya (Penza Institute of National Education) but
remained in contact with Shilov's laboratory and, together

Card 1/3

Freundlich.

(Chair) of

Department of Chemistry

Chair

into the Academy

Defense

Card 2/2

Jersey Aleksandrovich Voznesenskiy (1892-1968)-
February

From 1931 - 1941 Voznesenskiy was a member of the
Literary Commission at the Institute of Physical and
became an associate head of a chair of "Physical Chemistry
polytechnic institute". In 1941 he was appointed
"The Ministry of Education". In conclusion, a list of
the works by A. A. Voznesenskiy is given, listing
inorganic chemistry, physical and colloidal chemistry,
water-technology. There are 1 figure and 1 table, both
which are Soviet.

Card 3/3

NEKRASOV, Boris Vladimirovich; NAGATKIN, I.G., red. [deceased]; BARKOV,
S.A., red.; ZAZUL'SKAYA, V.P., tekhn.red.

[General chemistry] Kurs obshchei khimii. Izd.13. Moskva, Gos.
nauchno-tekhn.izd-vo khim.lit-ry, 1960. 973 p.

1. Chlen-korrespondent Akademii nauk SSSR (for Nekrasov).
(MIRA 13:12)
(Chemistry)

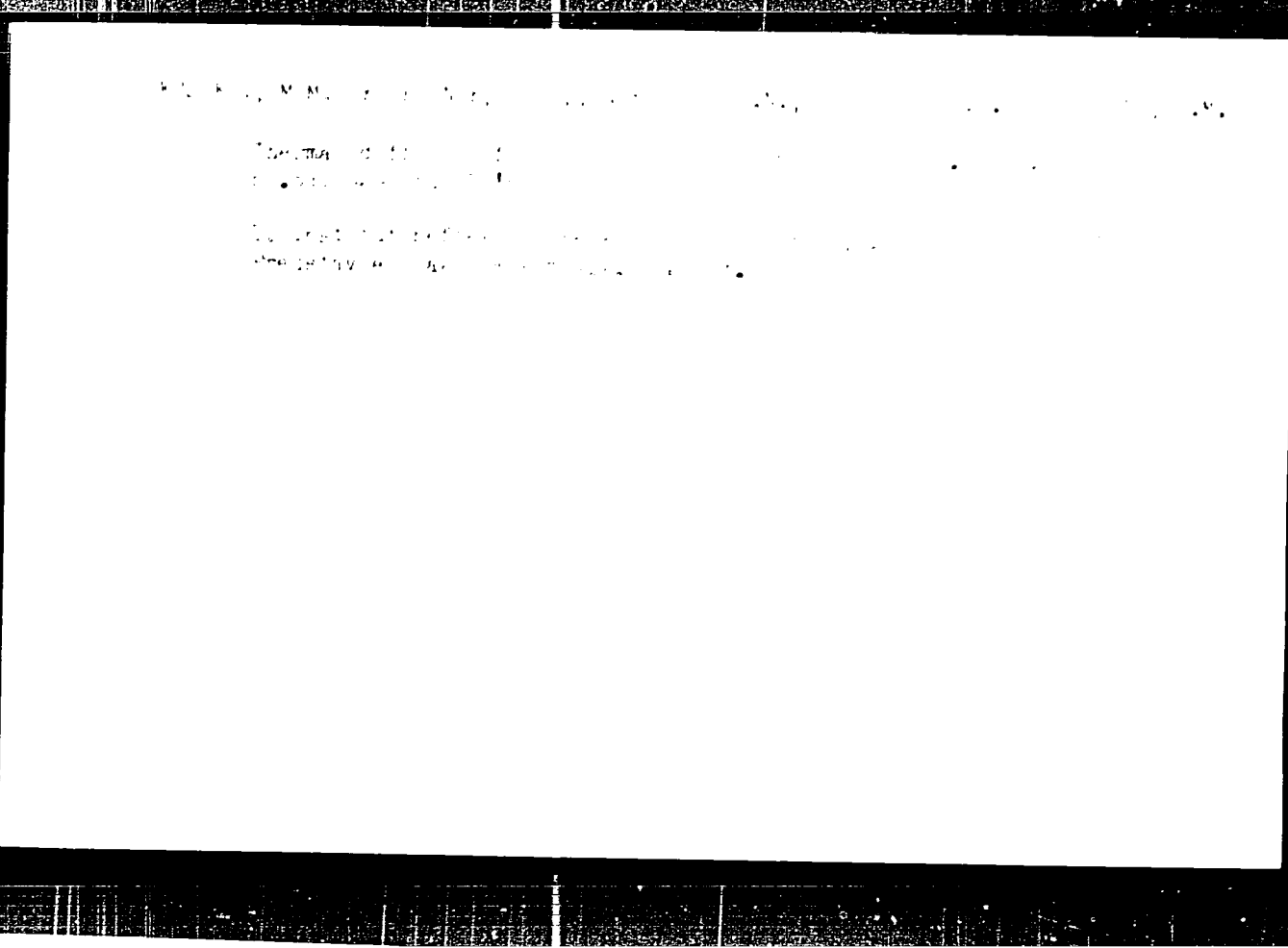
NEKRASOV, Boris Vladimirovich; TSVETKOVA, N.F., red.; PANTELEVA,
L.A., tekhn. red.

[General chemistry textbook] Uchebnik obshchei khimii. Izd. 2.
Moskva, Goskhimizdat, 1963. 495 p. (MIRA 16:12)

1. Chlen-korrespondent AN SSSR (for Nekrasov).
(Chemistry)

NEKRASOV, Boris Vladimirovich, akademik, S.S.S.R., red.

{Principles of general chemistry in three volumes
Osnovy obshchei khimii. Moskva, Fizmatgiz, 1969, 3 vols.
518 p. ISBN 5-02-000111-1 (Moscú, U.R.S.S.)
1. Chlen-korrespondent AN SSSR (for N. Krasovskii).



L 23786-66 EWT(1)/EWT(m)/EWP(t) IJP(c) JD

ACC NR: AR6005225

SOURCE CODE: UR/0058/65/000/009/EO86/EO86

AUTHOR: Nekrasov, D. V.

TITLE: Electric breakdown of cuprous oxide

49

SOURCE: Ref. zh. Fizika, Abs. 9E725⁷

B

REF SOURCE: Sb. Probov dielektrikov i poluprovodnikov. M.-L., Energiya, 1964, 322-324

TOPIC TAGS: cuprous oxide, dielectric breakdown, volt ampere characteristic, minority carrier

TRANSLATION: The Cu₂O was prepared by oxidation of Cu at 1090C. The polycrystalline samples were finished mechanically. The electrodes were deposited by sputtering Sb in vacuum at a pressure $\approx 10^{-8}$ mm Hg. I-V characteristics are presented for a sample of thickness 0.3 mm and of electrode area 15 mm². The characteristics were taken at frequencies 50, 200, 4000, and 5000 cps. It is shown that a sharp increase of the electric conductivity occurs in the pre-breakdown region as a result of the minority carriers injected by the cathode. It is stated that the field near the electrode is not smaller than 10^4 v/cm.

SUB CODE: 20

Card 1/1

С. Г. ЕКРАСОВ

9

Spectrophotographic determination of copper in cer-
aluminia B. Ya. Nekrasov and Z. V. Korovin (Kraus-
gorsk Mech. Plant) *Zashchita Lab. 10, 883 (1950)* - The
determ. is made with the 2 line pairs - CuI 2824-AII 2852 and
CuI 2824-AII 2800 A and the Al 3060 line as reference.
G. M. Kowaloff

USSR, B. Ya.

USSR/Chemistry - Spectral analysis

Card 1/1

Pub. 43 - 45/97

Authors : Nekrasov, B. Ya.; Misharin, G. I.; Saranchuk, E. I.; Sukhenko, K. A.;
Fishman, I. S. and Yakovleva, M. P.

Title : Method of express spectral analysis, its advantages and results of
introducing into industry

Periodical : Izv. AN SSSR. Ser. fis. 18/2, page 271, Mar-Apr 1954

Abstract : The results obtained by industry in applying the I. S. Fishman method
of controlled standards to the analysis of Al-alloys, high-alloyed
steel, cast iron and Ni are mentioned briefly. The application of the
objective express spectral analysis method in industry is highly
recommended by the authors of this report. One USSR reference (1950).

Institution : The All-Union Institute of Aviation Materials

Submitted :

NEKRASOV, D.

zasluzhennyy zootekhnik RSFSR, laureat Stalinskoy premii.

Methods of improving Kuybyshev sheep. Zhivotnovodstvo 20 no.2:
23-27 P 158. (MIRA 11:1)

1. St. rudy zootekhnik Koshkinskogo gosplemrassadnika ovets.
(Kuybyshev Province--Sheep breeding)

NEKRASOV, D. A., Candidate of Agric Sci (diss) -- "Improving the Kuzbyshev breed of sheep, and using them for improving coarse-wooled sheep". Moscow, 1969. 12 pp (All-Union Sci Res Inst of Animal Husbandry, Dept of Sheep Husbandry, 1970 copies (KL, No 21, 1969, 117)

AUTHORS:

Kusakov, M. M., Nekrasov, D. N.

20-119-1-25/52

TITLE:

The Rise of a Liquid in Capillaries of Variable Cross Section and Capillary Hysteresis (Pod"yem zhidkosti kapillyarakh peremennogo secheniya i kapillyarnyy gisteresis)

PERIODICAL:

Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 1, pp. 107-109 (USSR)

ABSTRACT:

For capillary tubes with circular cross section the height h of the capillary rise of a nonviscous liquid can be determined from the condition $U/U_0 = h$. Here

$$U = \pi r^2 \int_0^h \rho g \, dh - 2\pi r \int_0^h \sigma \, dh$$

denotes the potential energy

of the wetting liquid in the tube: ρ denotes the density of the liquid, g - gravitation, r - the radius of the capillaries and σ - the surface tension of the liquid at its boundary against the supersaturated vapor. The expression for U given here holds on the premise that the meniscus is spherical and that the liquid wets the walls of the capillaries. In the same expression the function $r = f(h)$ determines the (rotation-symmetrical with regard to the axis of the capil-

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larities) form of the capillaries. The heights of the capillary rise in a capillary with variable cross section can also be determined by a simultaneous solution of the equation system $h \rho g = 2\sigma/r$ and $r = f(h)$. For a capillary, the form of which is determined by the equation $r = 2\sigma/h \rho g$, there is an equilibrium for every height of the liquid. In this case the interior surface of the capillary is formed by rotation of a hyperbola around the vertical axis of the capillary. Thus the nonreproducibility observed in some liquids is connected with the heights of the capillary rise. In many cases the capillaries in fact have a variable cross section. The considerations here discussed were checked by means of the capillary rise of water in conic capillaries becoming narrower and also in glass capillaries with sinusoidal periodically variable cross section, which were produced for this purpose. For a sinusoidal capillary here the curves $U = f(h)$, $h \rho g = f(h)$ and $2\sigma/r = f(h)$ are given. Finally numerical data for a concrete example are given. The final conclusion of the existence of several heights of the capillary rise in capillaries with variable cross section (this phenomenon is known under the name of capillary hysteresis) can be ob-

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The Rise of a Liquid in Capillaries of Variable Cross Section and Capillary Hysteresis 20-119-1-29/52 Ca-

tained by investigation of the general conditions for the equilibrium of the liquid in the capillaries. There are 1 figure and 2 references, 1 of which is Soviet.

PRESENTED: August 8, 1957, by A. V. Topchiyev, Member, Academy of Sciences, USSR

SUBMITTED: July 29, 1957

Card 3/3

1970/11/11 11:11:11

AUTHORS: Kusakov, M. M. and Nekrasov, D. N.

TITLE: Capillary hysteresis in rising liquids in capillary tubes with varying cross sections

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 1, pp. 1602 - 1604

TEXT: The basic problem confronting the authors was the determination of the equilibrium point between water and petroleum in porous layers, making allowance for capillary hysteresis occurring in capillary tubes with variable cross sections. In this paper, capillary hysteresis in rising liquids is investigated in a porous bed with some circular increasing and decreasing circular cross sections. Two variants of the results are given. 1) From the formula $U = \rho g h + \sigma / r$ (where U is the potential energy of gravity and surface tension, h - height of ascent of the liquid in the capillary tube), equilibrium values for h were calculated in the condition that $dU/dh = 0$ (4). The profile of the capillary tube was characterized by the following function $r = r_0 + \Delta r \sin^2 \theta$.

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Capillary Hysteresis in Rising Liquid in Capillary Tubes With Varying Cross Sections

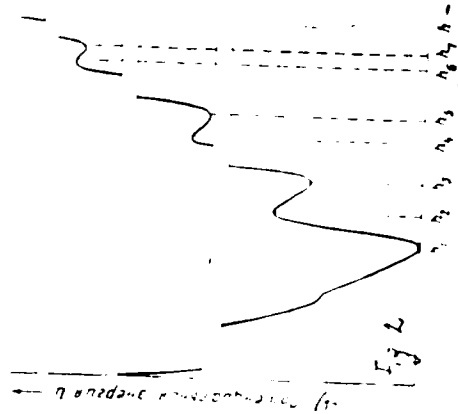
V. V. Lebedev is mentioned. There are 7 figures, 1 table, and 6 references: 4 Soviet, 1 French, and 1 Czechoslovakian.

ASSOCIATION: Akademiya nauk SSSR, Institut nefti (Academy of Sciences USSR, Institute of Petroleum)

SUBMITTED: October 24, 1958

Legend to Fig.2:
a) Potential energy Φ .

Fig..



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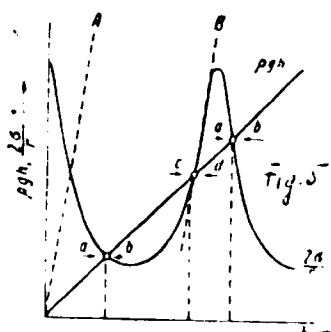


Fig. 5

S/C76/60/034/007/031/042/XX
BOC4/BC68

Legend to Fig. 5: a \rightarrow \leftarrow b
calculated stable equilibrium;
c \rightarrow \leftarrow d calculated unstable
equilibrium.

Card 4/4

1964
1964

AUTHOR: Nekrasov, D. E. and Kusakov, M. I.

TITLE: The Capillary Rising of Liquids in Porous Media, or Capillary Hysteresis

PERIODICAL: Doklady Akademii Nauk SSSR, 1964, Vol. 196, No. 6, pp. 1372-1380

TEXT: Employing a method explained in a previous paper, on the basis of experimental data, and on the assumption of an equivalent vertical capillary with varying diameter, the authors prove that a non-viscous liquid may rise in capillary media to an infinite number of levels, between a minimum and a maximum (capillary hysteresis). For the equivalent capillary the system of equations (1) is written down: $h_1 = \frac{2\sigma}{\rho g r}$; $r = f(h)$, where h denotes the height of the liquid in the capillary, ρ its density; g the gravitational acceleration; σ the surface tension of the liquid, r the radius of the capillary. This system has an infinite number of roots $(h_1)_{\min} < h_2 < \dots < (h_n)_{\max}$. The potential energy U is

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The Capillary Rise of Liquids in Porous Media, and Capillary Hysteresis

S. I. Zhuravskiy, 1960
 B. G. ...

expressed by equation (2): $U = -\rho g \int_0^h (r_k - h) dV$ (r_k = capillary pressure, V = volume of the liquid in the capillary). Function $U = f(V)$ is graphically obtained from the experimentally found function $V = f(p_k - p)$; (H = meniscus height), and from the condition $dV/dh = 0$, the different levels of the liquid rise that are in equilibrium are found. Fig. 1 shows the experimentally determined function $U = f(V)$ for quartz sand, grain size 0.35 - 0.42 mm. Curve 1 corresponds to the rise in the capillary, curves 2-6 are calculated for $h/(H_1)_{min}$. Each curve has a singular point; locus lies on curve 7, that goes over into a vertical line at $h = (H_1)_{min}$. There are 1 figure and 1 Soviet reference.

Author's Address: Institut neftokhimicheskogo sinteza Akademii Nauk SSSR
 Institute of Petroleum-chemical Synthesis of the Academy of Sciences USSR

PRESENTED: April 11, 1960, by A. V. Topchiyev, Academician
 SUBMITTED: April 11, 1960
 Card 2/2

NEKRASOV, P.M.

Nonlinear theory of electron-ion oscillations of plasma. Zhur.
tekh. fiz. 30 no.7:774-780 JI '60. (MIRA 13:8)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M. Gor'kovsk.
(Plasma (Ionized gas))

NEKRASOV, F.M.

Nonlinear theory of stationary processes in an electron plasma.
Zhur. eksp. i teor. fiz. 38 no.1:233-238 Jan '60. (MIRA 14:9)

1. Khar'kovskiy gosudarstvennyy universitet.
(Plasma oscillations) (Electron beams)

8/781/62/000/000/008/036

AUTHOR: Faynberg, Ya. B., Nekrasov, F. M., Kurilko, V. I.

TITLE: Contribution to the theory of nonlinear longitudinal waves in a plasma

PERIODICAL: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady i konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktory. Fiz.-tech. inst. AN Ukr. SSR. Kiev, Izd-vo AN Ukr. SSR, 1962, 27-31.

TEXT: The interaction between a beam of charged particles and a plasma is investigated for a specific distribution function, so as to obtain in closed form expressions for the maximum electric field intensity and for the maximum electric field gradient.

It is shown that the maximum field intensity and gradient depend strongly on the form of the distribution function and on the assumptions made concerning the capture of the particles in the potential well formed by the propagating wave, so that the results obtained are only tentative.

The system of equations describing the interaction between the beam and the plasma has

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Contribution to the theory of nonlinear . . .

the form

$$v \frac{\partial f}{\partial x} + \frac{|e|}{m} \cdot \frac{dy}{dx} \cdot \frac{\partial f}{\partial v} = 0, \quad \frac{d^2 \psi}{dx^2} = 4\pi |e| \left(\int f_{background} dv + \int f_{beam} dv - n_+ \right), \quad (1)$$

where n_+ is the density of the ion background (the ions are assumed stationary). The distribution function chosen for the plasma electron is

$$f(v) = \begin{cases} A_{max} \exp \left\{ -\frac{m}{2T} \left[\left(\frac{2m}{m} \right)^{1/2} + v_0 \right]^2 \right\} & (v \geq u_0) \\ A_{max} \exp \left\{ -\frac{m}{2T} \left[\left(\frac{2m}{m} \right)^{1/2} - v_0 \right]^2 \right\} & (|v| < u_0) \\ A_{max} \exp \left\{ -\frac{m}{2T} \left[\left(\frac{2m}{m} \right)^{1/2} - v_0 \right]^2 \right\} & (v < -u_0) \end{cases} \quad \frac{m u_0^2}{2} = -|e| \psi_{max} = \frac{m V_0^2}{2}, \quad (2)$$

and for the beam electrons $f(v) = A_0 \delta(v - v_0)$.

In the most interesting case, when the phase velocity is very close to the beam velocity,

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Contribution to the theory of nonlinear . . .

the maximum field is given by

$$E_{\text{max,max}}^2 = 4\pi(V_0 - V_0^2) \left[n_0 - (n_- - n_0) \frac{V_0}{2V_0} \left(1 - \frac{V_0^2}{V_0^2} \right) \right]. \quad (8)$$

where V_0 is the beam velocity, and n_- and n_0 are the densities of the uncaptured plasma particles at the point of zero potential and of the beam at this point.

There are six references. The English-language references are by D. Bohm and E. P. Gross, *Phys. Rev.* **76**, 1851 (1949) and by H. K. Son, *Phys. Rev.* **97**, 849 (1955).

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24 x 120

[Faint, mostly illegible typed text, possibly a memorandum or report, with some handwritten marks and a checkmark.]

