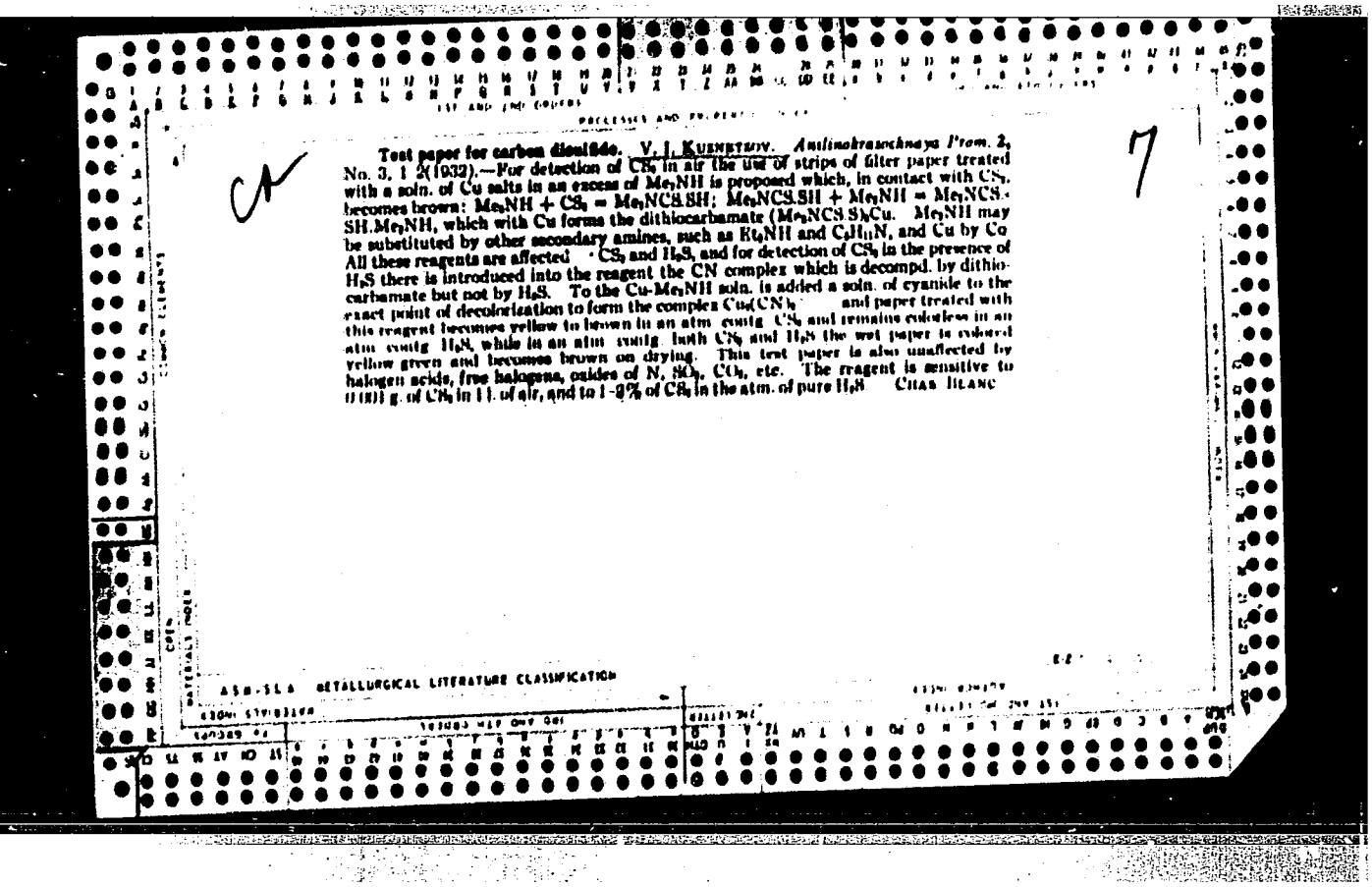
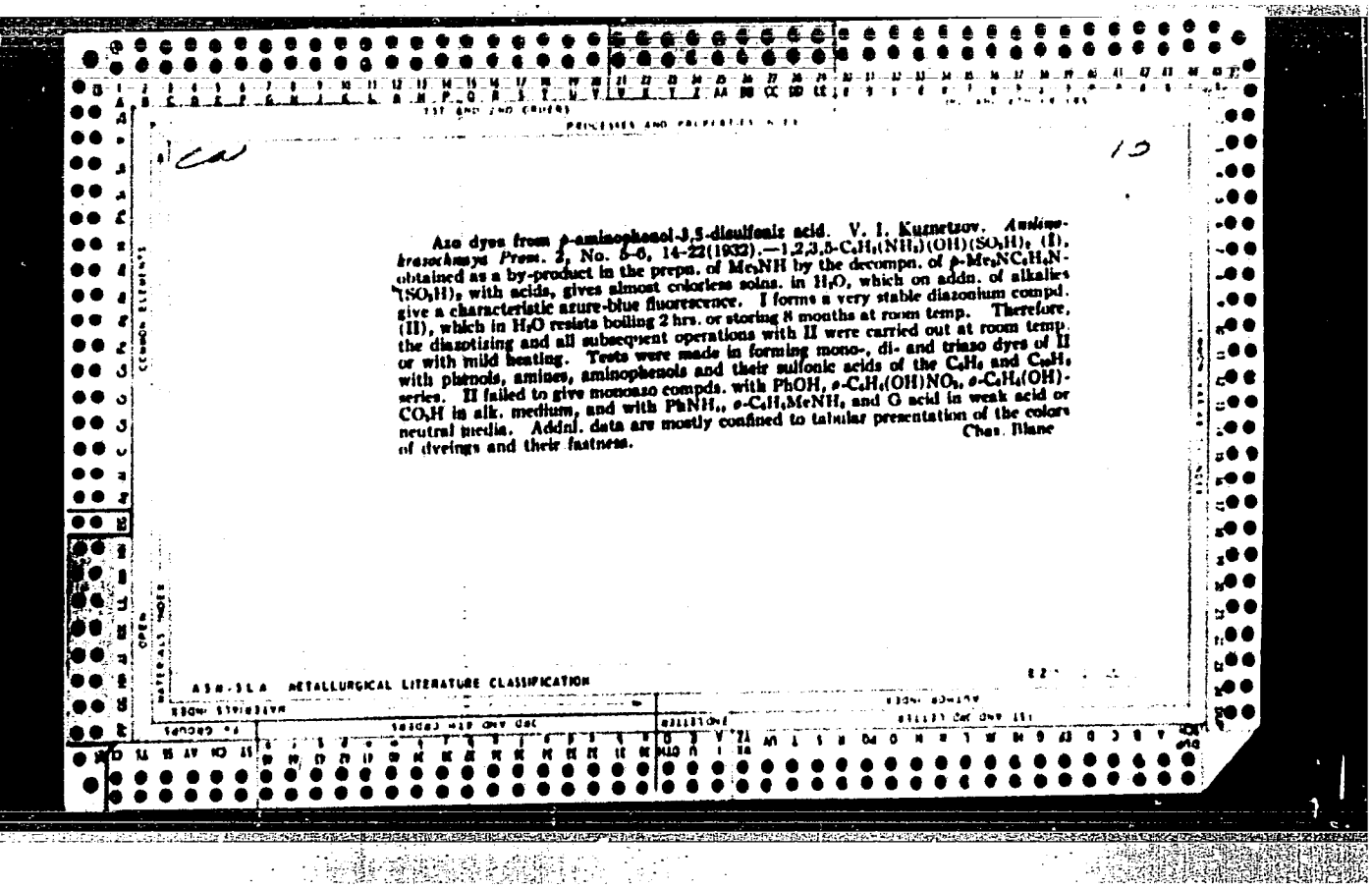


Test paper for carbon disulfide. V. I. KUZNETSOV. *Avtinokhrantchnaya Prom.* 2, No. 3, 1 2(1932).—For detection of CS_2 in air the use of strips of filter paper treated with a soln. of Cu salts in an excess of Me_2NH is proposed which, in contact with CS_2 becomes brown: $Me_2NH + CS_2 = Me_2NCS.SH$; $Me_2NCS.SH + Me_2NH = Me_2NCS.SH.Me_2NH$, which with Cu forms the dithiocarbamate $(Me_2NCS.S)_2Cu$. Me_2NH may be substituted by other secondary amines, such as Et_2NH and $C_5H_{11}N$, and Cu by Co. All these reagents are affected by CS_2 and H_2S, and for detection of CS_2 in the presence of H_2S there is introduced into the reagent the CN complex which is decompd. by dithiocarbamate but not by H_2S. To the Cu-Me_2NH soln. is added a soln. of cyanide to the exact point of decolorization to form the complex $Cu_2(CN)_2$ and paper treated with this reagent becomes yellow to brown in an atm. contg. CS_2 and remains colorless in an atm. contg. H_2S, while in an atm. contg. both CS_2 and H_2S the wet paper is colored yellow green and becomes brown on drying. This test paper is also unaffected by halogen acids, free halogens, oxides of N, SO_2, CO_2, etc. The reagent is sensitive to 0.0001 g. of CS_2 in 1 l. of air, and to 1–2% of CS_2 in the atm. of pure H_2S. CHAS. BLANC



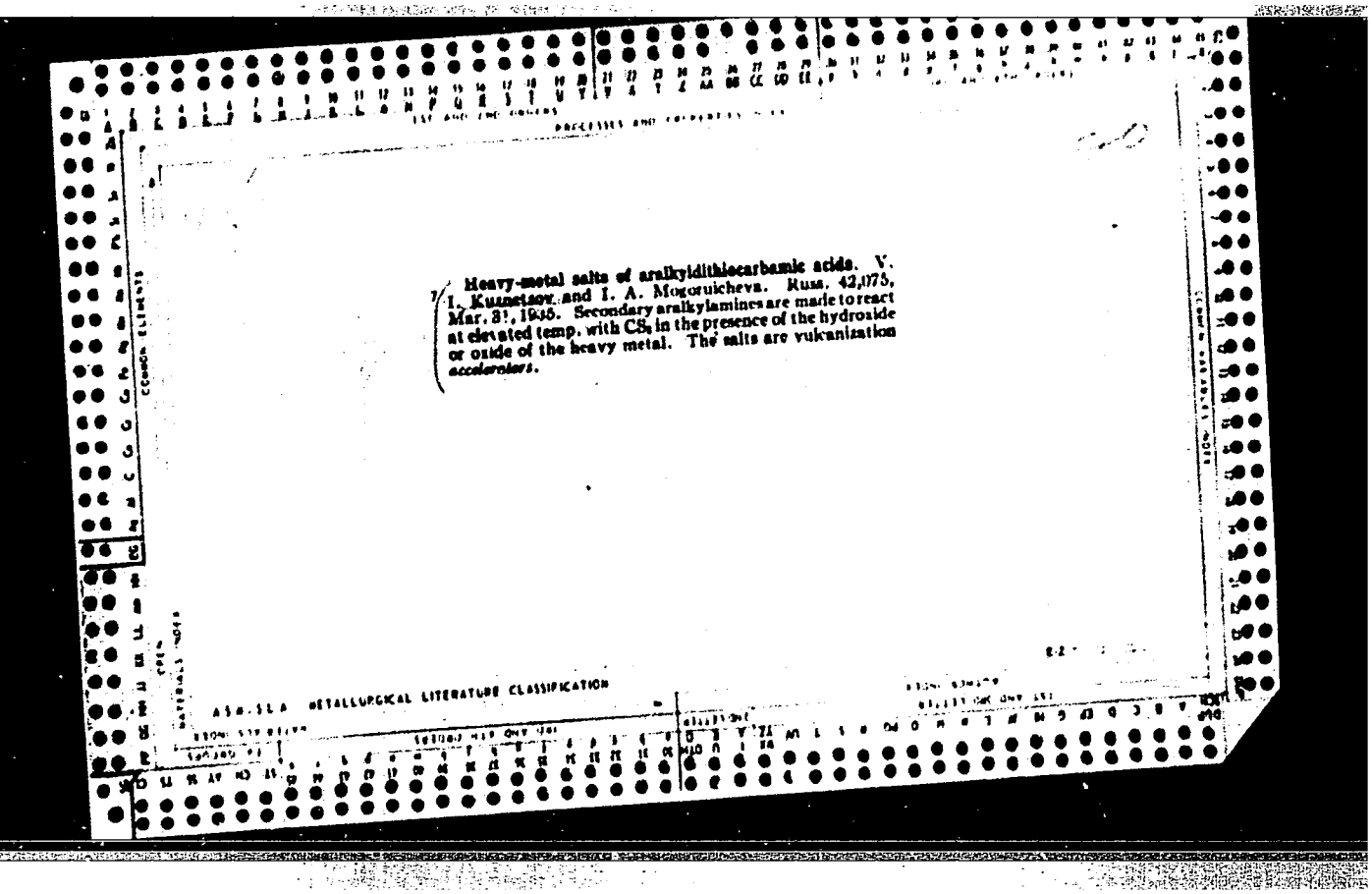
Ca

15

Azo dyes from *p*-aminophenol-3,5-disulfonic acid. V. I. Kuznetzov. *Anilino-Krasochnaya Prom.* 2, No. 5-6, 14-22(1932).—1,2,3,5-$C_6H_1(NH_2)(OH)(SO_3H)_2$ (I), obtained as a by-product in the prepn. of Me_2NH by the decompn. of *p*-$Me_2NC_6H_4N(SO_3H)_2$ with acids, gives almost colorless solns. in H_2O, which on addn. of alkalies give a characteristic azure-blue fluorescence. I forms a very stable diazonium compd. (II), which in H_2O resists boiling 2 hrs. or storing 8 months at room temp. Therefore, the diazotizing and all subsequent operations with II were carried out at room temp. or with mild heating. Tests were made in forming mono-, di- and trisazo dyes of II with phenols, amines, aminophenols and their sulfonic acids of the C_6H_6 and $C_{10}H_8$ series. II failed to give monoazo compds. with PhOH, *o*-$C_6H_4(OH)NO_2$, *o*-$C_6H_4(OH)CO_2H$ in alk. medium, and with $PhNH_2$, *o*-$C_6H_4MeNH_2$, and G acid in weak acid or neutral media. Addnl. data are mostly confined to tabular presentation of the colors of dyeings and their fastness.

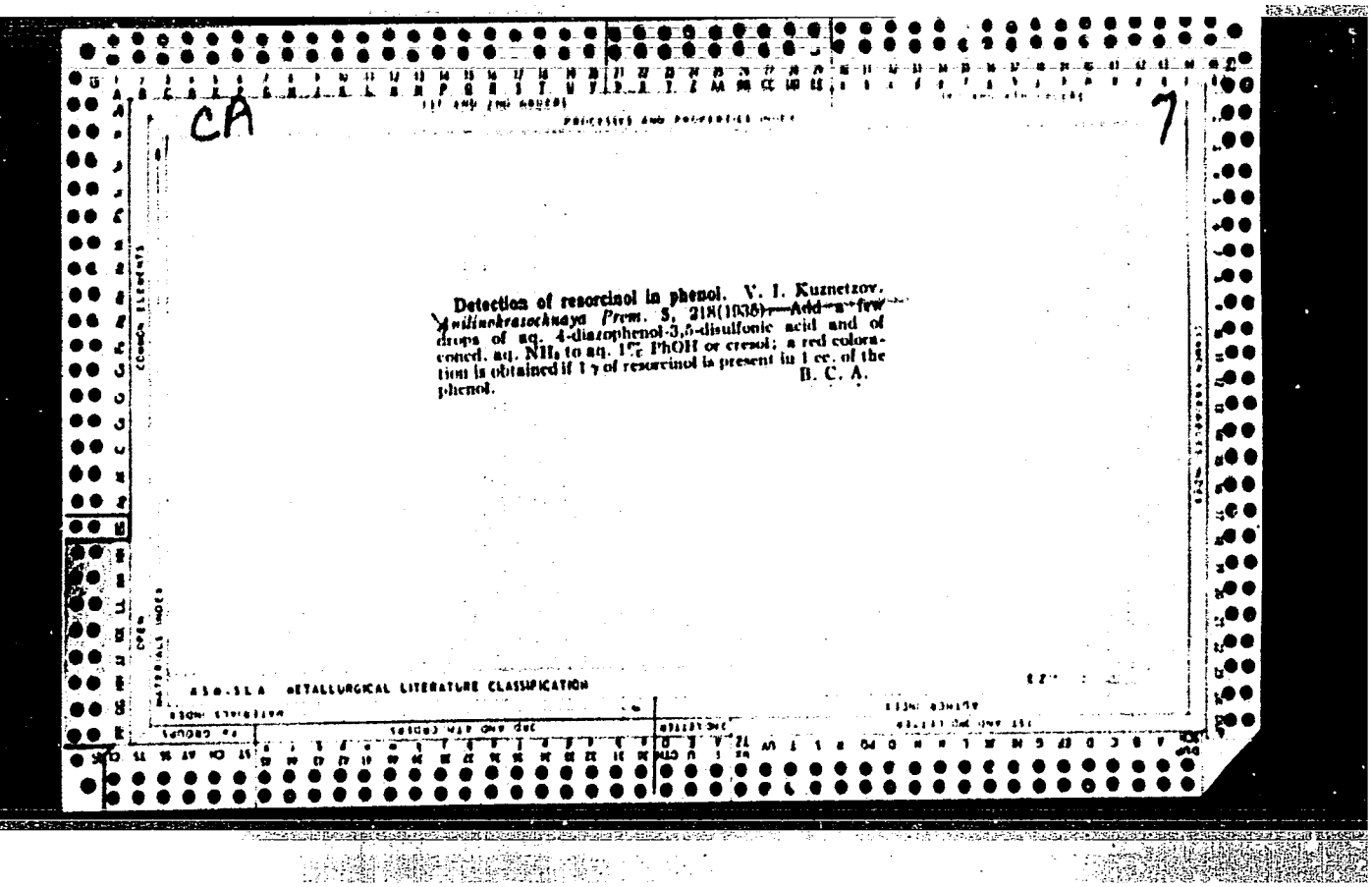
Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Heavy-metal salts of aralkyldithiocarbamic acids. V. I. Kuznetsov and I. A. Mogorulcheva. Russ. 42,1175, Mar. 31, 1935. Secondary aralkylamines are made to react at elevated temp. with CS_2 in the presence of the hydroxide or oxide of the heavy metal. The salts are vulcanization *accelerators*.

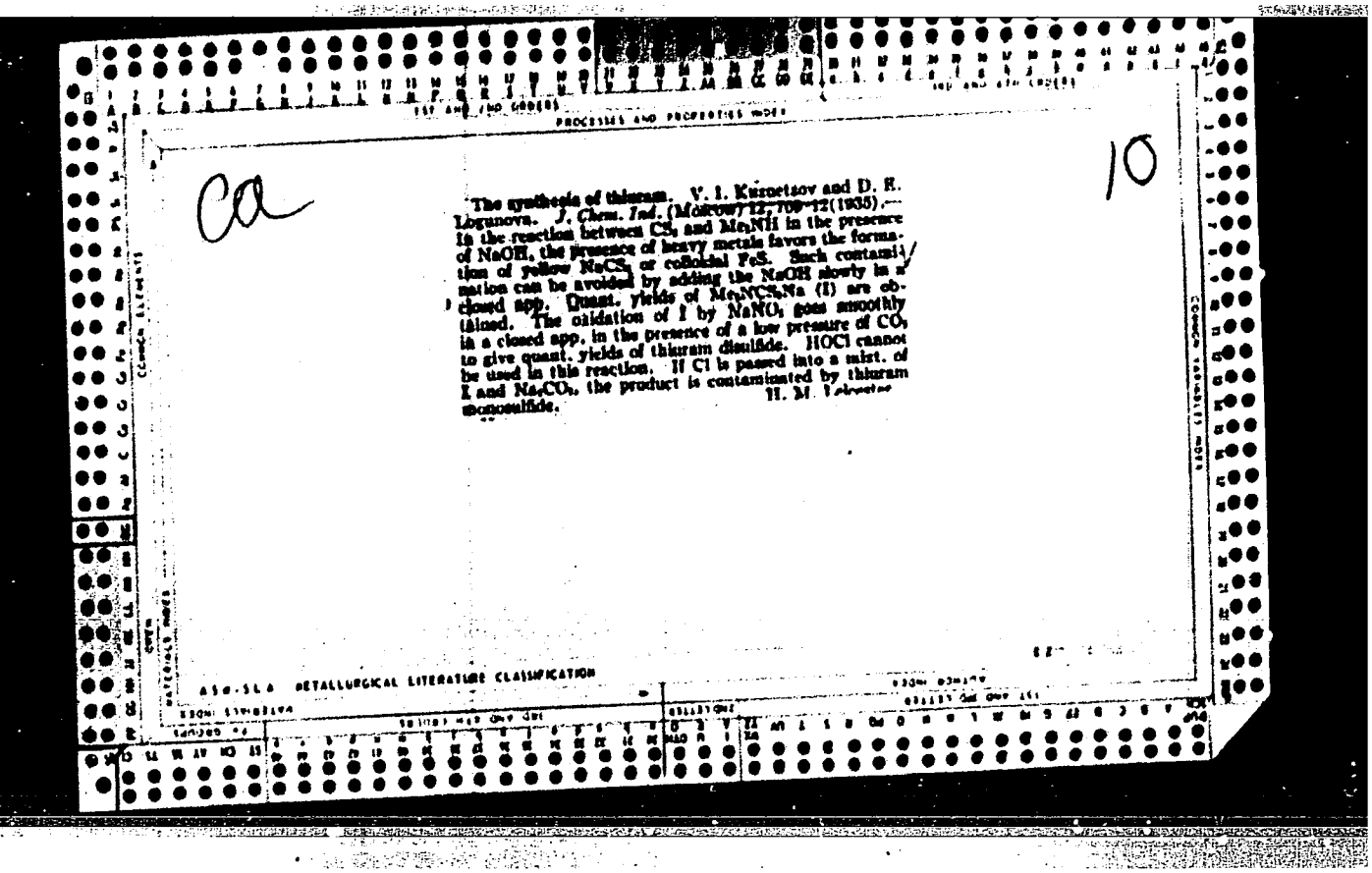
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA 7

Detection of resorcinol in phenol. V. I. Kuznetzov. *Koksikhimicheskaya Prom.* 8, 218(1938).—Add a few drops of aq. 4-diazophenol-3,5-disulfonic acid and of concd. aq. NH_3 to aq. 1% PhOH or cresol; a red coloration is obtained if 1 γ of resorcinol is present in 1 cc. of the phenol. B. C. A.

A50-51A METALLURGICAL LITERATURE CLASSIFICATION



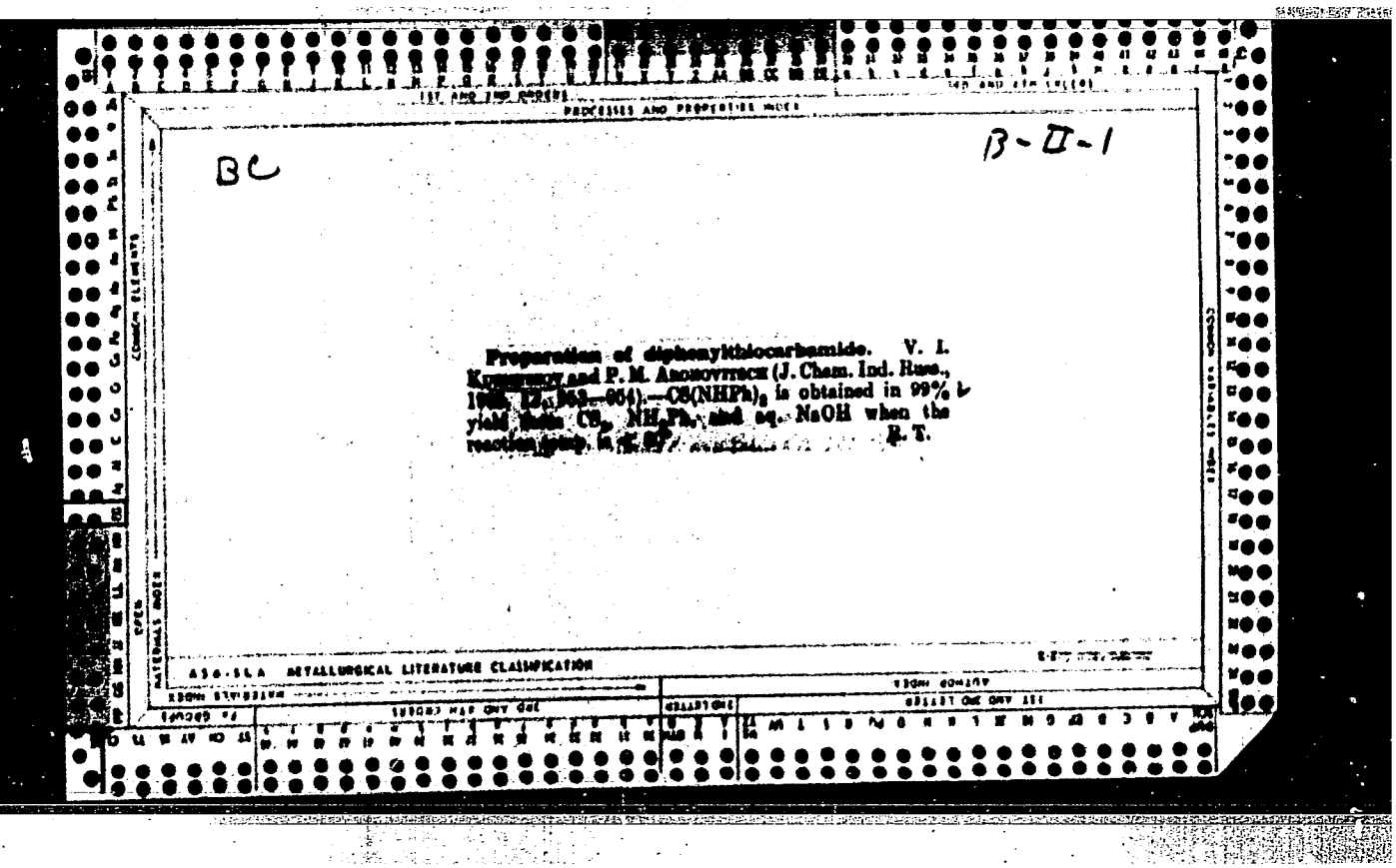
Ca

10

The synthesis of thiuram. V. I. Kuzoetsov and D. E. Lbgunova. *J. Chem. Ind.* (Moscow) 12, 709-12(1935).—In the reaction between CS_2 and Me_2NH in the presence of NaOH, the presence of heavy metals favors the formation of yellow $NaCS_2$ or colloidal FeS. Such contamination can be avoided by adding the NaOH slowly in a closed app. Quant. yields of Me_2NCS_2Na (I) are obtained. The oxidation of I by $NaNO_2$ goes smoothly in a closed app. in the presence of a low pressure of CO_2 to give quant. yields of thiuram disulfide. HOCl cannot be used in this reaction. If Cl is passed into a mixt. of I and Na_2CO_3, the product is contaminated by thiuram monosulfide.

H. M. [illegible]

A50-SLA METALLURGICAL LITERATURE CLASSIFICATION

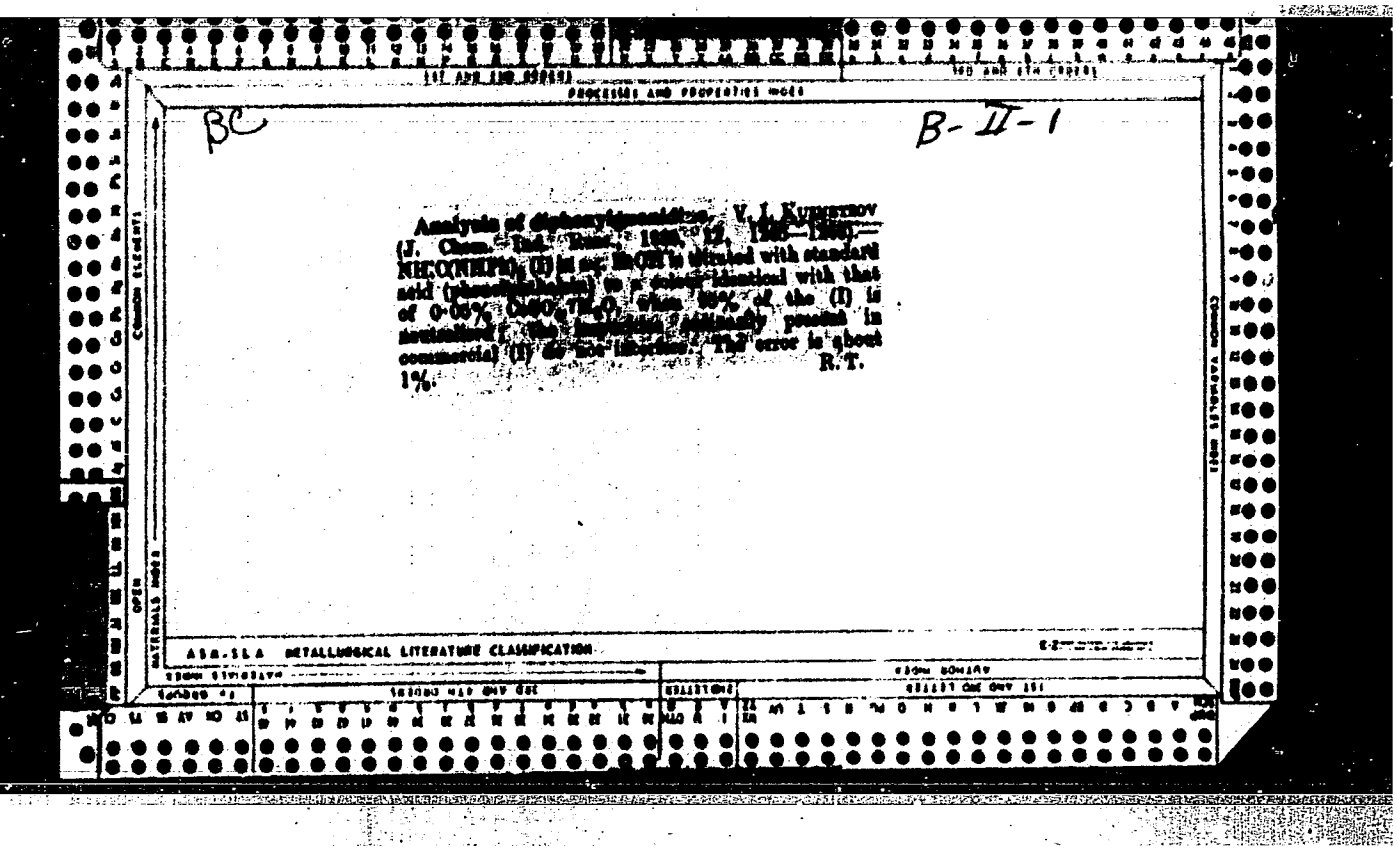


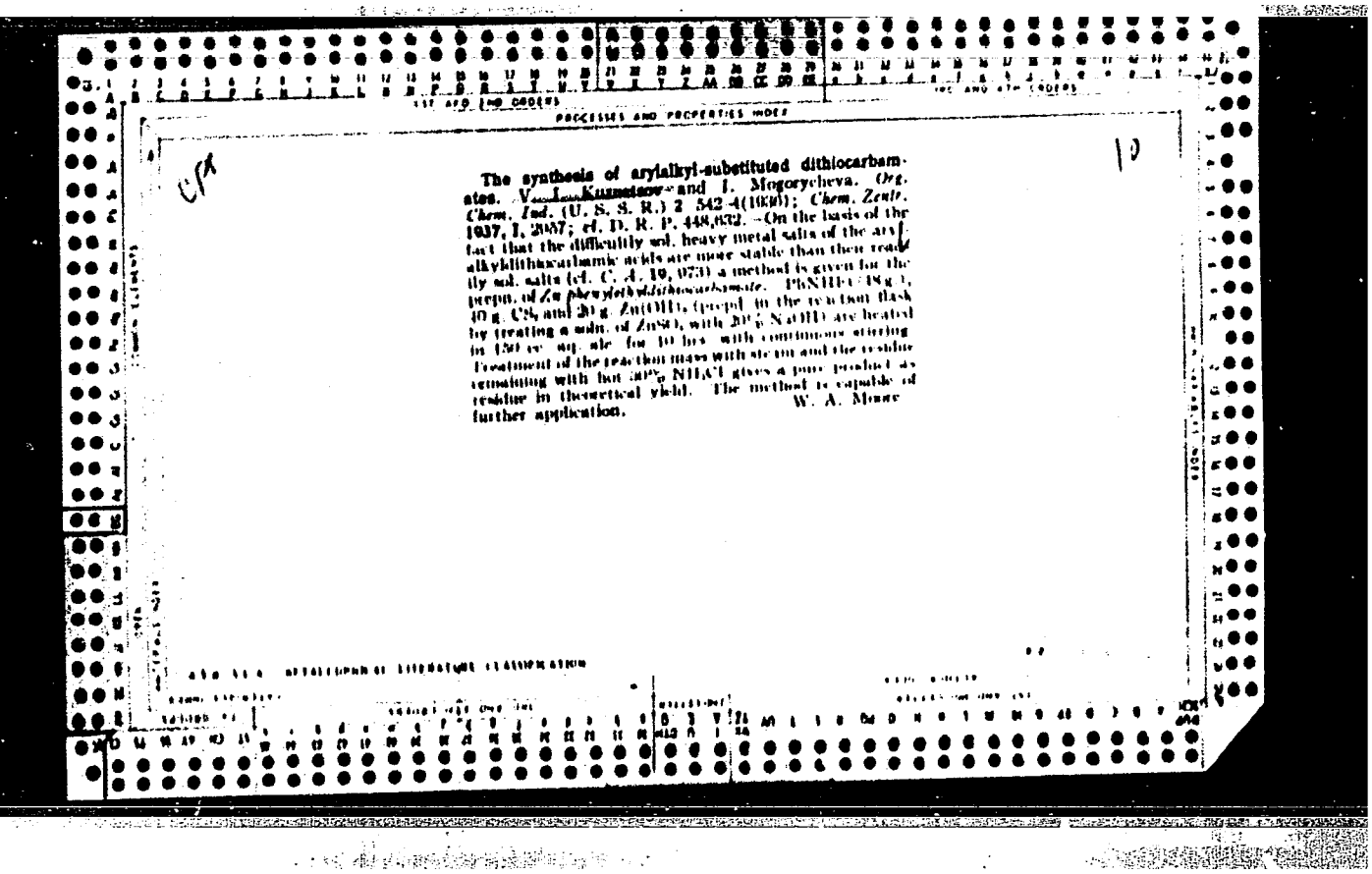
BC

B-II-1

Preparation of diphenylthiocarbamide. V. I. Kuznetsov and P. M. Anosovtsev (J. Chem. Ind. Russ., 1[illegible], 12, 863–864).—$CS(NHPh)_2$ is obtained in 99% yield from CS_2, NH_2Ph, and aq. NaOH when the reaction [illegible] R. T.

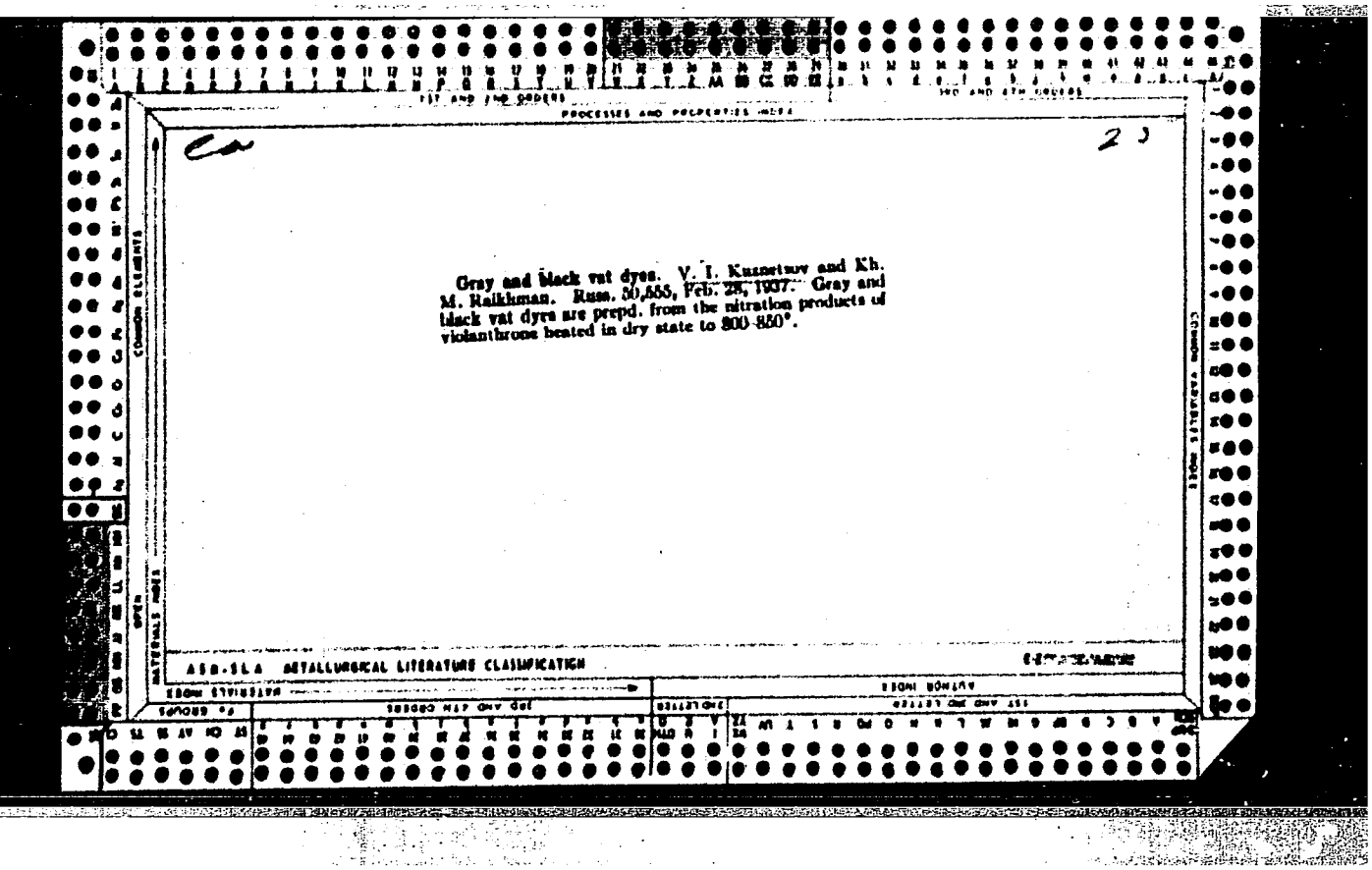
A56-SLA METALLURGICAL LITERATURE CLASSIFICATION





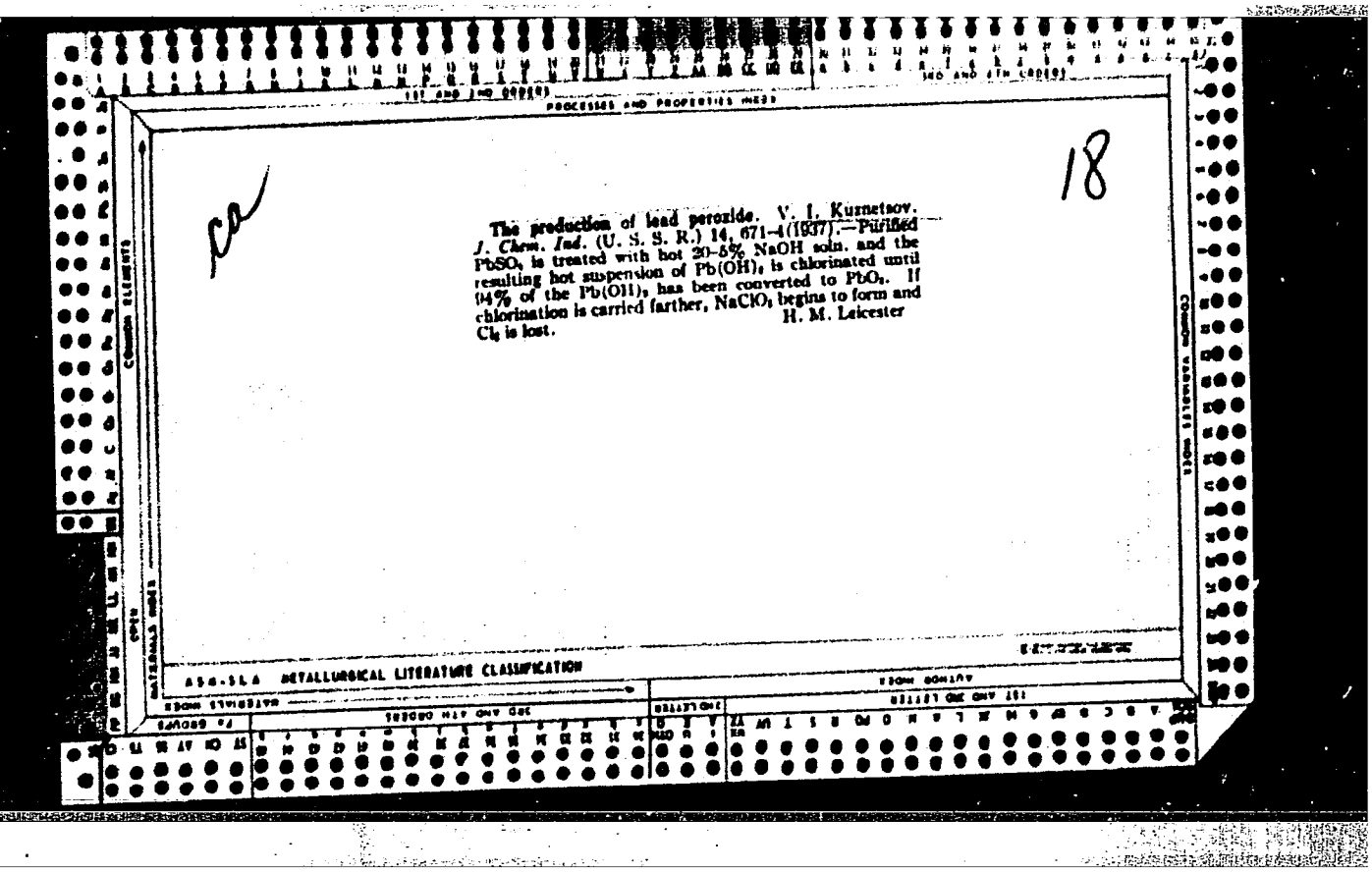
The synthesis of arylalkyl-substituted dithiocarbamates. V. I. Kuznetsov and I. Mogorycheva. *Org. Chem. Ind.* (U. S. S. R.) 2 542-4(1938); *Chem. Zentr.* 1937, I, 2057; cf. D. R. P. 448,832.—On the basis of the fact that the difficultly sol. heavy metal salts of the arylalkylthiocarbamic acids are more stable than their readily sol. salts (cf. C. A. 19, 973) a method is given for the prepn. of Zn phenylethyldithiocarbamate. PhNHEt (18 g.), 40 g. CS_2 and 20 g. Zn(OH)$_2$ (prepd. in the reaction flask by treating a soln. of $ZnSO_4$ with 20% NaOH) are heated in 150 cc. aq. alc. for 10 hrs. with continuous stirring. Treatment of the reaction mass with ale. and the residue remaining with hot 10% NH$_4$Cl gives a pure product in quant. yield. The method is capable of further application.

W. A. Mosher



Gray and black vat dyes. V. I. Kuznetsov and Kh. M. Raikhman. Russ. 50,855, Feb. 28, 1937. Gray and black vat dyes are prepd. from the nitration products of violanthrone heated in dry state to 800-850°.

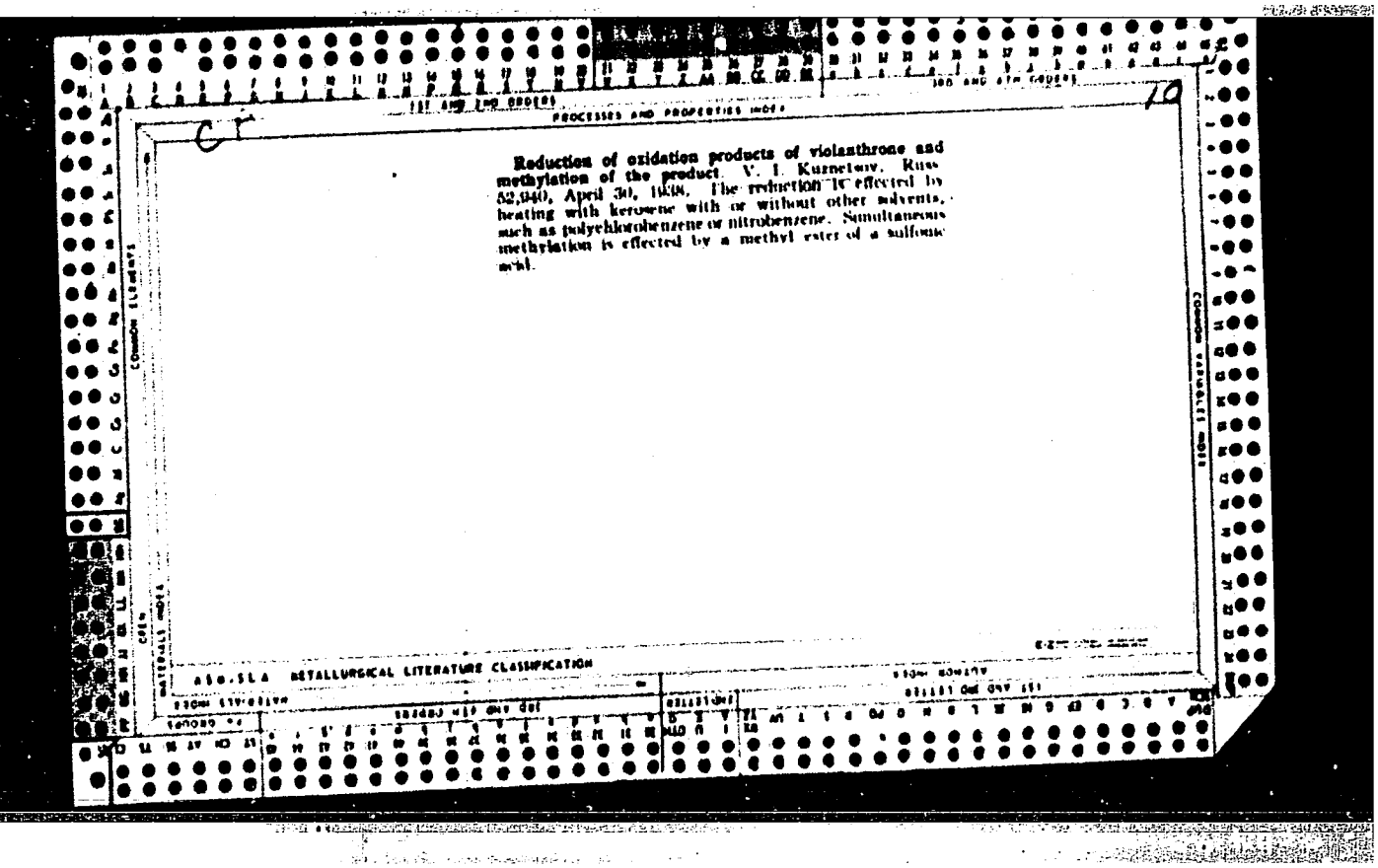
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



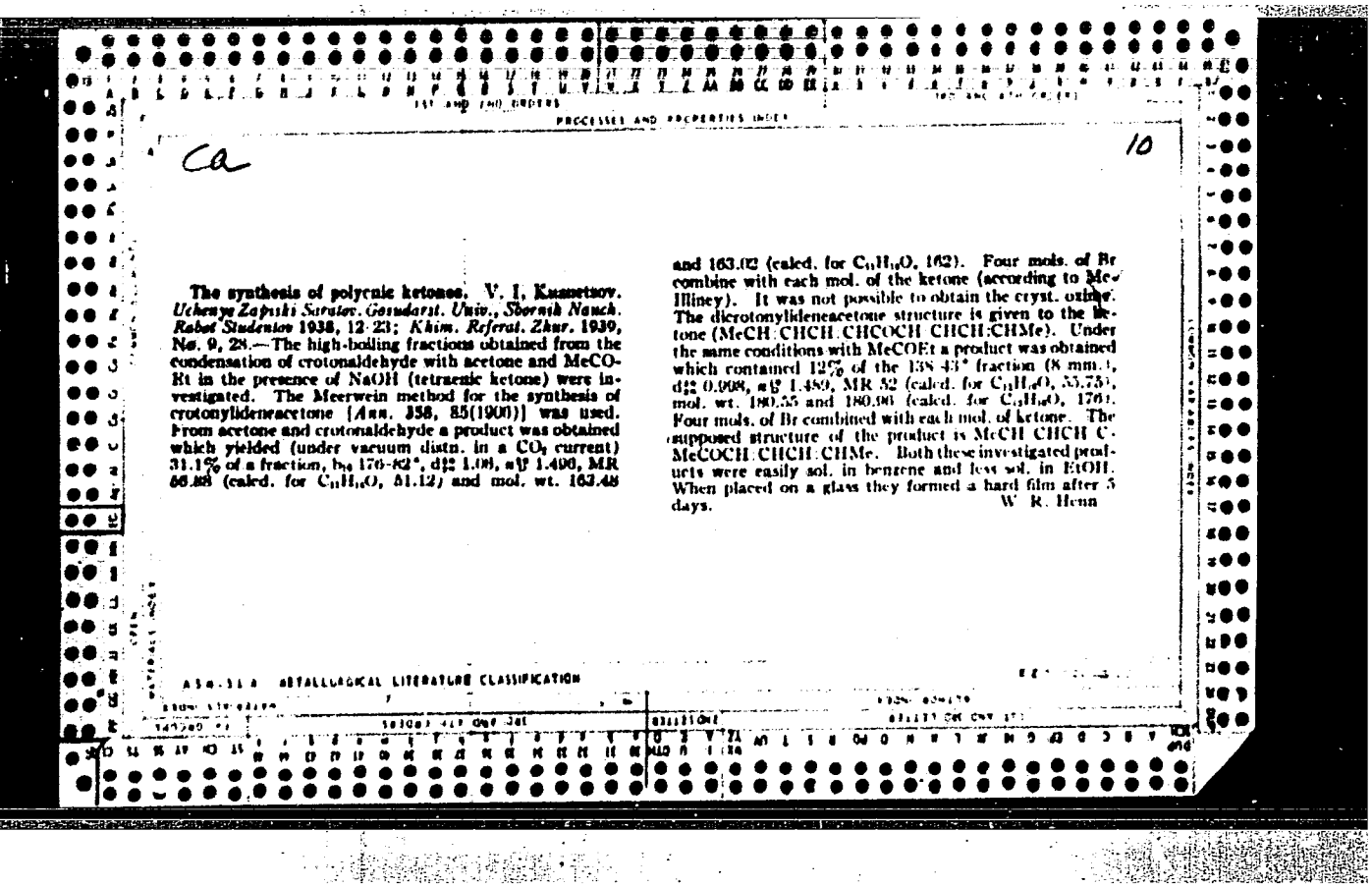
18

The production of lead peroxide. V. I. Kuznetsov. *J. Chem. Ind.* (U. S. S. R.) 14, 671-4(1937).—Purified $PbSO_4$ is treated with hot 20–5% NaOH soln. and the resulting hot suspension of $Pb(OH)_2$ is chlorinated until 94% of the $Pb(OH)_2$ has been converted to PbO_2. If chlorination is carried farther, $NaClO_3$ begins to form and Cl_2 is lost.
H. M. Leicester

METALLURGICAL LITERATURE CLASSIFICATION



Reduction of oxidation products of violanthrone and methylation of the product. V. I. Kuznetsov. Russ. 52,940, April 30, 1938. The reduction is effected by heating with kerosene with or without other solvents, such as polychlorobenzene or nitrobenzene. Simultaneous methylation is effected by a methyl ester of a sulfonic acid.



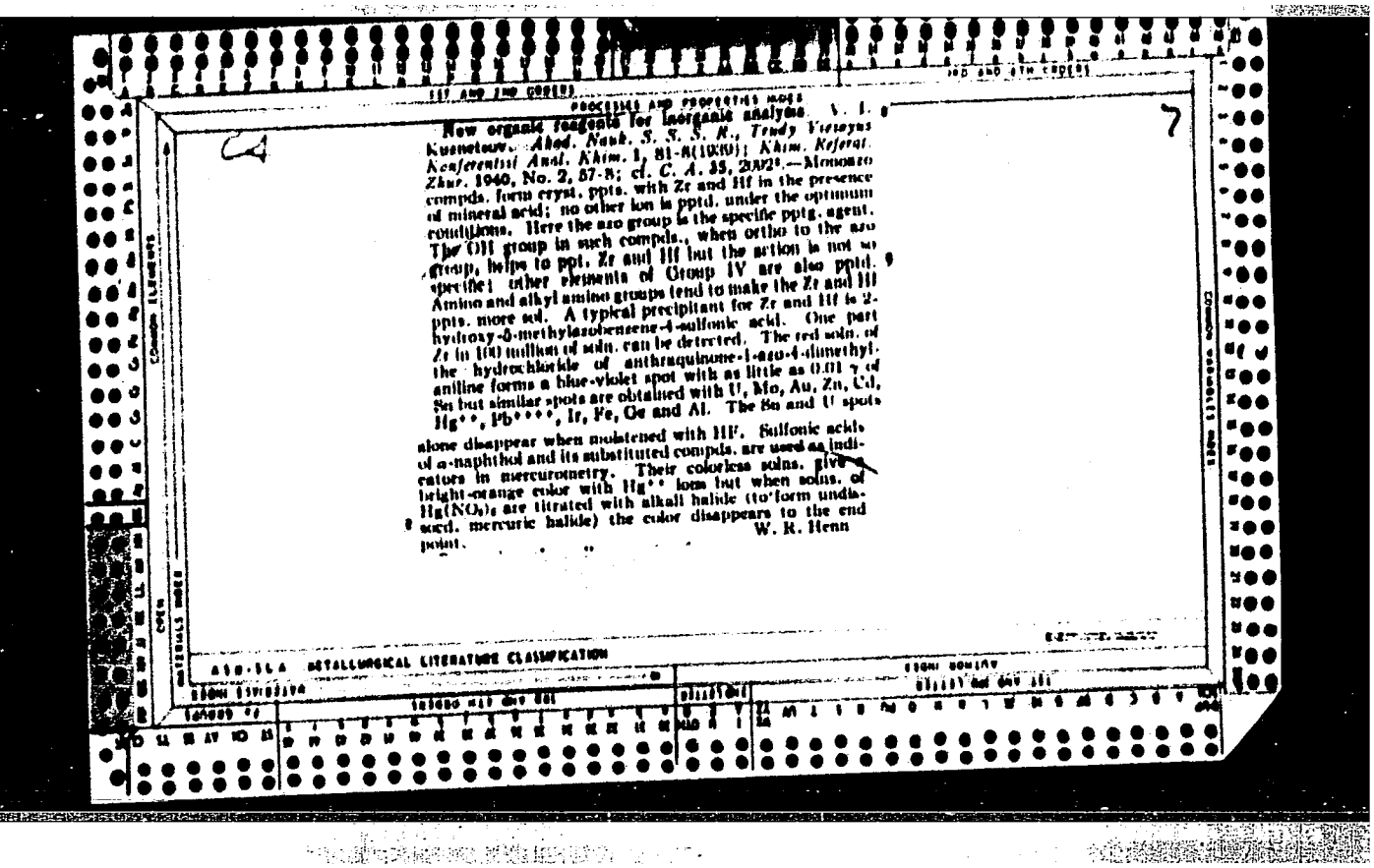
Ca

10

The synthesis of polycnic ketones. V. I. Kuznetsov. *Uchenye Zapiski Saratov. Gosudarst. Univ., Sbornik Nauch. Rabot Studentov* 1938, 12-23; *Khim. Referat. Zhur.* 1939, No. 9, 28.—The high-boiling fractions obtained from the condensation of crotonaldehyde with acetone and MeCOEt in the presence of NaOH (tetraenic ketone) were investigated. The Meerwein method for the synthesis of crotonylideneacetone [*Ann.* 358, 85(1908)] was used. From acetone and crotonaldehyde a product was obtained which yielded (under vacuum distn. in a CO_2 current) 31.1% of a fraction, b_{14} 176-82°, d_4^{22} 1.08, n_D^{22} 1.490, MR 66.88 (calcd. for $C_{11}H_{14}O$, 51.12) and mol. wt. 163.48 and 163.02 (calcd. for $C_{11}H_{14}O$, 162). Four mols. of Br combine with each mol. of the ketone (according to Mc-Illiney). It was not possible to obtain the cryst. oxime. The dicrotonylideneacetone structure is given to the ketone (MeCH:CHCH:CHCOCH:CHCH:CHMe). Under the same conditions with MeCOEt a product was obtained which contained 12% of the 138-43° fraction (8 mm.), d_4^{22} 0.908, n_D^{22} 1.489, MR 52 (calcd. for $C_{11}H_{18}O$, 55.75), mol. wt. 180.55 and 180.90 (calcd. for $C_{11}H_{18}O$, 176). Four mols. of Br combined with each mol. of ketone. The supposed structure of the product is MeCH:CHCH:C-MeCOCH:CHCH:CHMe. Both these investigated products were easily sol. in benzene and less sol. in EtOH. When placed on a glass they formed a hard film after 5 days.

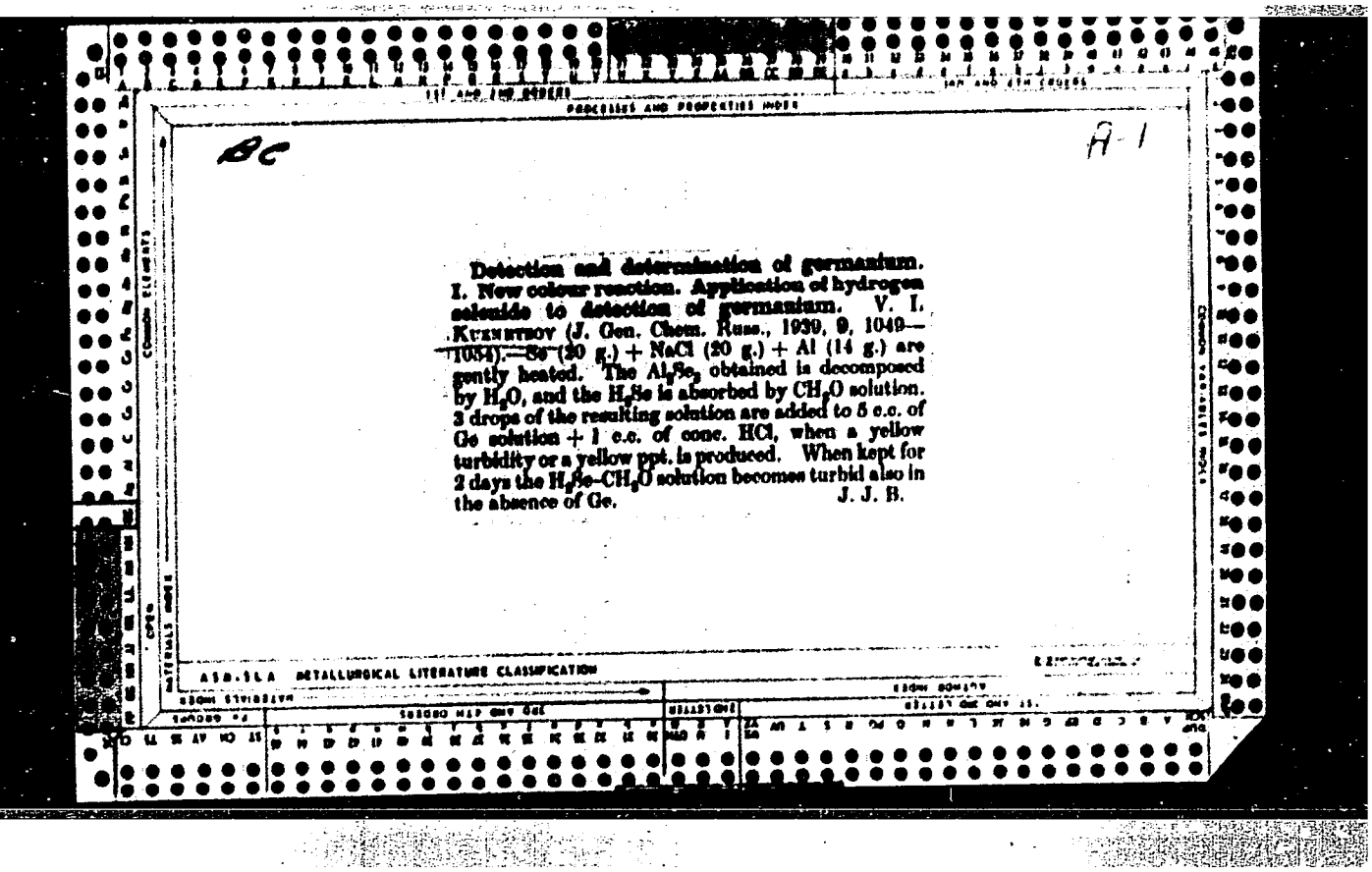
W. R. Henn

A S M - I N A METALLURGICAL LITERATURE CLASSIFICATION



New organic reagents for inorganic analysis. V. I. Kuznetsov. *Akad. Nauk. S. S. S. R., Trudy Vtoroya Konferentsii Anal. Khim.* 1, 81-8(1939); *Khim. Referat. Zhur.* 1940, No. 2, 57-8; cf. *C. A.* 35, 2892⁹.—Mononazo compds. form cryst. ppts. with Zr and Hf in the presence of mineral acid; no other ion is pptd. under the optimum conditions. Here the azo group is the specific ppte. agent. The OH group in such compds., when ortho to the azo group, helps to ppt. Zr and Hf but the action is not so specific; other elements of Group IV are also ppted. Amino and alkyl amino groups tend to make the Zr and Hf ppts. more sol. A typical precipitant for Zr and Hf is 2-hydroxy-5-methylazobenzene-4-sulfonic acid. One part Zr in 100 million of soln. can be detected. The red soln. of the hydrochloride of anthraquinone-1-azo-4-dimethyl-aniline forms a blue-violet spot with as little as 0.01 γ of Sn but similar spots are obtained with U, Mo, Au, Zn, Cd, Hg^{++}, Pb^{++++}, Ir, Fe, Ge and Al. The Sn and U spots alone disappear when moistened with HF. Sulfonic acids of α-naphthol and its substituted compds. are used as indicators in mercurometry. Their colorless solns. give a bright-orange color with Hg^{++} ions but when solns. of $Hg(NO_3)_2$ are titrated with alkali halide (to form undissociated mercuric halide) the color disappears to the end point.

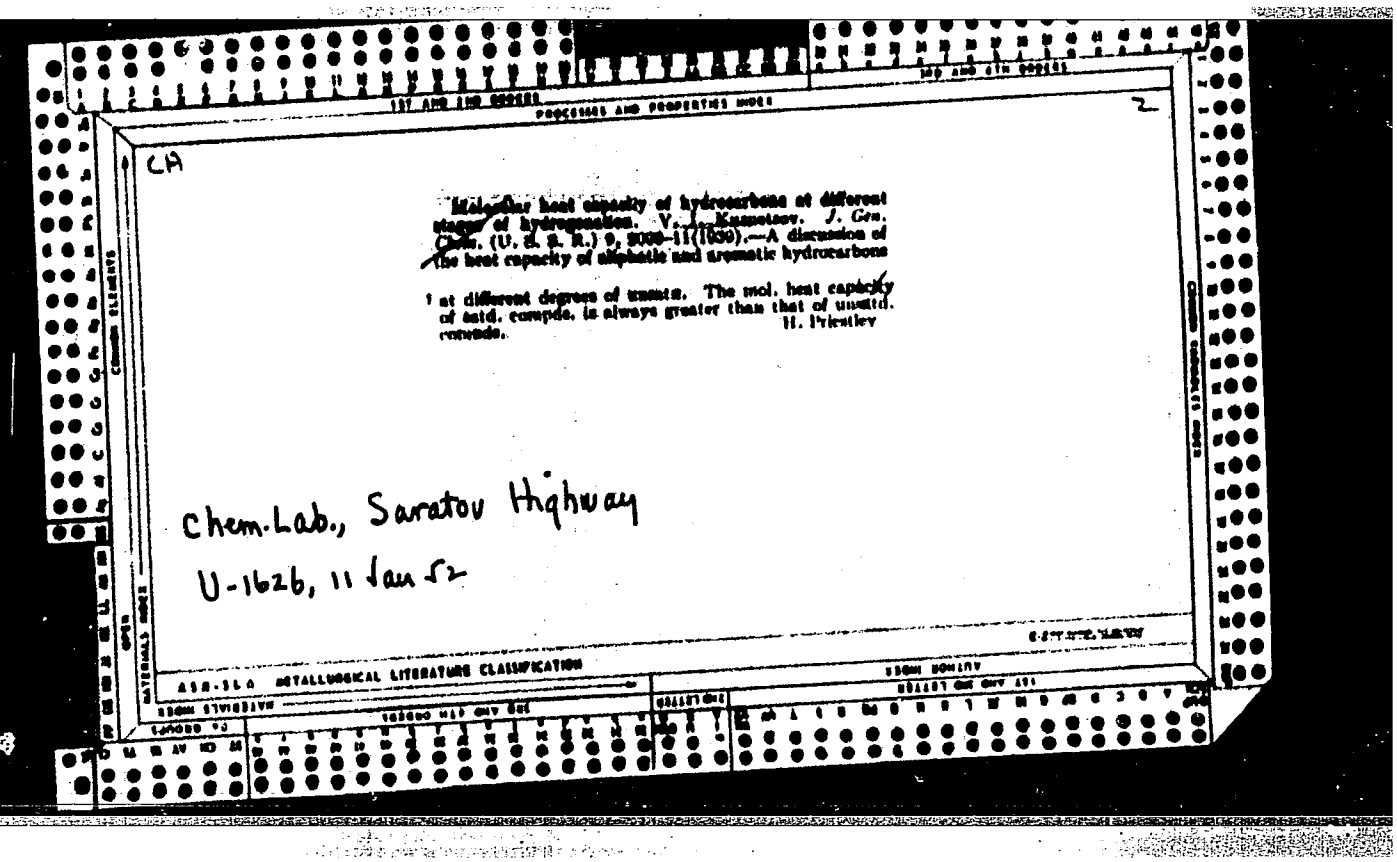
W. R. Henn

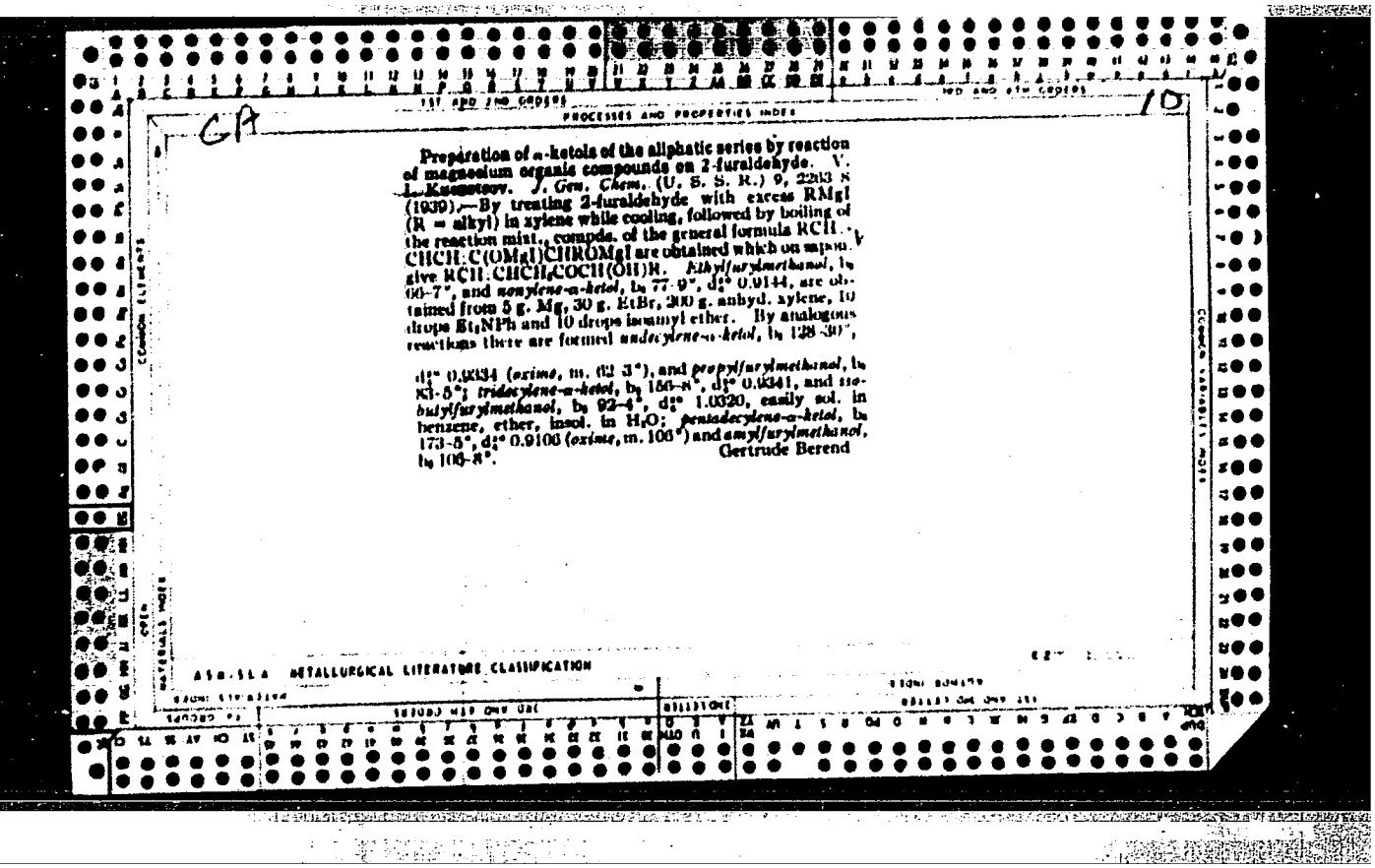


8C

A-1

Detection and determination of germanium. I. New colour reaction. Application of hydrogen selenide to detection of germanium. V. I. KRASNITSOV (J. Gen. Chem. Russ., 1939, 9, 1049—1054).—Se (20 g.) + NaCl (20 g.) + Al (14 g.) are gently heated. The Al_2Se_3 obtained is decomposed by H_2O, and the H_2Se is absorbed by CH_2O solution. 2 drops of the resulting solution are added to 5 c.c. of Ge solution + 1 c.c. of conc. HCl, when a yellow turbidity or a yellow ppt. is produced. When kept for 2 days the H_2Se–CH_2O solution becomes turbid also in the absence of Ge. J. J. B.





CA

10

PROCESSES AND PROPERTIES INDEX

Preparation of α-ketols of the aliphatic series by reaction of magnesium organic compounds on 2-furaldehyde. V. L. Kazitsyn. *J. Gen. Chem.* (U. S. S. R.) 9, 2283-8 (1939).—By treating 2-furaldehyde with excess RMgI (R = alkyl) in xylene while cooling, followed by boiling of the reaction mixt., compds. of the general formula RCH:CHCH:C(OMgI)CHROMgI are obtained which on saponn. give RCH:CHCH$_2$COCH(OH)R. *Ethylfurylmethanol*, b$_{10}$ 66–7°, and *nonylene-α-ketol*, b$_8$ 77–9°, d_4^{20} 0.9144, are obtained from 5 g. Mg, 30 g. EtBr, 200 g. anhyd. xylene, 10 drops Et$_3$NPh and 10 drops isoamyl ether. By analogous reactions there are formed *undecylene-α-ketol*, b$_8$ 128–30°, d_4^{20} 0.8834 (*oxime*, m. 62.3°), and *propylfurylmethanol*, b$_{10}$ 83–5°; *tridecylene-α-ketol*, b$_8$ 150–8°, d_4^{20} 0.8341, and *isobutylfurylmethanol*, b$_8$ 92–4°, d_4^{20} 1.0320, easily sol. in benzene, ether, insol. in H_2O; *pentadecylene-α-ketol*, b$_8$ 173–5°, d_4^{20} 0.9100 (*oxime*, m. 106°) and *amylfurylmethanol*, b$_{10}$ 106–8°.

Gertrude Berend

A5a-5L4 METALLURGICAL LITERATURE CLASSIFICATION

CHELINTSEV, V. V.; KUZNETSOV, V.; KUZNETSOV, G.

"Condensations of Furanic Compounds -- IX. Eutectics of Ketono-Phenolic Systems and the Fixing Among Them of Oxonium Complexes," Zhur. Obshch. Khim., 9, No. 2, 1939.
Received 7 June 1938

U-1517, 22 Oct 1951.

KUZNETSOV,V.I. 600

1. CHELINTSEV, V. V., KUZNETSOV, V.I.

2. USSR (600)

"Furan Compounds and Their Condensation—XII. Polyene Compounds (Alnhatic and Furanic) and their Condensation", Zhur. Obshch. Khim.,9, No. 20, 1939. Received 21 May 1939.

9. [redacted] Report U-1626, 11 Jan 1952.

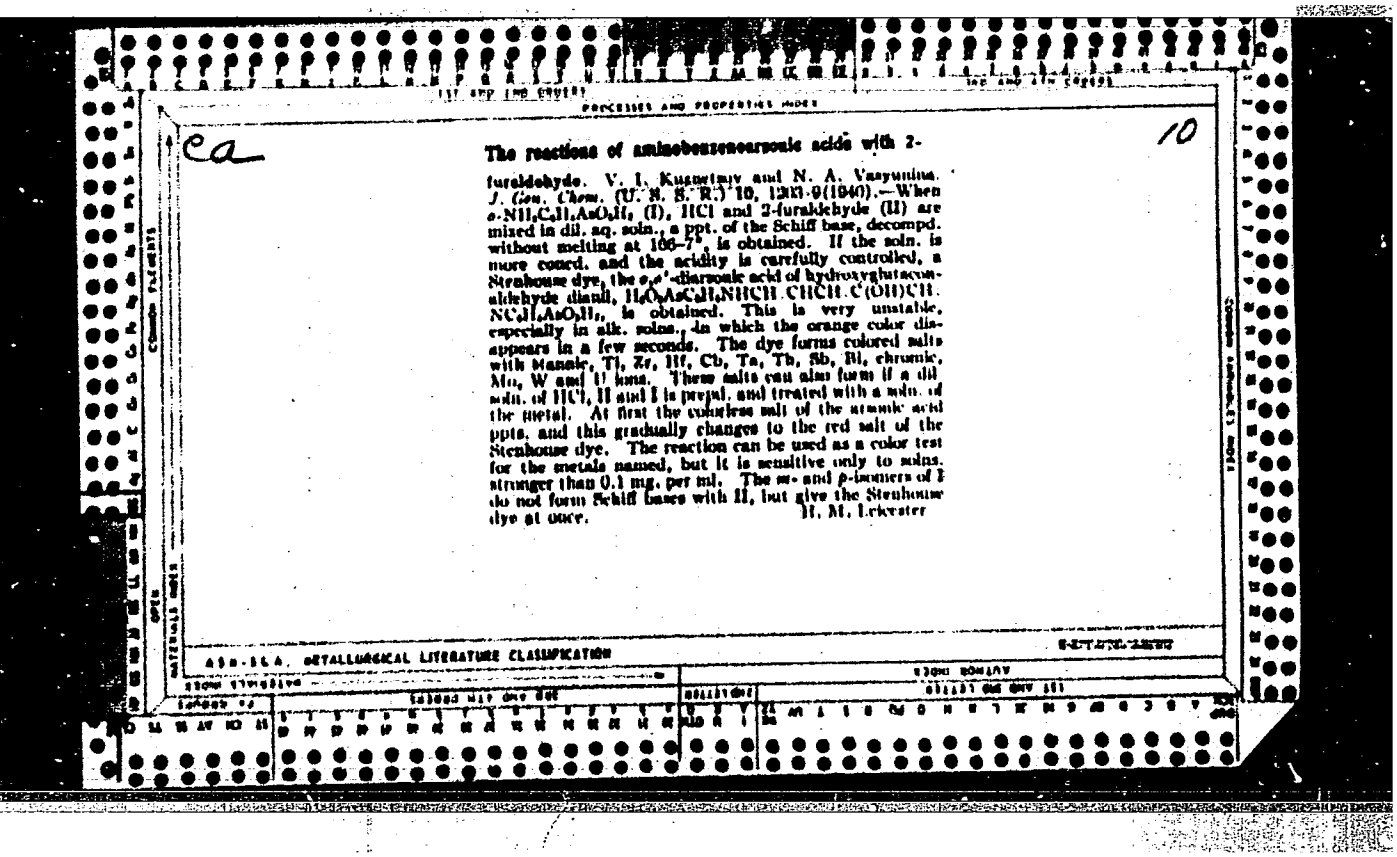
KUZNETSOV4V818 600

1. KUZNETSOV, V.I.

2. USSR (600)

"Obtaining - Ketoles of the Aliphatic Series by the action of Individual Organomagnesium Compounds on Furfurole", Zhur. Obshch. Khim.,9, No. 24, 1939. Lab. of Organic Chem., Saratov Automobil'no-Dorozhnyy Inst.
Received 10 July 1939.

9. [redacted] Report U-1621, 11 Jan 1952.



ca

10

The reactions of aminobenzenearsonic acids with 2-furaldehyde. V. I. Kuznetsov and N. A. Vasyunina. *J. Gen. Chem.* (U. S. S. R.) 10, 1203-9(1940).—When *o*-NH$_2$C$_6$H$_4$AsO$_3$H$_2$ (I), HCl and 2-furaldehyde (II) are mixed in dil. aq. soln., a ppt. of the Schiff base, decompd. without melting at 166–7°, is obtained. If the soln. is more concd. and the acidity is carefully controlled, a Stenhouse dye, the *o,o'*-diarsonic acid of hydroxyglutaconaldehyde dianil, H$_2$O$_3$AsC$_6$H$_4$NHCH:CHCH:C(OH)CH:NC$_6$H$_4$AsO$_3$H$_2$, is obtained. This is very unstable, especially in alk. solns., in which the orange color disappears in a few seconds. The dye forms colored salts with Mn(II), Ti, Zr, Hf, Cb, Ta, Th, Sb, Bi, chromic, Mo, W and U(VI) salts. These salts can also form if a dil. soln. of HCl, II and I is prepd. and treated with a soln. of the metal. At first the cuprous salt of the arsonic acid ppts. and this gradually changes to the red salt of the Stenhouse dye. The reaction can be used as a color test for the metals named, but it is sensitive only to solns. stronger than 0.1 mg. per ml. The *m*- and *p*-isomers of I do not form Schiff bases with II, but give the Stenhouse dye at once.

H. M. Leicester

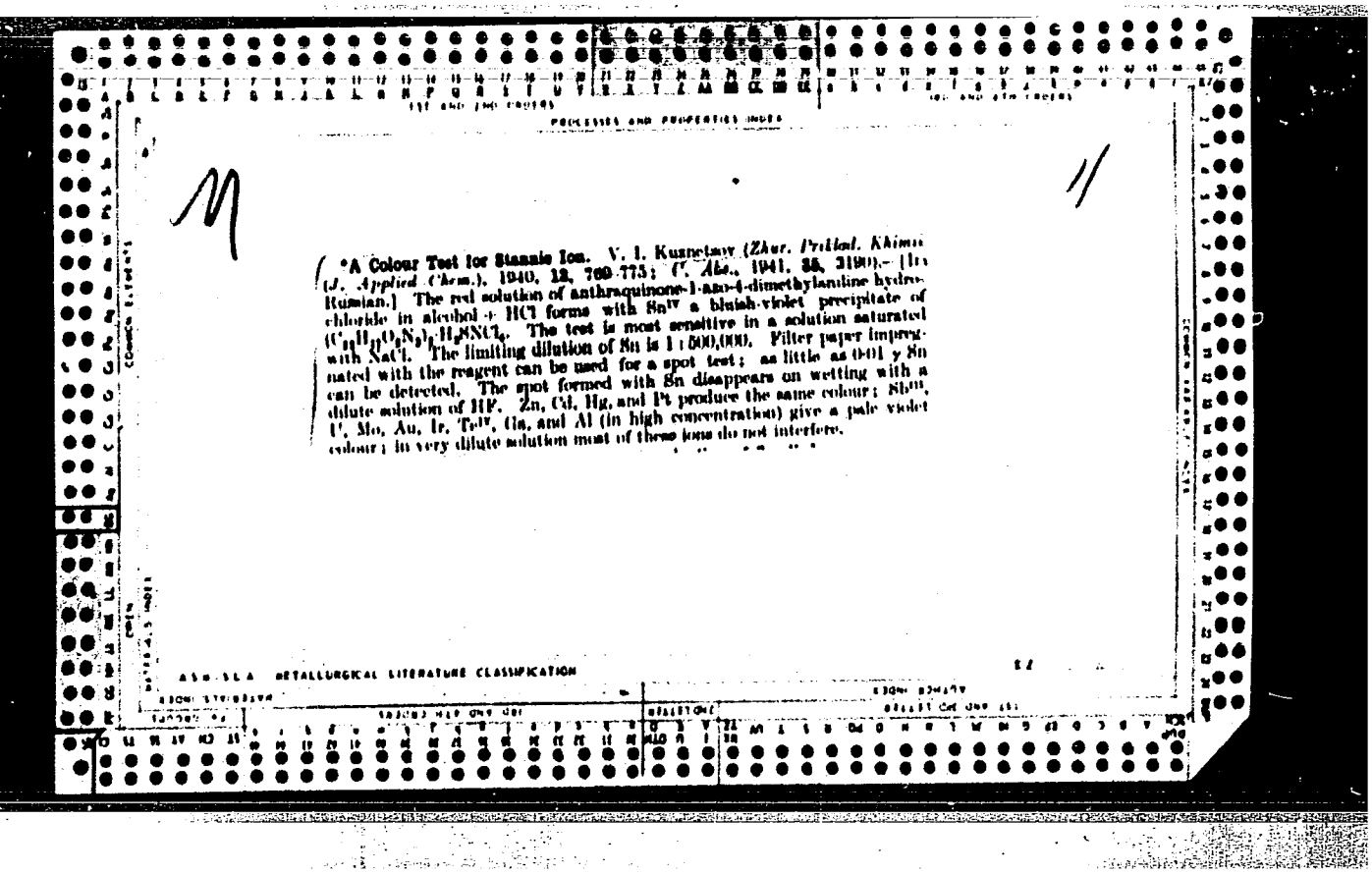
A58-16A. METALLURGICAL LITERATURE CLASSIFICATION

1. KUZNETSOV, V. I.; VASYUNINA, N.A.

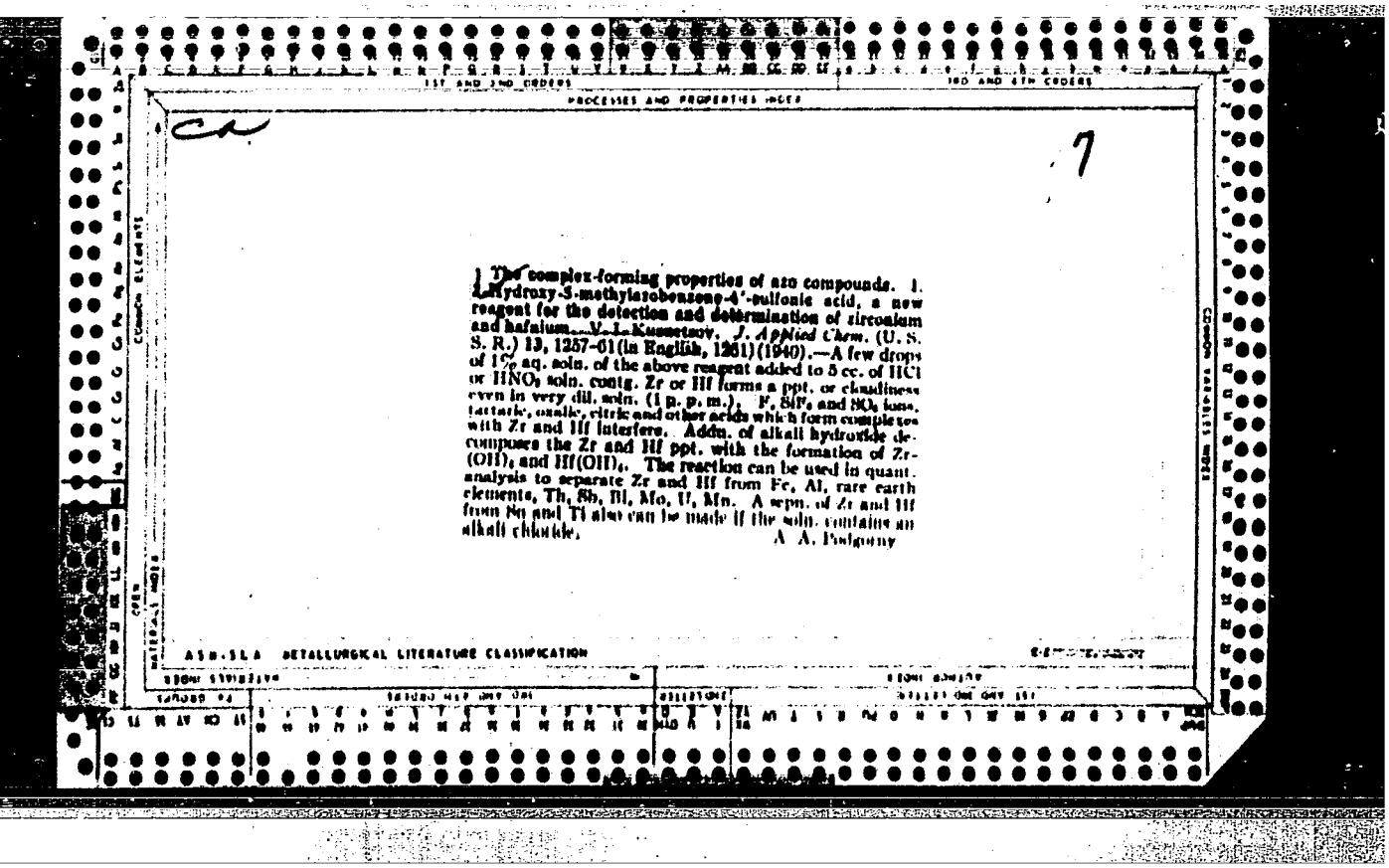
2. USSR (600)

"The Reaction of Aminophenylarsenic Acid with Furfurol," Zhur. Obshch. Khim., 10, No. 13, 1940. All-Union Sci.Res. Inst. for Mineral Materials. Received 16, 1940.

9. [redacted] Report U-1610, 3 Jan 1952.

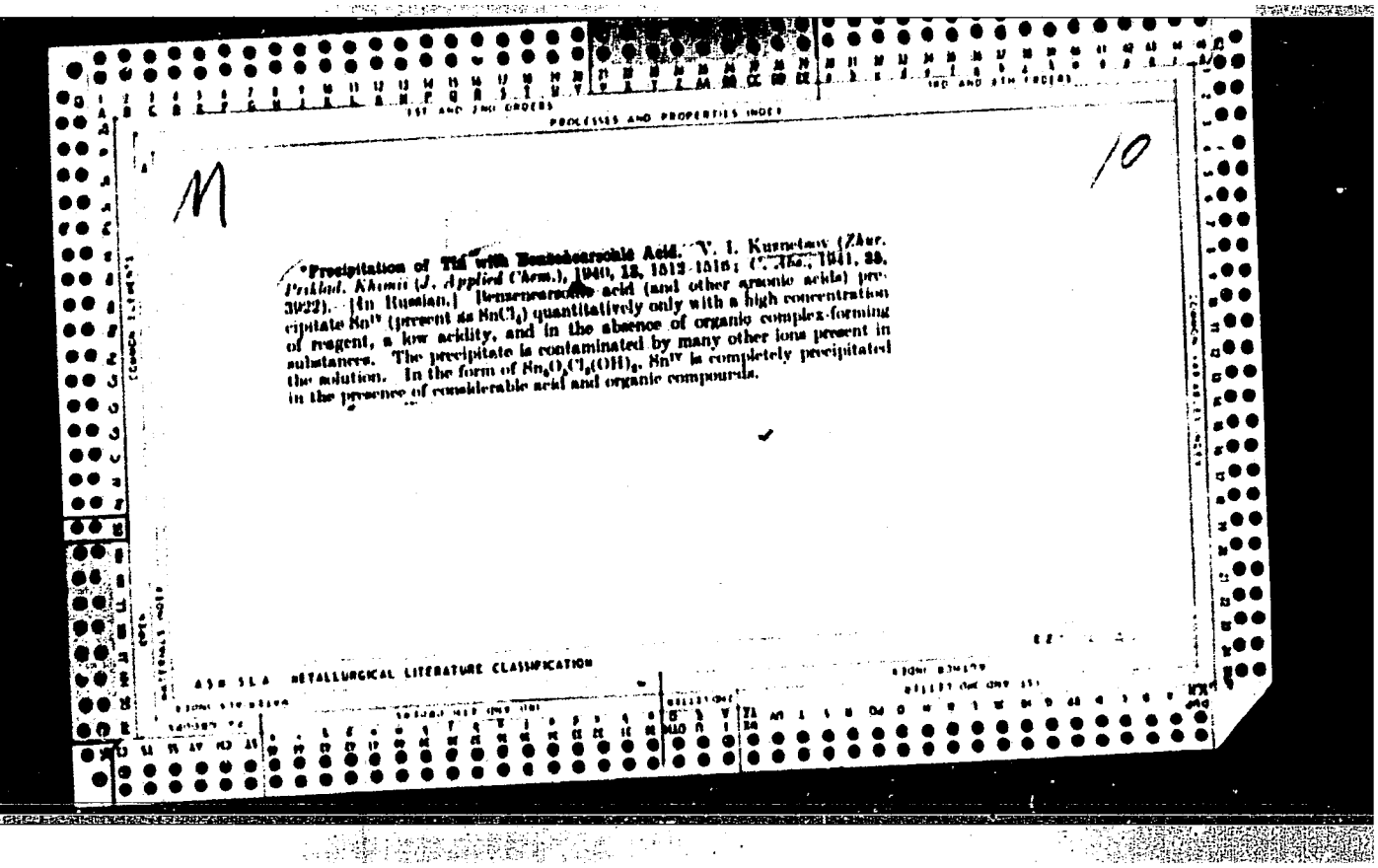


*A Colour Test for Stannic Ion. V. I. Kuznetsov (*Zhur. Prikhal. Khimii (J. Applied Chem.)*, 1940, **13**, 769-775; *C. Abs.*, 1941, **35**, 3190).—[In Russian.] The red solution of anthraquinone-1-azo-4-dimethylaniline hydrochloride in alcohol + HCl forms with Sn^{IV} a bluish-violet precipitate of $(C_{16}H_{13}ON_2)_2H_2SnCl_6$. The test is most sensitive in a solution saturated with NaCl. The limiting dilution of Sn is 1 : 500,000. Filter paper impregnated with the reagent can be used for a spot test; as little as 0·01 γ Sn can be detected. The spot formed with Sn disappears on wetting with a dilute solution of HF. Zn, Cd, Hg, and Pt produce the same colour; Sb^{III}, Fe^{III}, Mo, Au, Ir, Te^{IV}, Cu, and Al (in high concentration) give a pale violet colour; in very dilute solution most of these ions do not interfere.



The complex-forming properties of azo compounds. I. 1-Hydroxy-2-methylarobenzene-4'-sulfonic acid, a new reagent for the detection and determination of zirconium and hafnium. V. I. Kuznetsov. *J. Applied Chem.* (U. S. S. R.) 13, 1257-61 (in English, 1261) (1940).—A few drops of 1% aq. soln. of the above reagent added to 5 cc. of HCl or HNO_3 soln. contg. Zr or Hf forms a ppt. or cloudiness even in very dil. soln. (1 p. p. m.). F, SiF_6 and SO_4 ions, tartaric, oxalic, citric and other acids which form complexes with Zr and Hf interfere. Addn. of alkali hydroxide decomposes the Zr and Hf ppt. with the formation of $Zr(OH)_4$ and $Hf(OH)_4$. The reaction can be used in quant. analysis to separate Zr and Hf from Fe, Al, rare earth elements, Th, Sb, Bi, Mo, U, Mn. A sepn. of Zr and Hf from Ni and Ti also can be made if the soln. contains an alkali chloride.

A. A. Pulgunny



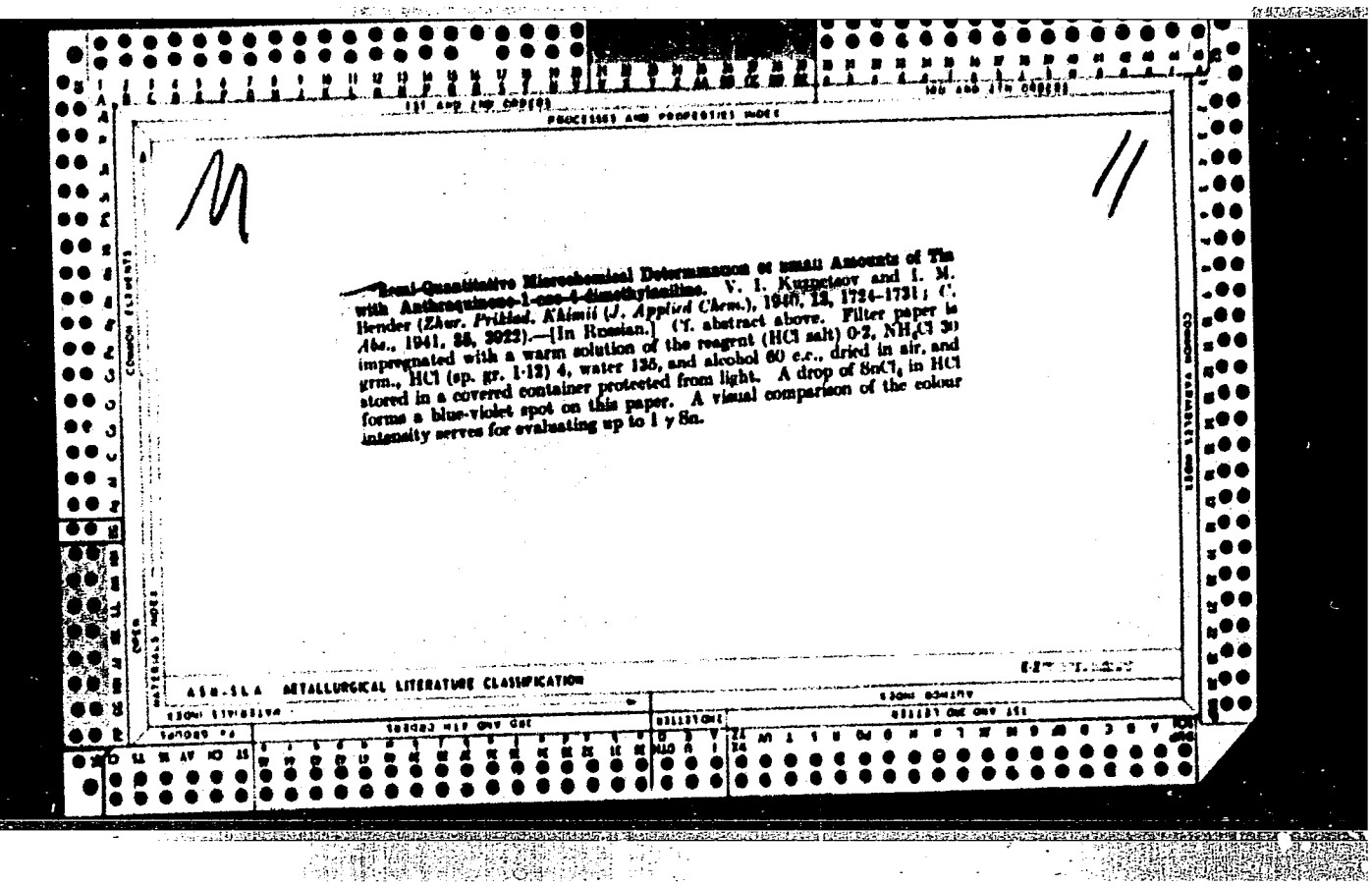
PROCESSES AND PROPERTIES INDEX

M

10

Precipitation of Tin with Benzenearsonic Acid. V. I. Kuznetsov (Zhur. Prikład. Khimii (J. Applied Chem.), 1940, 13, 1512-1516; (C.A., 1941, 35, 3922). [In Russian.] Benzenearsonic acid (and other arsonic acids) precipitate Sn^{IV} (present as $SnCl_4$) quantitatively only with a high concentration of reagent, a low acidity, and in the absence of organic complex-forming substances. The precipitate is contaminated by many other ions present in the solution. In the form of $Sn_6O_4Cl_4(OH)_8$, Sn^{IV} is completely precipitated in the presence of considerable acid and organic compounds.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



Semi-Quantitative Microchemical Determination of small Amounts of Tin with Anthraquinone-1-one-4-dimethylaniline. V. I. Kuznetsov and I. M. Hender (*Zhur. Prikhad. Khimii* (*J. Applied Chem.*), 1940, 13, 1724–1731; *C. Abs.*, 1941, 35, 2022).—[In Russian.] (*T.* abstract above. Filter paper is impregnated with a warm solution of the reagent (HCl salt) 0·2, NH_4Cl 30 grm., HCl (sp. gr. 1·12) 4, water 135, and alcohol 60 c.c., dried in air, and stored in a covered container protected from light. A drop of $SnCl_4$ in HCl forms a blue-violet spot on this paper. A visual comparison of the colour intensity serves for evaluating up to 1 γ Sn.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Colour reactions for thorium, uranium, and other elements. V. I. Kuznetsov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 898–900). The effect of various groupings on the production of coloured compounds with sp. elements, thus providing colour tests for these elements, is discussed. The colours produced by some o-arsonic acids of o-hydroxyazo compounds with rare earths, Ti, Zr, Sn, Th, Nb, Ta, and U are given. By adjustment of pH it is possible to increase the specificity of the reaction. The presence of $As(OH)_2$ or the to the azo-group is essential for the production of colour. The sensitivity in the case of Th or U is sufficient to give a colour change with additions of 1 p.p.m. A. J. M.

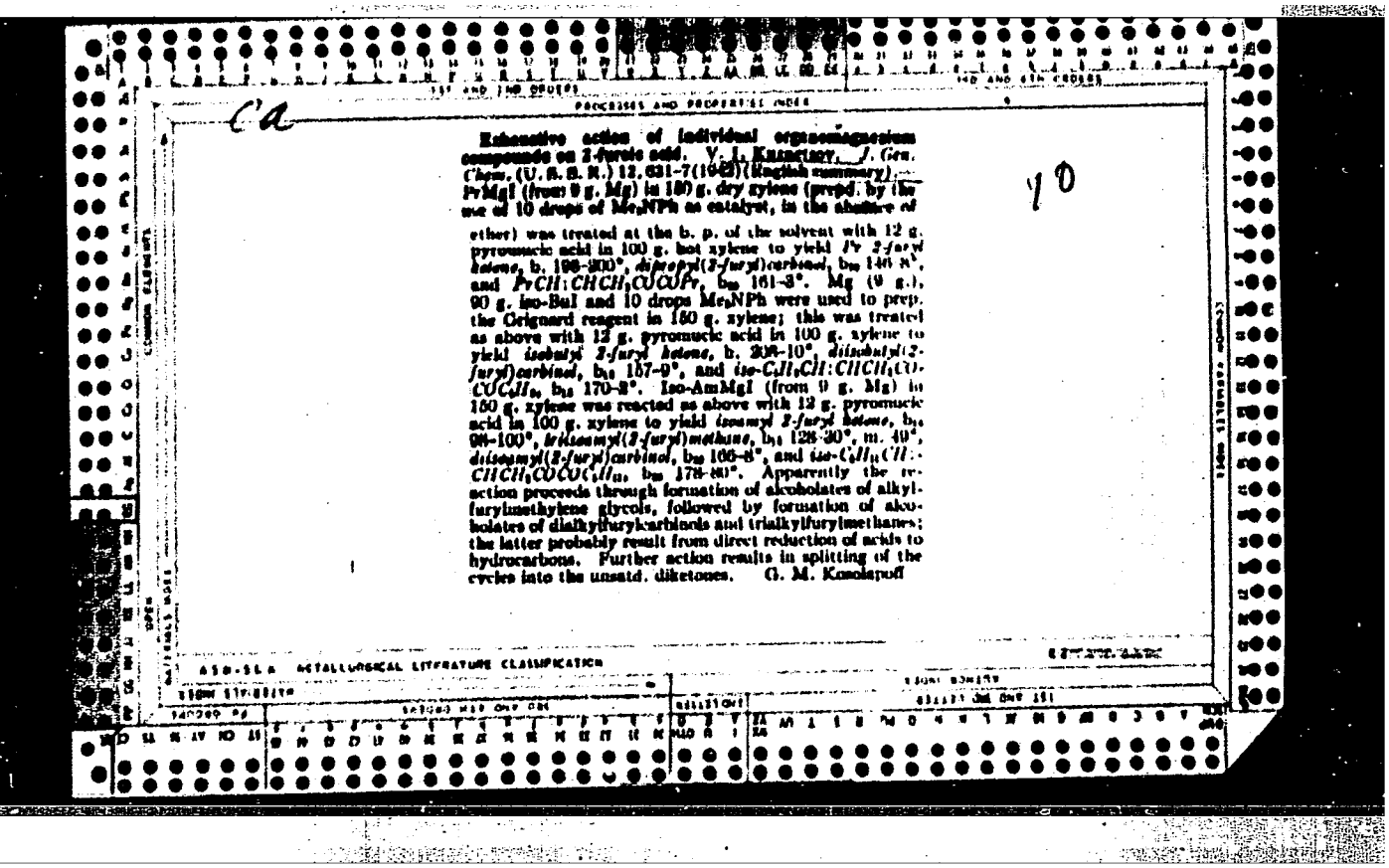
M.4

Y. A. Knyazev

On Colour Reactions for the Detection of Antimony, Gallium, and Other Elements. V. I. Kuznetsov. (Compt. rend. (Doklady) *Acad. Sci. U.R.S.S.*, 1941, 33, 45–47; *C. Abs.*, 1943, 37, 1948).—[In German.] Suitable colour reactions are tabulated for Sb^{III}, Sb^{V}, Al, Ca, Bi, Fe^{III}, Ti^{IV}, Zr, Th, and Sn^{IV} with 4-nitropyrocatechol, 4-nitrosopyrocatechol, alizarin, the *p*-diazonium compound of phenolsulphonic acid and pyrocatechol, and the *p*-diazonium compound of phenolsulphonic acid and α-dihydroxynaphthalene. In each of these fifty systems, the colour of the respective metal phenolate is given for solutions of 0·1*N*., 0·5*N*., and *N*·HCl.

Analytic Chem. Lab.,
Inst. Mineral Raw Materials, Moscow

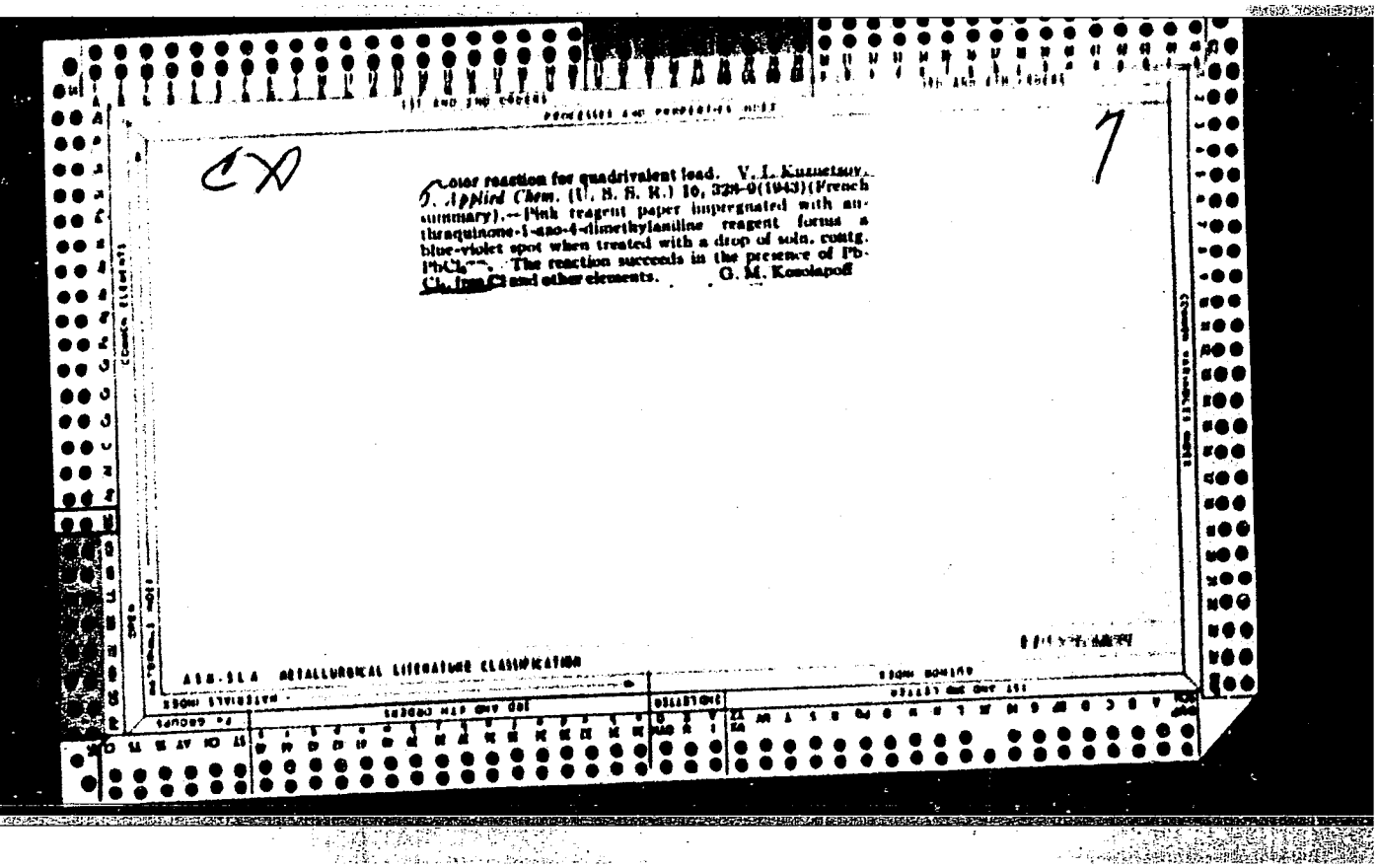
1945



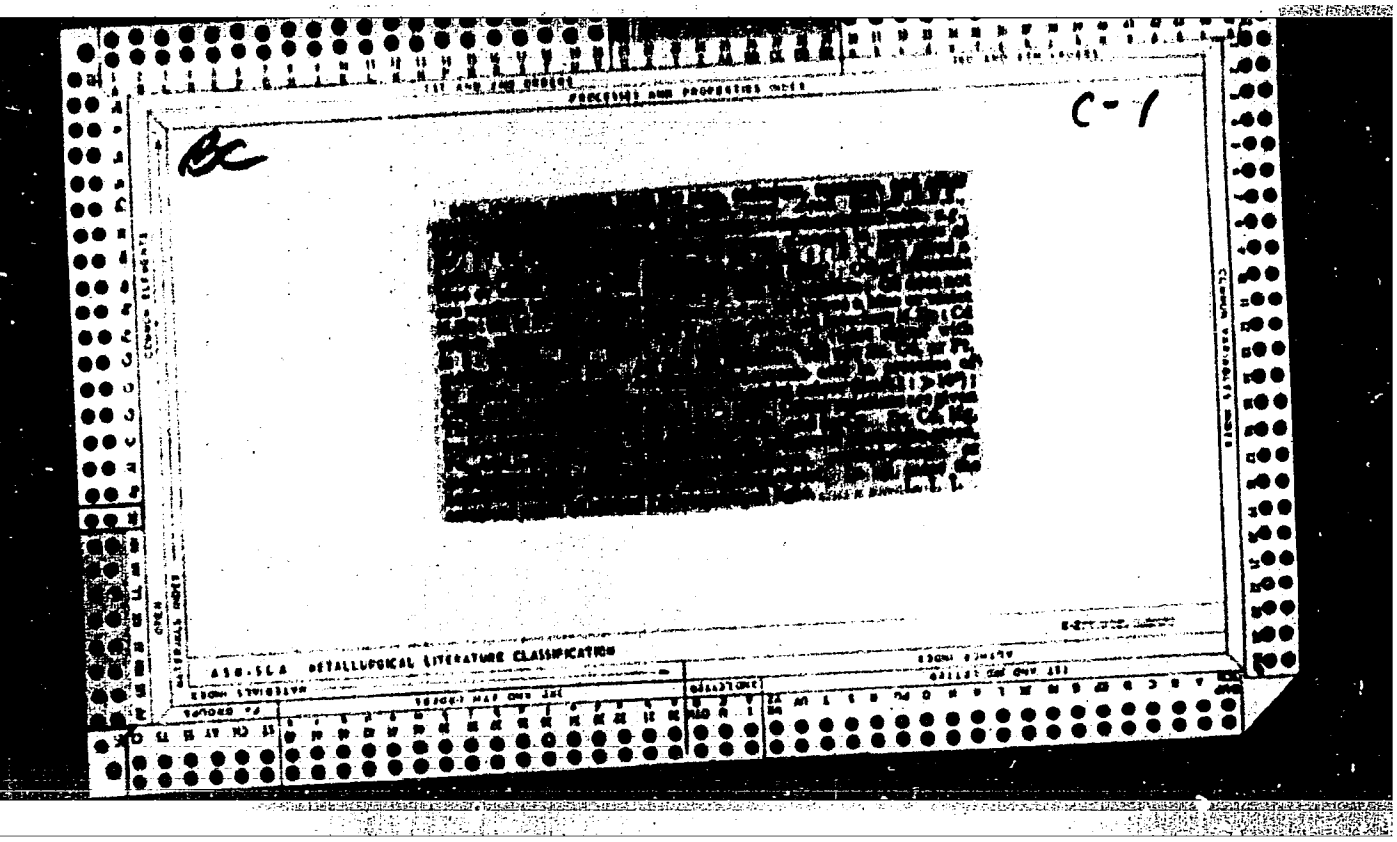
Ca

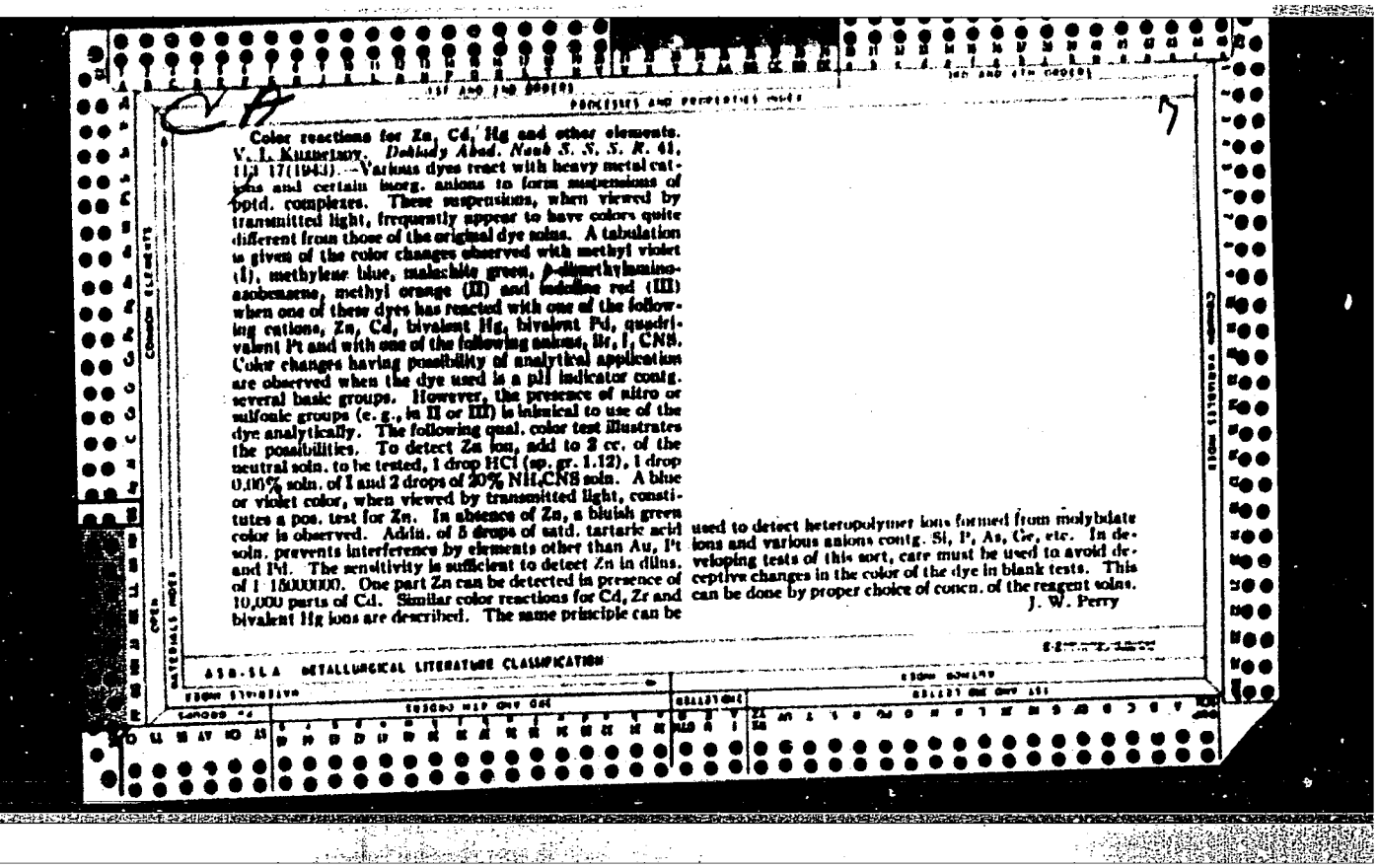
Exhaustive action of individual organomagnesium compounds on 2-furoic acid. V. I. Kravtsov. *J. Gen. Chem.* (U.S.S.R.) 12, 631-7(1942)(English summary). PrMgI (from 9 g. Mg) in 180 g. dry xylene (prepd. by the use of 10 drops of Me_2NPh as catalyst, in the absence of ether) was treated at the b. p. of the solvent with 12 g. pyromucic acid in 100 g. hot xylene to yield *Pr 2-furyl ketone*, b. 198-200°, *dipropyl(2-furyl)carbinol*, b_{20} 146°, and $PrCH{:}CHCH_2COCPr$, b_{20} 161-3°. Mg (9 g.), 90 g. iso-BuI and 10 drops Me_2NPh were used to prep. the Grignard reagent in 180 g. xylene; this was treated as above with 12 g. pyromucic acid in 100 g. xylene to yield *isobutyl 2-furyl ketone*, b. 208-10°, *diisobutyl(2-furyl)carbinol*, b_{15} 157-9°, and *iso*-$C_4H_9CH{:}CHCH_2CO$-COC_4H_9, b_{15} 170-3°. Iso-AmMgI (from 9 g. Mg) in 150 g. xylene was reacted as above with 12 g. pyromucic acid in 100 g. xylene to yield *isoamyl 2-furyl ketone*, b_{15} 98-100°, *triisoamyl(2-furyl)methane*, b_{15} 128-30°, m. 40°, *diisoamyl(2-furyl)carbinol*, b_{20} 166-8°, and *iso*-$C_4H_9CH{:}$-$CHCH_2COCOC_4H_9$, b_{20} 178-80°. Apparently the reaction proceeds through formation of alcoholates of alkylfurylmethylene glycols, followed by formation of alcoholates of dialkylfurylcarbinols and trialkylfurylmethanes; the latter probably result from direct reduction of acids to hydrocarbons. Further action results in splitting of the cycles into the unsatd. diketones. G. M. Kosolapoff

10



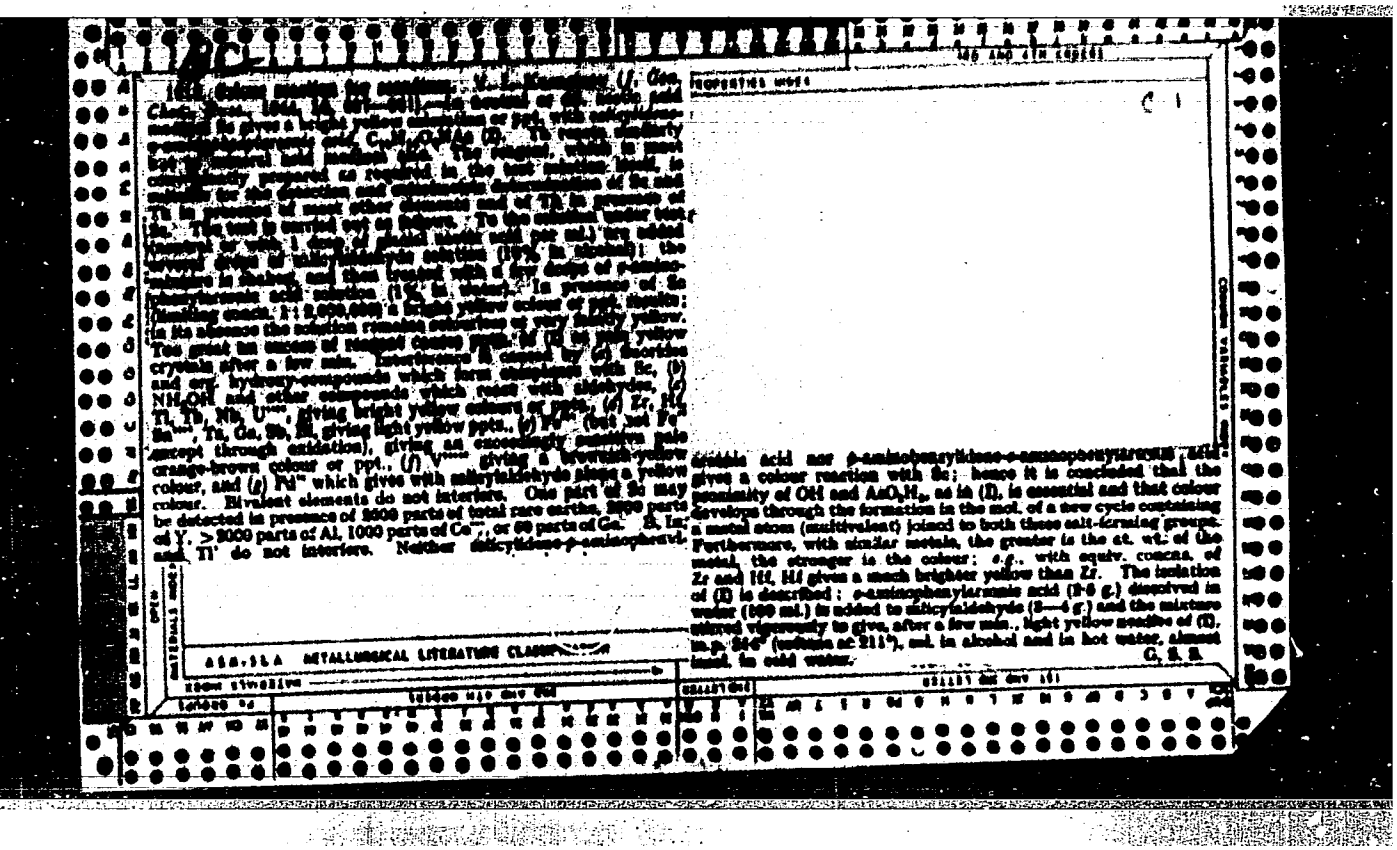
Color reaction for quadrivalent lead. V. I. Kuznetsov. *J. Applied Chem.* (U. S. S. R.) 16, 329-9(1943)(French summary).—Pink reagent paper impregnated with anthraquinone-1-azo-4-dimethylaniline reagent forms a blue-violet spot when treated with a drop of soln. contg. $PbCl_4^{--}$. The reaction succeeds in the presence of $Pb(NO_3)_2$, Cl_2 and other elements. G. M. Kosolapoff

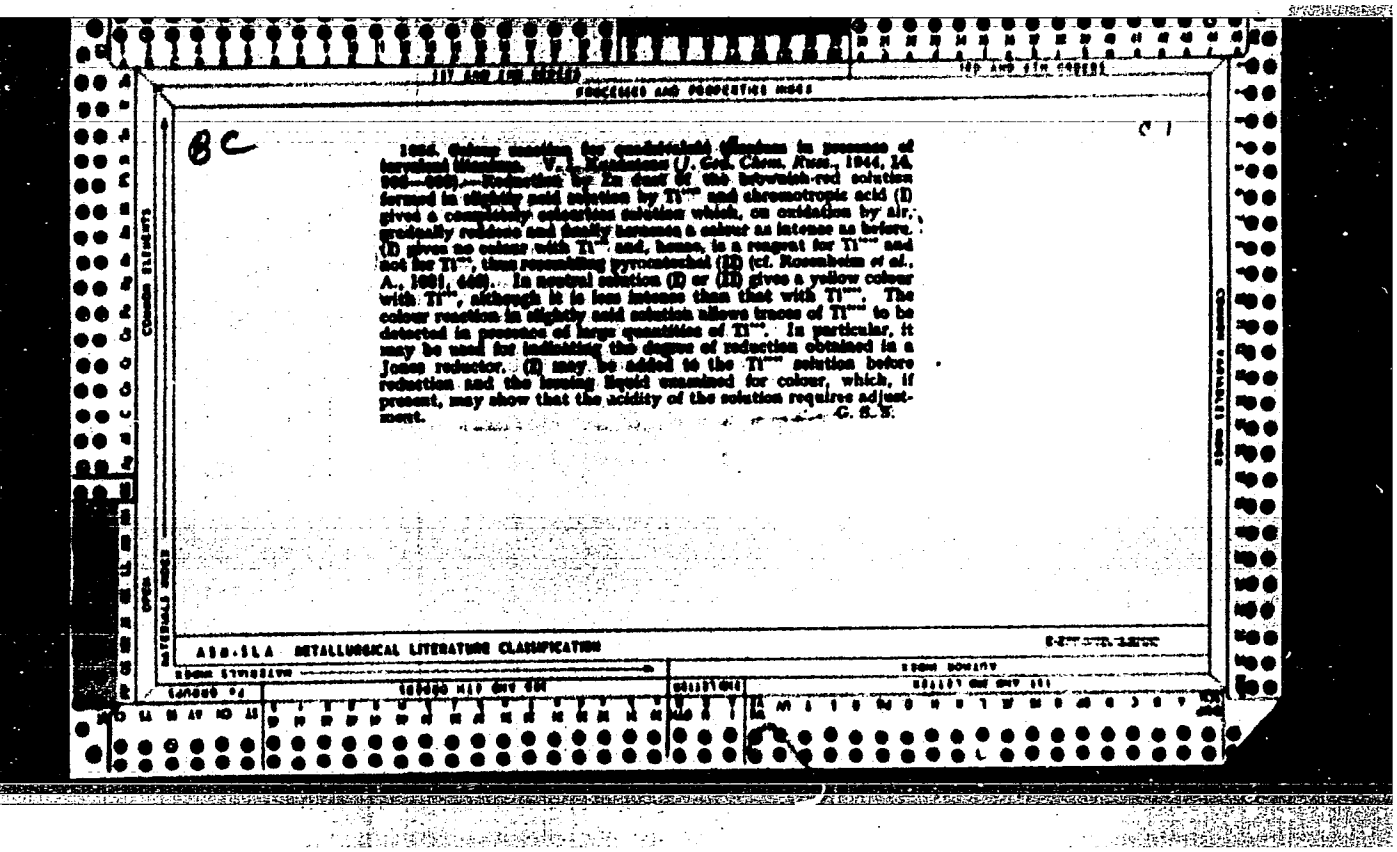




Color reactions for Zn, Cd, Hg and other elements. V. I. Kuznetsov. *Doklady Akad. Nauk S. S. S. R.* 41, 113-17(1943).—Various dyes react with heavy metal cations and certain inorg. anions to form suspensions of bptd. complexes. These suspensions, when viewed by transmitted light, frequently appear to have colors quite different from those of the original dye solns. A tabulation is given of the color changes observed with methyl violet (I), methylene blue, malachite green, *p*-dimethylaminoazobenzene, methyl orange (II) and indoline red (III) when one of these dyes has reacted with one of the following cations, Zn, Cd, bivalent Hg, bivalent Pd, quadrivalent Pt and with one of the following anions, Br, I, CNS. Color changes having possibility of analytical application are observed when the dye used is a pH indicator contg. several basic groups. However, the presence of nitro or sulfonic groups (e. g., in II or III) is inimical to use of the dye analytically. The following qual. color test illustrates the possibilities. To detect Zn ion, add to 2 cc. of the neutral soln. to be tested, 1 drop HCl (sp. gr. 1.12), 1 drop 0.10% soln. of I and 2 drops of 20% NH_4CNS soln. A blue or violet color, when viewed by transmitted light, constitutes a pos. test for Zn. In absence of Zn, a bluish green color is observed. Addn. of 5 drops of satd. tartaric acid soln. prevents interference by elements other than Au, Pt and Pd. The sensitivity is sufficient to detect Zn in dilns. of 1:1500000. One part Zn can be detected in presence of 10,000 parts of Cd. Similar color reactions for Cd, Zr and bivalent Hg ions are described. The same principle can be used to detect heteropolymet ions formed from molybdate ions and various anions contg. Si, P, As, Ge, etc. In developing tests of this sort, care must be used to avoid deceptive changes in the color of the dye in blank tests. This can be done by proper choice of concn. of the reagent solns.

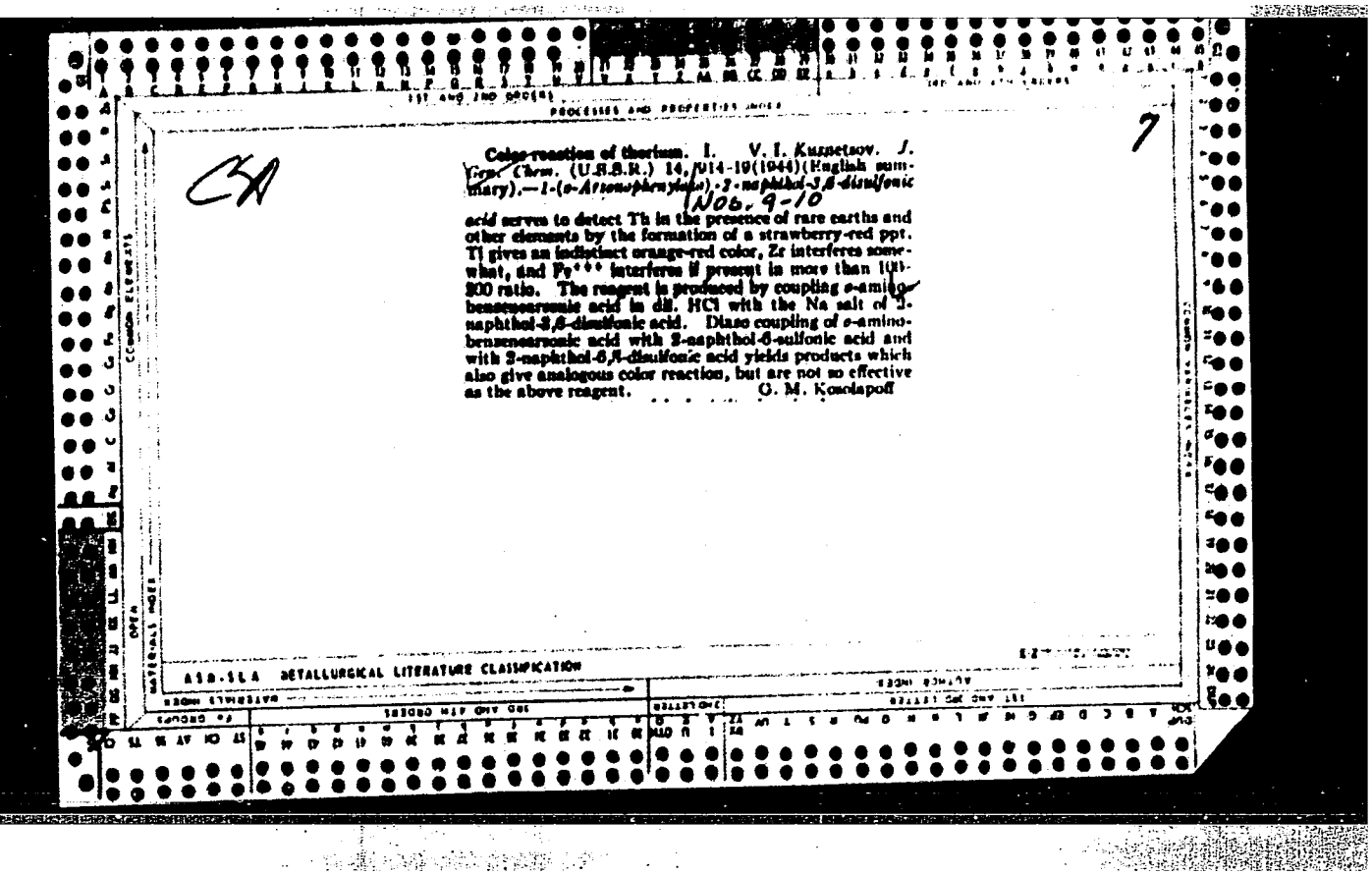
J. W. Perry





BC

1956. Colour reaction for quadrivalent titanium in presence of bervalent titanium. V. E. Nashbaum (*J. Gen. Chem. Russ.*, 1944, 14, 903—908).—Reduction by Zn dust of the brownish-red solution formed in slightly acid solution by Ti^{IV} and chromotropic acid (I) gives a completely colourless solution which, on oxidation by air, gradually reddens and finally becomes a colour as intense as before. (I) gives no colour with Ti^{III} and, hence, is a reagent for Ti^{IV} and not for Ti^{III}, thus resembling pyrocatechol (II) (cf. Rosenheim *et al.*, A., 1901, i, 446). In neutral solution (I) or (II) gives a yellow colour with Ti^{IV}, although it is less intense than that with Ti^{IV}. The colour reaction in slightly acid solution allows traces of Ti^{IV} to be detected in presence of large quantities of Ti^{III}. In particular, it may be used for indicating the degree of reduction obtained in a Jones reductor. (I) may be added to the Ti^{IV} solution before reduction and the issuing liquid examined for colour, which, if present, may show that the acidity of the solution requires adjustment. G. S. S.



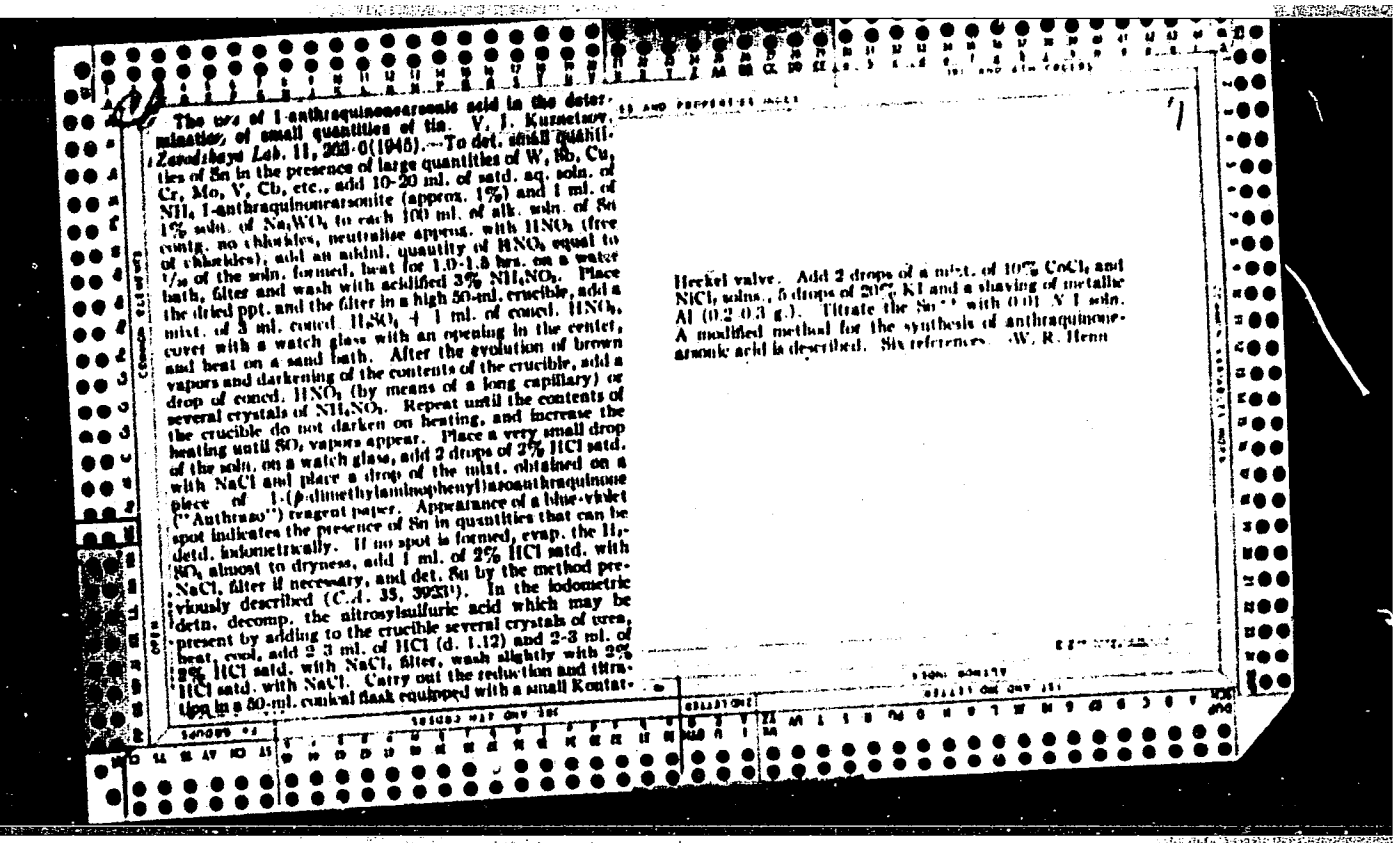
CA

7

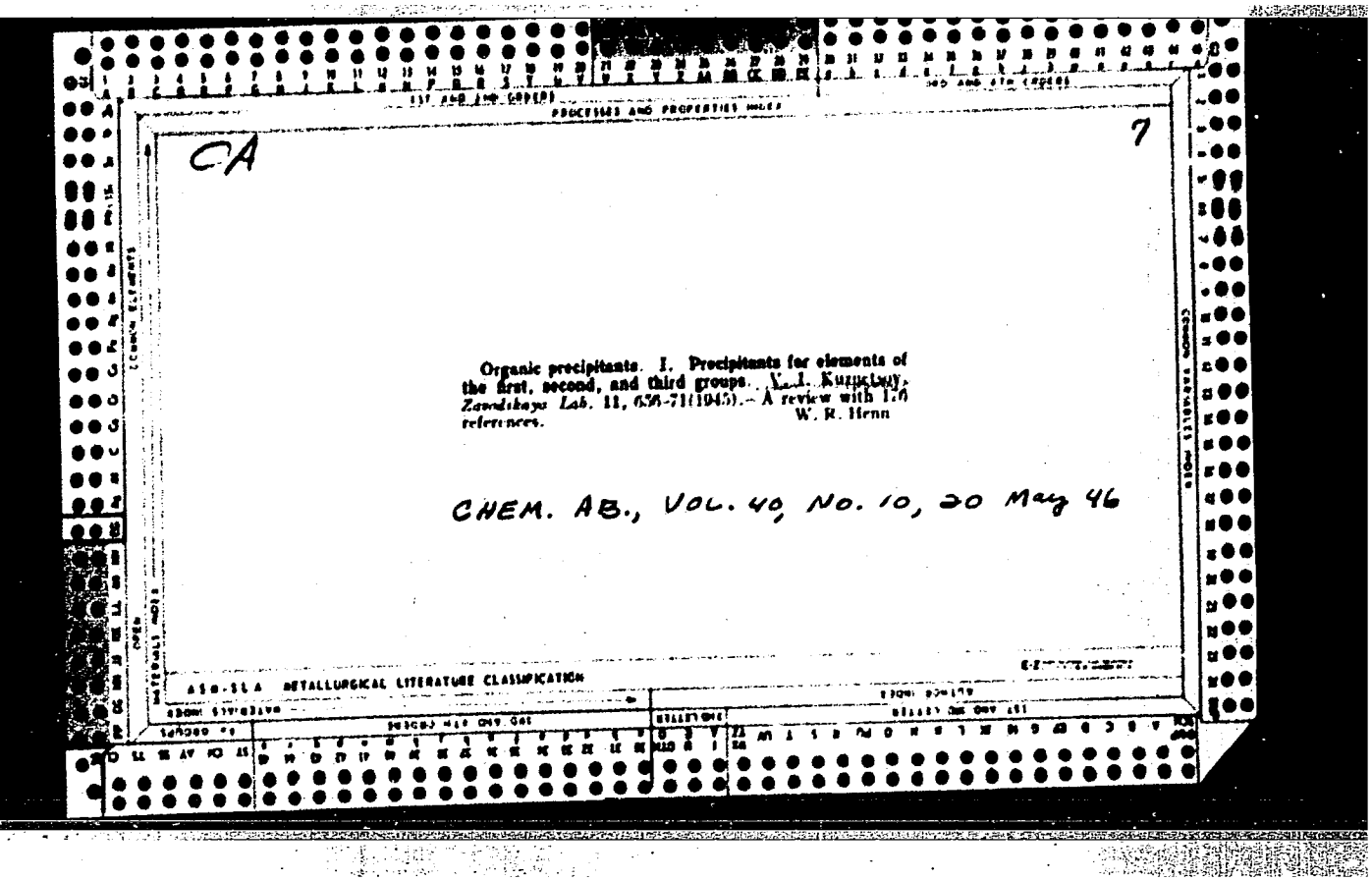
Color reaction of thorium. I. V. I. Kuznetsov. *J. Gen. Chem.* (U.S.S.R.) 14, 914-19(1944)(English summary).—*1-(o-Arsonophenylazo)-2-naphthol-3,6-disulfonic* [illegible] 9-10

acid serves to detect Th in the presence of rare earths and other elements by the formation of a strawberry-red ppt. Ti gives an indistinct orange-red color, Zr interferes somewhat, and Fe^{+++} interferes if present in more than 1(0)-200 ratio. The reagent is produced by coupling *o*-aminobenzenearsonic acid in dil. HCl with the Na salt of 2-naphthol-3,6-disulfonic acid. Diazo coupling of *o*-aminobenzenearsonic acid with 2-naphthol-6-sulfonic acid and with 2-naphthol-6,8-disulfonic acid yields products which also give analogous color reaction, but are not so effective as the above reagent. G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



The use of 1-anthraquinonearsonic acid in the determination of small quantities of tin. V. I. Kuznetsov, *Zavodskaya Lab.* 11, 203-6(1945).—To det. small quantities of Sn in the presence of large quantities of W, Sb, Cu, Cr, Mo, V, Cb, etc., add 10-20 ml. of satd. aq. soln. of NH_4 1-anthraquinonearsonite (approx. 1%) and 1 ml. of 1% soln. of Na_2WO_4 to each 100 ml. of alk. soln. of Sn compg. no chlorides, neutralize approx. with HNO_3 (free of chlorides), add an addnl. quantity of HNO_3 equal to 1/5 of the soln. formed, heat for 1.0-1.5 hrs. on a water bath, filter and wash with acidified 3% NH_4NO_3. Place the dried ppt. and the filter in a high 50-ml. crucible, add a mixt. of 3 ml. concd. H_2SO_4 + 1 ml. of concd. HNO_3, cover with a watch glass with an opening in the center, and heat on a sand bath. After the evolution of brown vapors and darkening of the contents of the crucible, add a drop of concd. HNO_3 (by means of a long capillary) or several crystals of NH_4NO_3. Repeat until the contents of the crucible do not darken on heating, and increase the heating until SO_3 vapors appear. Place a very small drop of the soln. on a watch glass, add 2 drops of 2% HCl satd. with NaCl and place a drop of the mixt. obtained on a piece of 1-(*p*-dimethylaminophenyl)arsoanthraquinone ("Anthraso") reagent paper. Appearance of a blue-violet spot indicates the presence of Sn in quantities that can be detd. iodometrically. If no spot is formed, evap. the H_2SO_4 almost to dryness, add 1 ml. of 2% HCl satd. with NaCl, filter if necessary, and det. Sn by the method previously described (*C.A.* 35, 3923[1]). In the iodometric detn. decomp. the nitrosylsulfuric acid which may be present by adding to the crucible several crystals of urea, heat, cool, add 2-3 ml. of HCl (d. 1.12) and 2-3 ml. of 2% HCl satd. with NaCl, filter, wash slightly with 2% HCl satd. with NaCl. Carry out the reduction and titration in a 50-ml. conical flask equipped with a small Kontat- Heckel valve. Add 2 drops of a mixt. of 10% $CoCl_2$ and $NiCl_2$ solns., 5 drops of 20% KI and a shaving of metallic Al (0.2-0.3 g.). Titrate the Sn^{++} with 0.01 *N* I soln. A modified method for the synthesis of anthraquinonearsonic acid is described. Six references. W. R. Henn

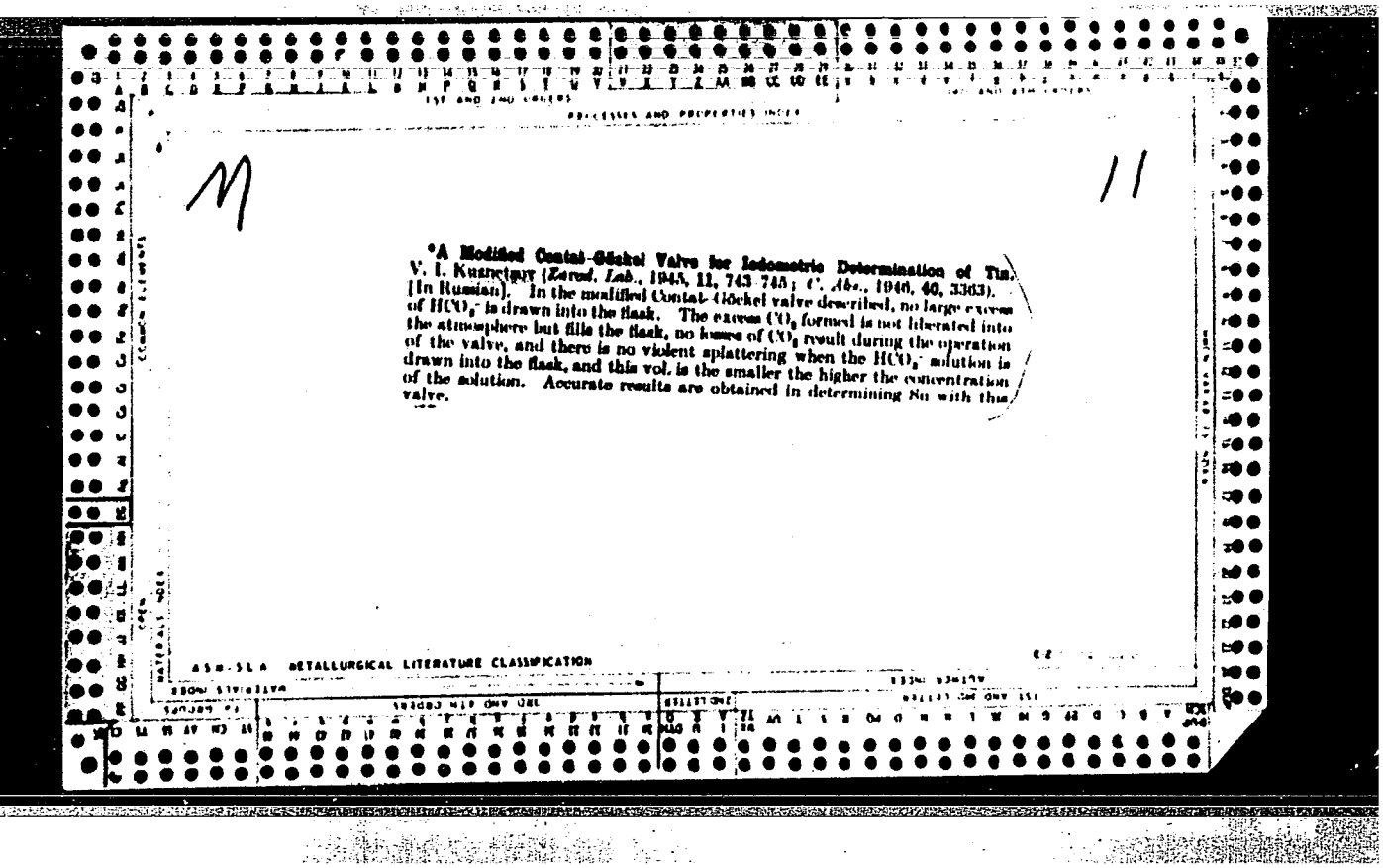


CA

7

Organic precipitants. I. Precipitants for elements of the first, second, and third groups. V. I. Kuznetsov. *Zavodskaya Lab.* 11, 656-71(1945).—A review with 120 references. W. R. Henn

CHEM. AB., VOL. 40, NO. 10, 20 May 46

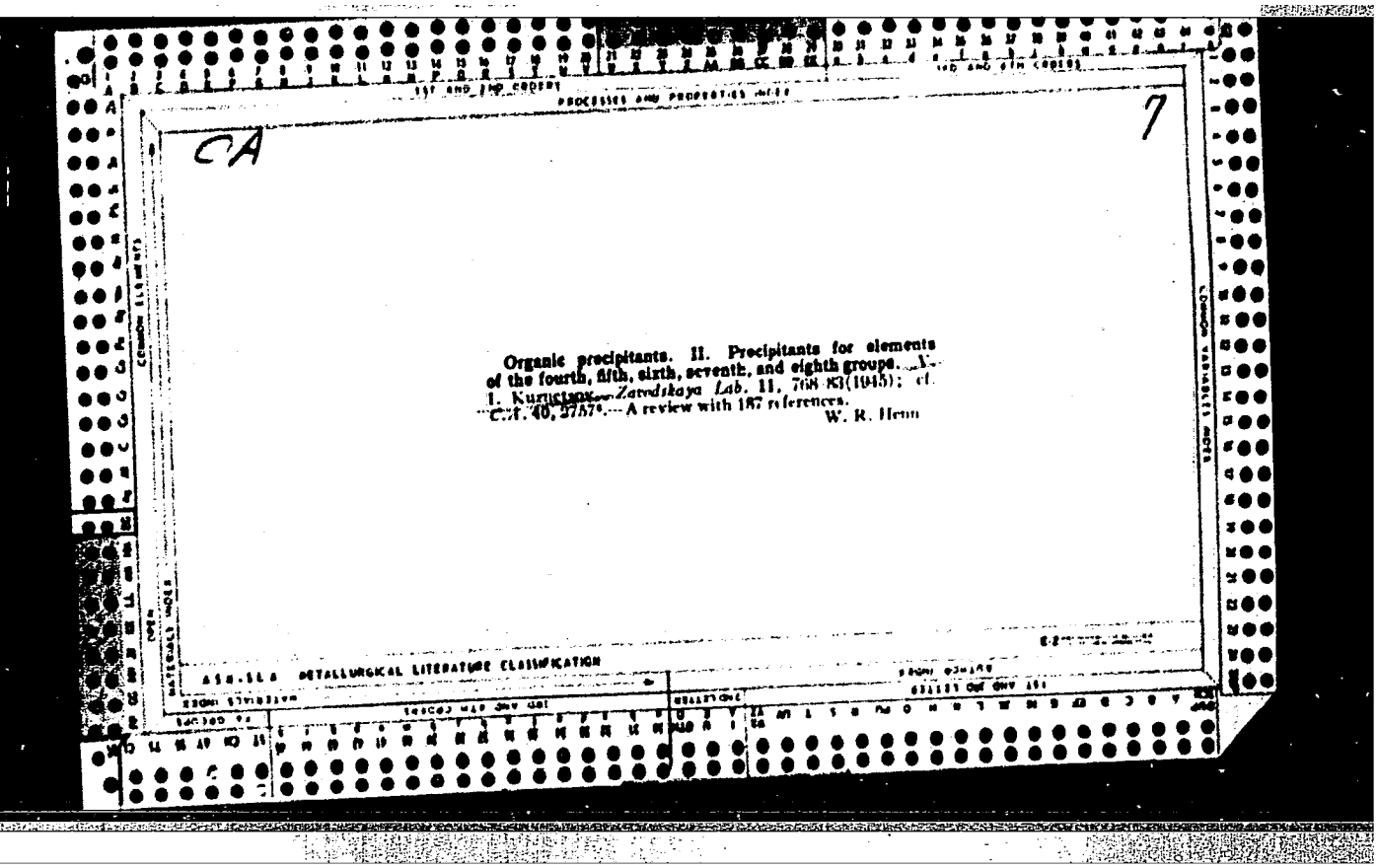


M

11

***A Modified Contat-Göckel Valve for Iodometric Determination of Tin.** V. I. Kuznetsov (*Zavod. Lab.*, 1945, 11, 743–745; *C. Abs.*, 1946, 40, 3363). [In Russian]. In the modified Contat-Göckel valve described, no large excess of HCO_3^- is drawn into the flask. The excess CO_2 formed is not liberated into the atmosphere but fills the flask, no losses of CO_2 result during the operation of the valve, and there is no violent splattering when the HCO_3^- solution is drawn into the flask, and this vol. is the smaller the higher the concentration of the solution. Accurate results are obtained in determining Sn with this valve.

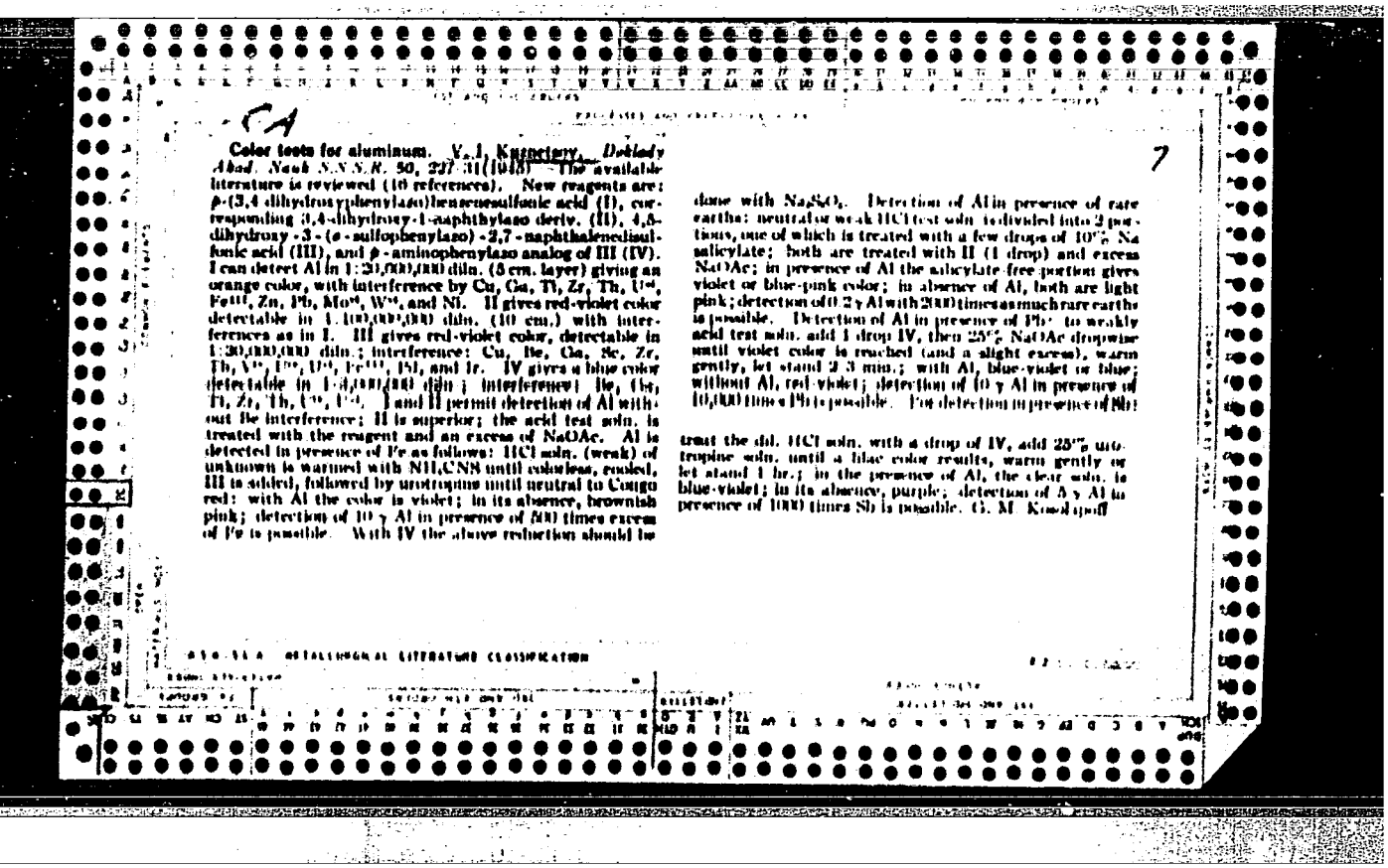
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION


CA

7

Organic precipitants. II. Precipitants for elements of the fourth, fifth, sixth, seventh, and eighth groups. I. I. Kurnitsyna. *Zavodskaya Lab.* 11, 768-83(1945); cf. C.A. 40, 37579.—A review with 187 references.
W. R. Henn

A58.514 METALLURGICAL LITERATURE CLASSIFICATION

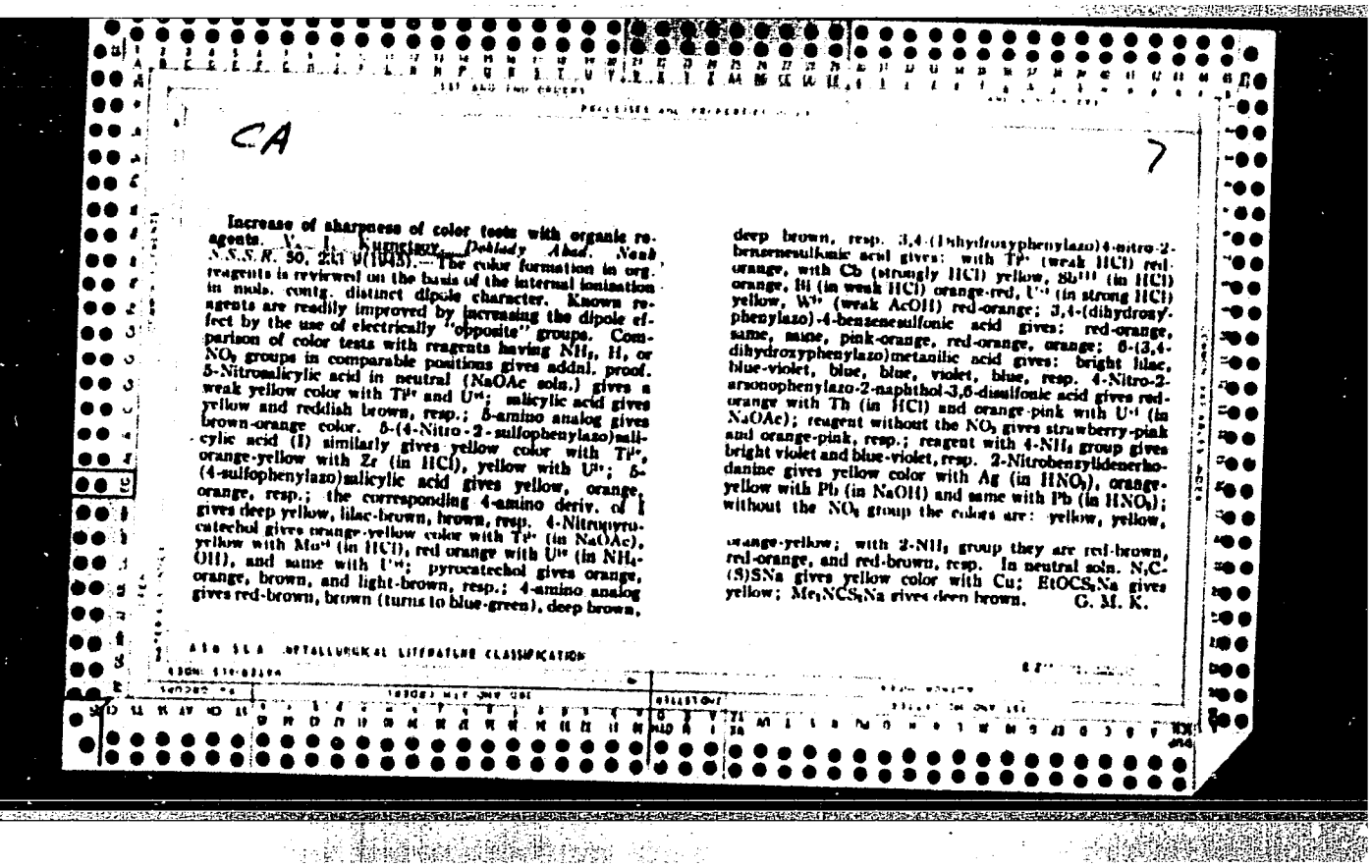


CA

7

Color tests for aluminum. V. I. Kuznetsov. *Doklady Akad. Nauk S.S.S.R.* 50, 237-31(1945). The available literature is reviewed (16 references). New reagents are: *p*-(3,4-dihydroxyphenylazo)benzenesulfonic acid (I), corresponding 3,4-dihydroxy-1-naphthylazo deriv. (II), 4,5-dihydroxy-3-(*o*-sulfophenylazo)-2,7-naphthalenedisulfonic acid (III), and *p*-aminophenylazo analog of III (IV). I can detect Al in 1:20,000,000 dil. (5 cm. layer) giving an orange color, with interference by Cu, Co, Ti, Zr, Th, U^{VI}, Fe^{III}, Zn, Pb, Mo^{VI}, W^{VI}, and Ni. II gives red-violet color detectable in 1:100,000,000 dil. (10 cm.) with interferences as in I. III gives red-violet color, detectable in 1:30,000,000 dil.; interference: Cu, Be, Co, Sc, Zr, Th, V^{V}, U^{VI}, Fe^{III}, Pt, and Ir. IV gives a blue color detectable in 1:4,000,000 dil.; interference: Be, Co, Ti, Zr, Th, U^{VI}, Fe^{III}. I and II permit detection of Al without Be interference; II is superior; the acid test soln. is treated with the reagent and an excess of NaOAc. Al is detected in presence of Fe as follows: HCl soln. (weak) of unknown is warmed with NH_4CNS until colorless, cooled, III is added, followed by urotropine until neutral to Congo red; with Al the color is violet; in its absence, brownish pink; detection of 10 γ Al in presence of 500 times excess of Fe is possible. With IV the above reaction should be done with Na_2SO_3. Detection of Al in presence of rare earths: neutralize weak HCl test soln. is divided into 2 portions, one of which is treated with a few drops of 10% Na salicylate; both are treated with II (1 drop) and excess NaOAc; in presence of Al the salicylate-free portion gives violet or blue-pink color; in absence of Al, both are light pink; detection of 0.2 γ Al with 200 times as much rare earths is possible. Detection of Al in presence of Pb, to weakly acid test soln. add 1 drop IV, then 25% NaOAc dropwise until violet color is reached (and a slight excess), warm gently, let stand 2-3 min.; with Al, blue-violet or blue; without Al, red-violet; detection of 10 γ Al in presence of 10,000 times Pb is possible. For detection in presence of Bi treat the dil. HCl soln. with a drop of IV, add 25% urotropine soln. until a lilac color results, warm gently or let stand 1 hr.; in the presence of Al, the clear soln. is blue-violet; in its absence, purple; detection of 5 γ Al in presence of 1000 times Sb is possible. G. M. Kosolapoff

A10-11A METALLURGICAL LITERATURE CLASSIFICATION

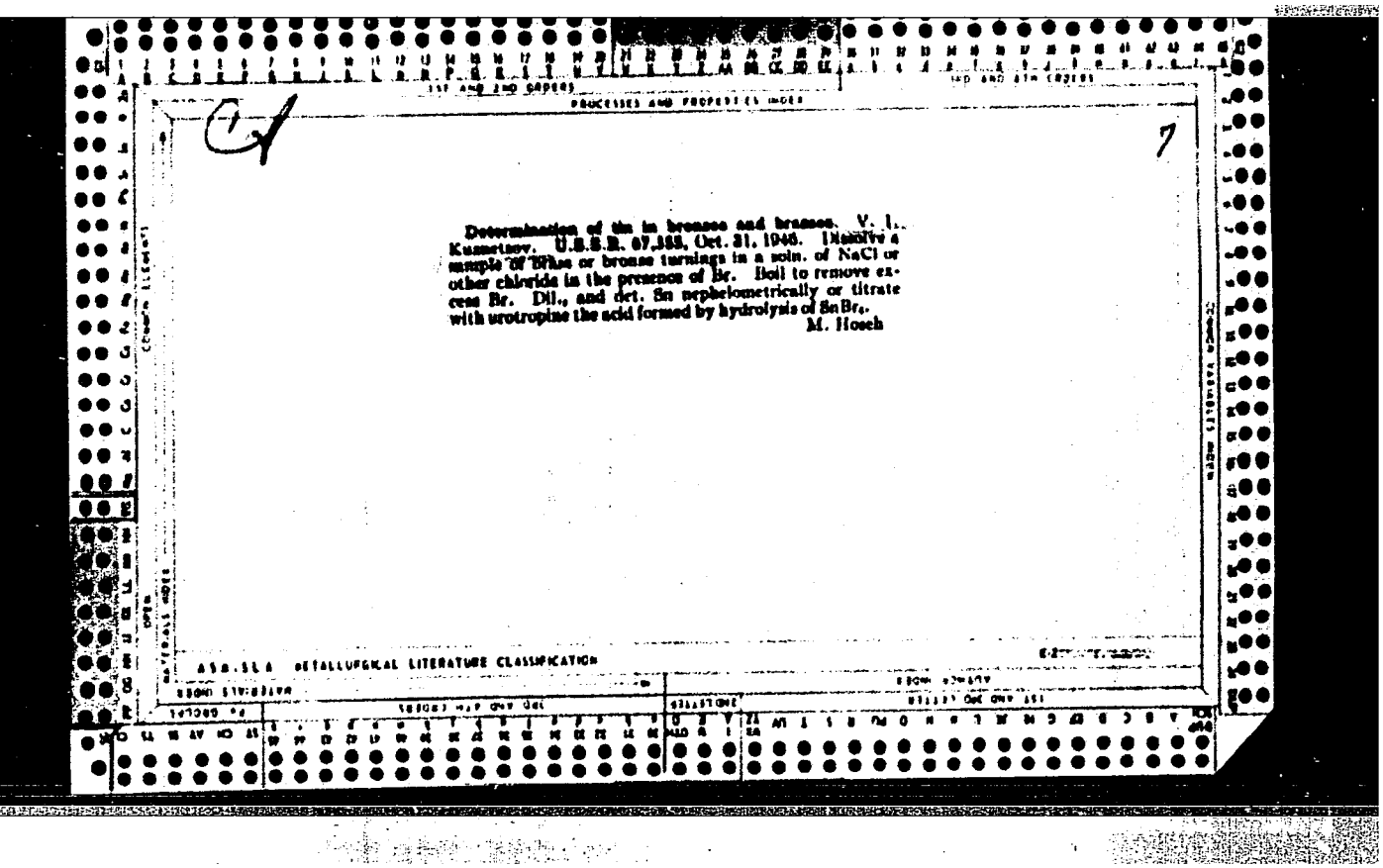


CA

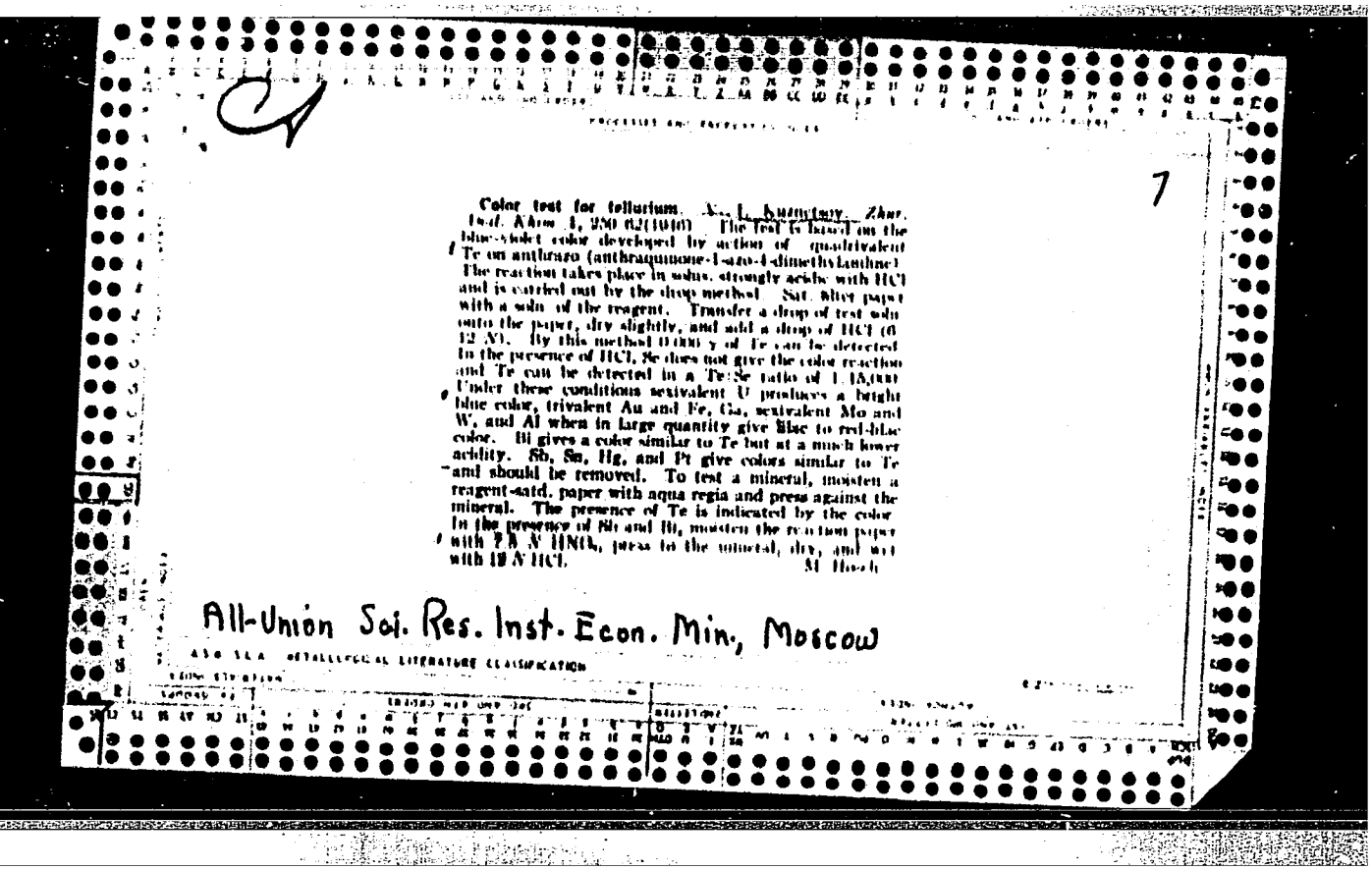
7

Increase of sharpness of color tests with organic reagents. V. I. Kuznetsov. *Doklady Akad. Nauk S.S.S.R.* 50, 251-4(1945).—The color formation in org. reagents is reviewed on the basis of the internal ionization in mols. contg. distinct dipole character. Known reagents are readily improved by increasing the dipole effect by the use of electrically "opposite" groups. Comparison of color tests with reagents having NH_2, H, or NO_2 groups in comparable positions gives addnl. proof. 5-Nitrosalicylic acid in neutral (NaOAc sols.) gives a weak yellow color with Th^{IV} and U^{VI}; salicylic acid gives yellow and reddish brown, resp.; 5-amino analog gives brown-orange color. 5-(4-Nitro-2-sulfophenylazo)salicylic acid (I) similarly gives yellow color with Th^{IV}, orange-yellow with Zr (in HCl), yellow with U^{IV}; 5-(4-sulfophenylazo)salicylic acid gives yellow, orange, orange, resp.; the corresponding 4-amino deriv. of I gives deep yellow, lilac-brown, brown, resp. 4-Nitropyrocatechol gives orange-yellow color with Th^{IV} (in NaOAc), yellow with Mo^{VI} (in HCl), red orange with U^{VI} (in NH_4OH), and same with U^{VI}; pyrocatechol gives orange, orange, brown, and light-brown, resp.; 4-amino analog gives red-brown, brown (turns to blue-green), deep brown, deep brown, resp. 3,4-(Dihydroxyphenylazo)4-nitro-2-benzenesulfonic acid gives: with Th^{IV} (weak HCl) red-orange, with Cb (strongly HCl) yellow, Sb^{III} (in HCl) orange, Bi (in weak HCl) orange-red, U^{VI} (in strong HCl) yellow, W^{VI} (weak AcOH) red-orange; 3,4-(dihydroxyphenylazo)-4-benzenesulfonic acid gives: red-orange, same, same, pink-orange, red-orange, orange; 6-(3,4-dihydroxyphenylazo)metanilic acid gives: bright lilac, blue-violet, blue, blue, violet, blue, resp. 4-Nitro-2-arsonophenylazo-2-naphthol-3,6-disulfonic acid gives red-orange with Th (in HCl) and orange-pink with U^{VI} (in NaOAc); reagent without the NO_2 gives strawberry-pink and orange-pink, resp.; reagent with 4-NH_2 group gives bright violet and blue-violet, resp. 2-Nitrobenzylidenerhodanine gives yellow color with Ag (in HNO_3), orange-yellow with Pb (in NaOH) and same with Pb (in HNO_3); without the NO_2 group the colors are: yellow, yellow, orange-yellow; with 2-NH_2 group they are red-brown, red-orange, and red-brown, resp. In neutral sols. N,C-(S)SNa gives yellow color with Cu; $EtOCS_2Na$ gives yellow; Me_2NCS_2Na gives deep brown. G. M. K.

A 50 51 A METALLURGICAL LITERATURE CLASSIFICATION



Determination of tin in bronzes and brasses. V. I. Kuznetsov. U.S.S.R. 67,385, Oct. 31, 1946. Dissolve a sample of filings or bronze turnings in a soln. of NaCl or other chlorides in the presence of Br. Boil to remove excess Br. Dil., and det. Sn nephelometrically or titrate with urotropine the acid formed by hydrolysis of $SnBr_4$.
M. Hosch



Color test for tellurium. A. I. Kuznetsov. Zhur. Anal. Khim. 1, 230-2(1946). The test is based on the blue-violet color developed by action of quadrivalent Te on anthrazo (anthraquinone-1-azo-4-dimethylaniline). The reaction takes place in soln. strongly acidic with HCl and is carried out by the drop method. Sat. filter paper with a soln. of the reagent. Transfer a drop of test soln. onto the paper, dry slightly, and add a drop of HCl (6-12 N). By this method 0.000 y. of Te can be detected. In the presence of HCl, Se does not give the color reaction and Te can be detected in a Te:Se ratio of 1:15,000. Under these conditions sexivalent U produces a bright blue color, trivalent Au and Fe, Ga, sexivalent Mo and W, and Al when in large quantity give blue to red-blue color. Bi gives a color similar to Te but at a much lower acidity. Sb, Sn, Hg, and Pt give colors similar to Te and should be removed. To test a mineral, moisten a reagent-satd. paper with aqua regia and press against the mineral. The presence of Te is indicated by the color. In the presence of Bi and Bi, moisten the reaction paper with 7 N HNO$_3$, press to the mineral, dry, and wet with 12 N HCl.

M. Hoch

7

All-Union Sci. Res. Inst. Econ. Min., Moscow

PROCESSES AND PROPERTIES INDEX

Colorimetric determination of iron with sulfosalicylic acid. V. I. Kuznetsov. *Zavodskaya Lab.* 12, 278-81 (1946).—To a weakly acid soln. contg. no more than 0.1 mg. of Fe^{+++}, add 1 ml. of sulfosalicylic acid soln. (to 10 g. of sulfosalicylic acid add approx. 18-20 ml. of pyridine and a sufficient quantity of water to bring the vol. to 100 ml.) and an addnl. 1 ml. for each 5 mg. of Al expected, add buffer soln. (1 vol. of 6 N HCl + 3.25-3.30 vol. of 20% AcONa soln.) until no visible changes in the color are observed, then a small excess, bring the vol. to 5-10 ml., and compare the color with that of a color scale prepd. similarly. If, under identical pH conditions, the color of the sample soln. has a more reddish tint than that of the color scale (indicating an insufficient quantity of the reagent), add enough of the reagent to the sample soln. to equalize the color with that of the color scale. Add $Na_2S_2O_3$ soln., if green solns. are formed (Cu). The contents of Fe can be detd. even in the presence of large quantities of Mn, Al, Cu, U and of small quantities of PO_4^{---} and F^-. The yellow tints of the sulfosalicylic complex of Fe can be made deeper by adding "bathochromic groups" to the reagent. For example, 2-amino-1-hydroxy-3-carboxybenzene-1-sulfonic acid forms a brown complex with Fe in NH_4OH soln. This makes visual colorimetry easier. Eleven references. W. R. H.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

KUZNETSOV, V. I.

Exhaustive action of individual organomagnesium compounds with furfuryl alcohol. V. I. Kuznetsov (Saratov Anto Inst.). *J. Gen. Chem.* (U.S.S.R.) 16, 187–92(1946).—The reactions of individual organomagnesium compds. with furfuryl alc. (I) result in reduction of the alc. with replacement of the OH by the radical of the particular Grignard reagent used. Further action in hot xylene leads to cleavage of the ring. In reactions in xylene the soln. was cooled with ice and slowly treated with cooled I to prevent tar formation; the 2nd phase of the reaction was conducted in refluxing xylene for 8 hrs. To PrMgI (from 65 g. PrI) there was added 6 g. I to yield *2-butylfuran*, b. 160–2°, d_4^{15} 0.8970, and *4-octen-1-ol-2-one*, b_{15} 70–2°, d_4^{15} 0.9178. Analogously, iso-BuMgI (from 70 g. iso-BuI) and 6 g. I gave *2-amylfuran*, b. 160–71°, d_4^{15} 0.8990, and *4-nonen-1-ol-2-one*, b_{15} 82–4°, d_4^{15} 0.9200. A similar reaction with iso-AmMgI gave *2-hexylfuran*, b_{15} 76–8°, d_4^{15} 0.9014, and *4-decen-1-ol-2-one*, b_{15} 90–8°, d_4^{15} 0.9254. G. M. K.

C. 1. Inorganic, Anal. + Appl. Chem.

Br. Ch.

71. **Ragrive's colour reaction for antimony (with Rhodamine-B).** V. I. Kuznetsov (*C. R. Acad. Sci. U.R.S.S.*, 1946, 52, 231—234; cf. Ragrive, A., 1927, I, 437).—The violet or blue colour observed when a drop of a HCl solution of Sb^V is added to a drop of a Rhodamine-*B* solution is due to the pptn. of a salt of the latter, probably containing the $SbCl_4'$ ion. Elements which can form complex ions or heteropoly-acids interfere, but the presence of Sb^V may be confirmed by observing the restoration of the colour of the Rhodamine-*B* on addition of $SnCl_4$. A more sensitive, but otherwise similar test, for Sb^V by reaction in HCl solution with the dye 1-aminoanthraquinone → dimethylaniline is described. $0{\cdot}1 \times 10^{-6}$ g. of Sb can be detected.

O. D. SALTMARSH.

KUZNETSOV, V. I.

"Color Reactions for Quadrivalent Vanadium," Dok. AN, 52, No. 1, 1946. (Research Inst. Mineral Raw Materials. -1946-

"On E. Eegriwe's Color Reaction for Antimony (With Rhodamin B), Dok. AN, 52, No. 3, 1946. (Research Inst. Mineral Raw Materials-1945-.

KUZNETSOV, V. I. PA 28T65

USSR/Metals Mar/Apr 1947

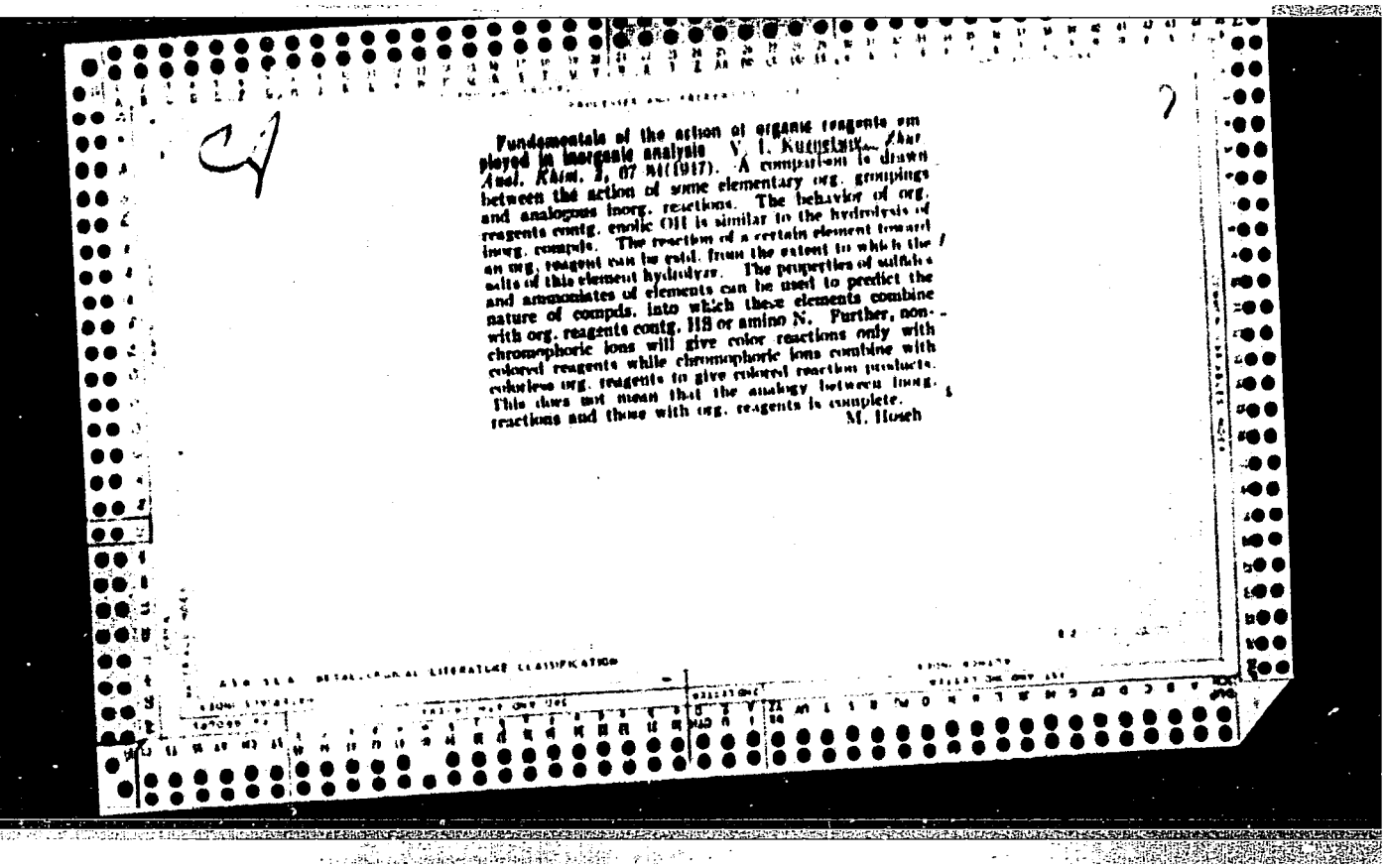
Antimony - Determination
Bronze

"Rapid Determination of Antimony in Bronzes and Brasses," V. I. Kuznetsov, VMIS, 1 p

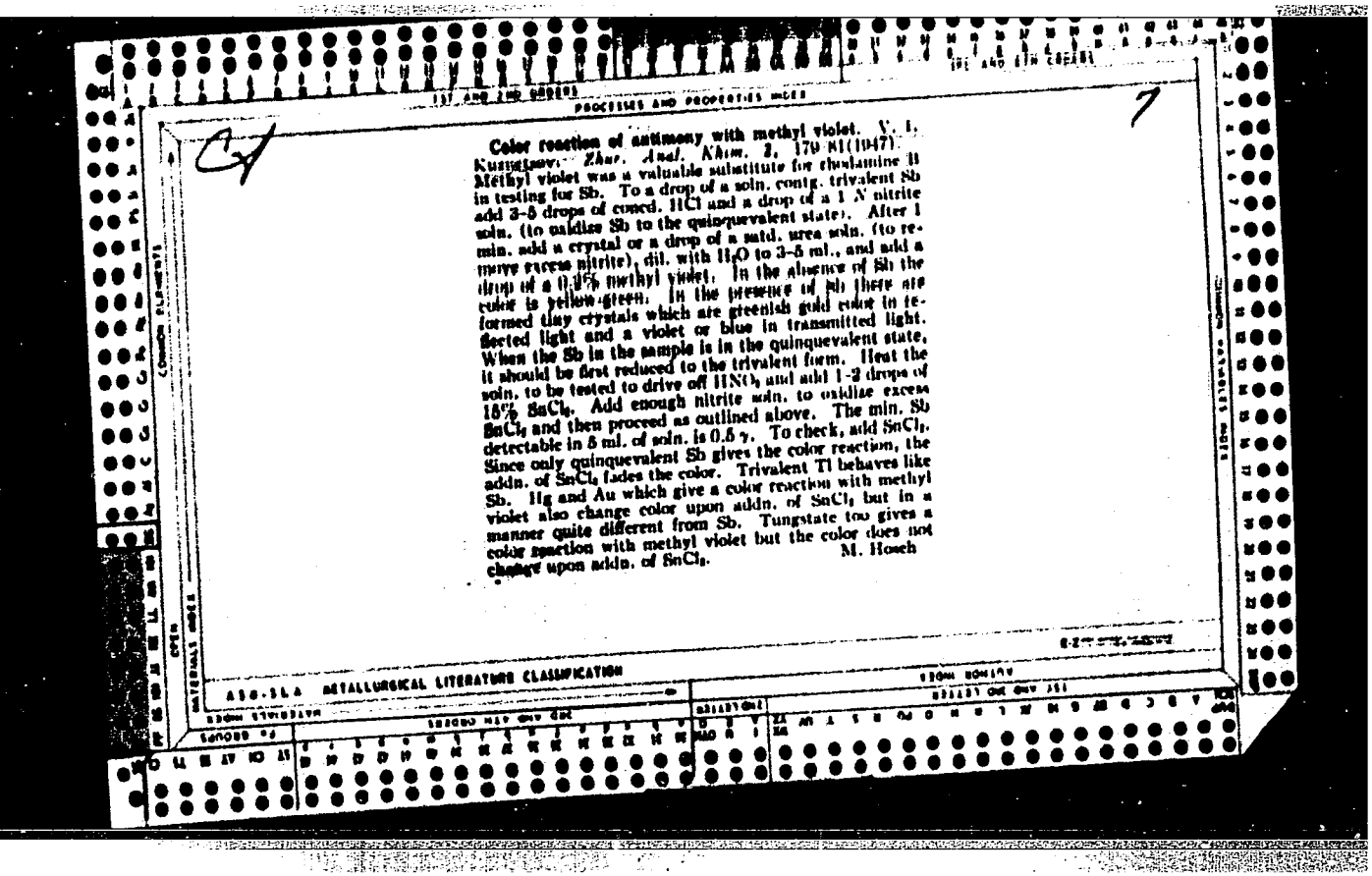
"Tsvetnye Metally" No 2

Description of methods for quick determination of antimony in bronzes and brasses when there is an admixture of copper, tin, zinc, and other elements.

28T65

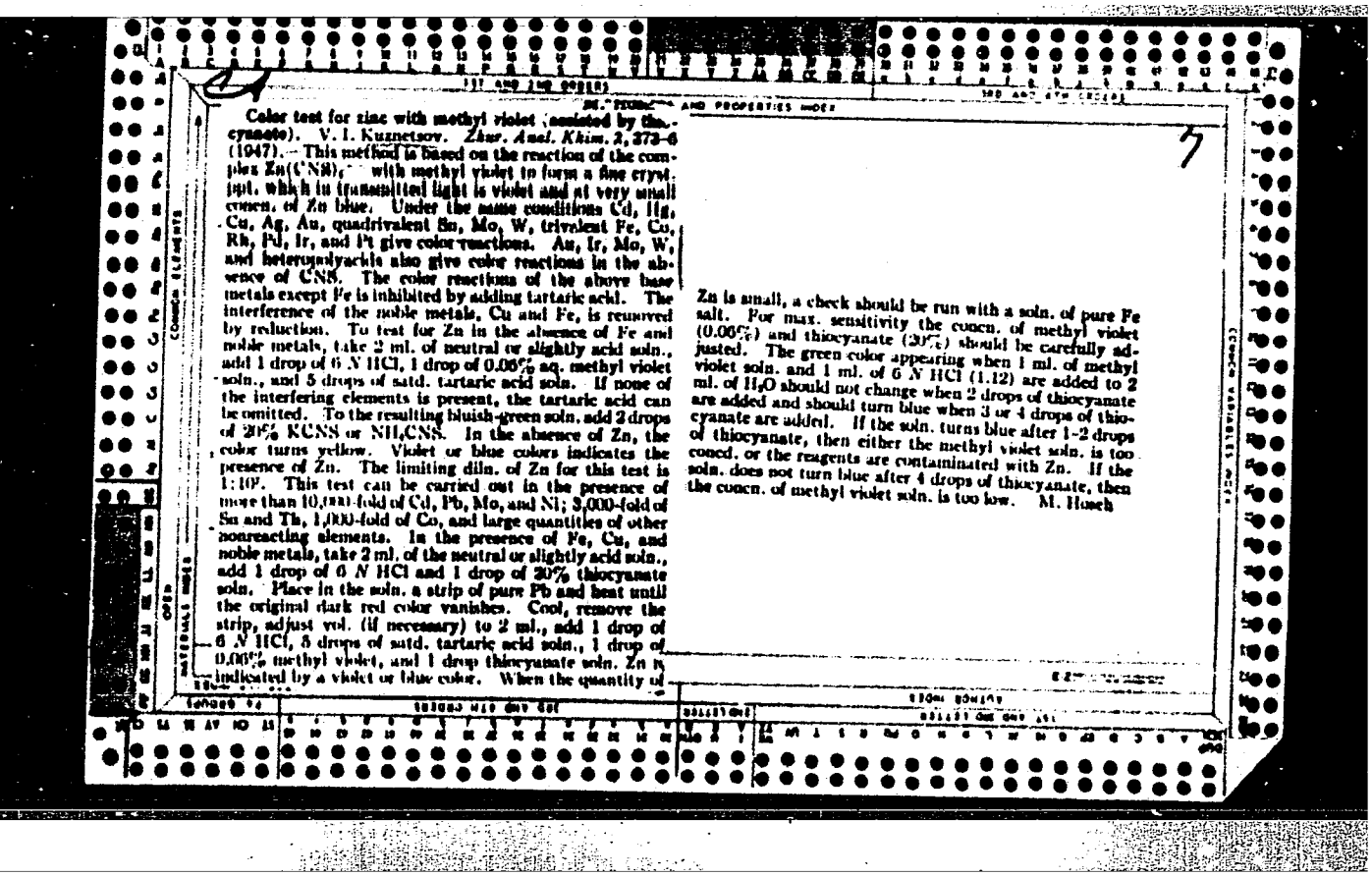


Fundamentals of the action of organic reagents employed in inorganic analysis. V. I. Kuznetsov. *Zhur. Anal. Khim.* 2, 67-81 (1947). A comparison is drawn between the action of some elementary org. groupings and analogous inorg. reactions. The behavior of org. reagents contg. enolic OH is similar to the hydrolysis of inorg. compds. The reaction of a certain element toward an org. reagent can be estd. from the extent to which the salts of this element hydrolyze. The properties of sulfides and ammoniates of elements can be used to predict the nature of compds. into which these elements combine with org. reagents contg. HS or amino N. Further, nonchromophoric ions will give color reactions only with colored reagents while chromophoric ions combine with colorless org. reagents to give colored reaction products. This does not mean that the analogy between inorg. reactions and those with org. reagents is complete.
M. Hosch



Color reaction of antimony with methyl violet. V. I. Kuznetsov. *Zhur. Anal. Khim.* 2, 179-81(1947). Methyl violet was a valuable substitute for rhodamine B in testing for Sb. To a drop of a soln. contg. trivalent Sb add 3–5 drops of concd. HCl and a drop of a 1 *N* nitrite soln. (to oxidize Sb to the quinquevalent state). After 1 min. add a crystal or a drop of a satd. urea soln. (to remove excess nitrite), dil. with H_2O to 3–5 ml., and add a drop of a 0.2% methyl violet. In the absence of Sb the color is yellow-green. In the presence of Sb there are formed tiny crystals which are greenish gold color in reflected light and a violet or blue in transmitted light. When the Sb in the sample is in the quinquevalent state, it should be first reduced to the trivalent form. Heat the soln. to be tested to drive off HNO_3 and add 1–2 drops of 18% $SnCl_2$. Add enough nitrite soln. to oxidize excess $SnCl_2$ and then proceed as outlined above. The min. Sb detectable in 5 ml. of soln. is 0.5 γ. To check, add $SnCl_2$. Since only quinquevalent Sb gives the color reaction, the addn. of $SnCl_2$ fades the color. Trivalent Tl behaves like Sb. Hg and Au which give a color reaction with methyl violet also change color upon addn. of $SnCl_2$ but in a manner quite different from Sb. Tungstate too gives a color reaction with methyl violet but the color does not change upon addn. of $SnCl_2$.

M. Hosch



Color test for zinc with methyl violet (acidified by thiocyanate). V. I. Kuznetsov. *Zhur. Anal. Khim.* 2, 373–6 (1947).—This method is based on the reaction of the complex $Zn(CNS)_4^{--}$ with methyl violet to form a fine crystal ppt. which in transmitted light is violet and at very small concn. of Zn blue. Under the same conditions Cd, Hg, Cu, Ag, Au, quadrivalent Sn, Mo, W, trivalent Fe, Co, Rh, Pd, Ir, and Pt give color reactions. Au, Ir, Mo, W, and heteropolyacids also give color reactions in the absence of CNS. The color reactions of the above base metals except Fe is inhibited by adding tartaric acid. The interference of the noble metals, Cu and Fe, is removed by reduction. To test for Zn in the absence of Fe and noble metals, take 2 ml. of neutral or slightly acid soln., add 1 drop of 6 *N* HCl, 1 drop of 0.05% aq. methyl violet soln., and 5 drops of satd. tartaric acid soln. If none of the interfering elements is present, the tartaric acid can be omitted. To the resulting bluish-green soln. add 2 drops of 20% KCNS or NH_4CNS. In the absence of Zn, the color turns yellow. Violet or blue colors indicates the presence of Zn. The limiting dilu. of Zn for this test is 1:10⁶. This test can be carried out in the presence of more than 10,000-fold of Cd, Pb, Mo, and Ni; 3,000-fold of Sn and Th, 1,000-fold of Co, and large quantities of other nonreacting elements. In the presence of Fe, Cu, and noble metals, take 2 ml. of the neutral or slightly acid soln., add 1 drop of 6 *N* HCl and 1 drop of 20% thiocyanate soln. Place in the soln. a strip of pure Pb and heat until the original dark red color vanishes. Cool, remove the strip, adjust vol. (if necessary) to 2 ml., add 1 drop of 6 *N* HCl, 5 drops of satd. tartaric acid soln., 1 drop of 0.05% methyl violet, and 1 drop thiocyanate soln. Zn is indicated by a violet or blue color. When the quantity of Zn is small, a check should be run with a soln. of pure Fe salt. For max. sensitivity the concn. of methyl violet (0.05%) and thiocyanate (20%) should be carefully adjusted. The green color appearing when 1 ml. of methyl violet soln. and 1 ml. of 6 *N* HCl (1.12) are added to 2 ml. of H_2O should not change when 2 drops of thiocyanate are added and should turn blue when 3 or 4 drops of thiocyanate are added. If the soln. turns blue after 1–2 drops of thiocyanate, then either the methyl violet soln. is too concd. or the reagents are contaminated with Zn. If the soln. does not turn blue after 4 drops of thiocyanate, then the concn. of methyl violet soln. is too low. M. Hoseh

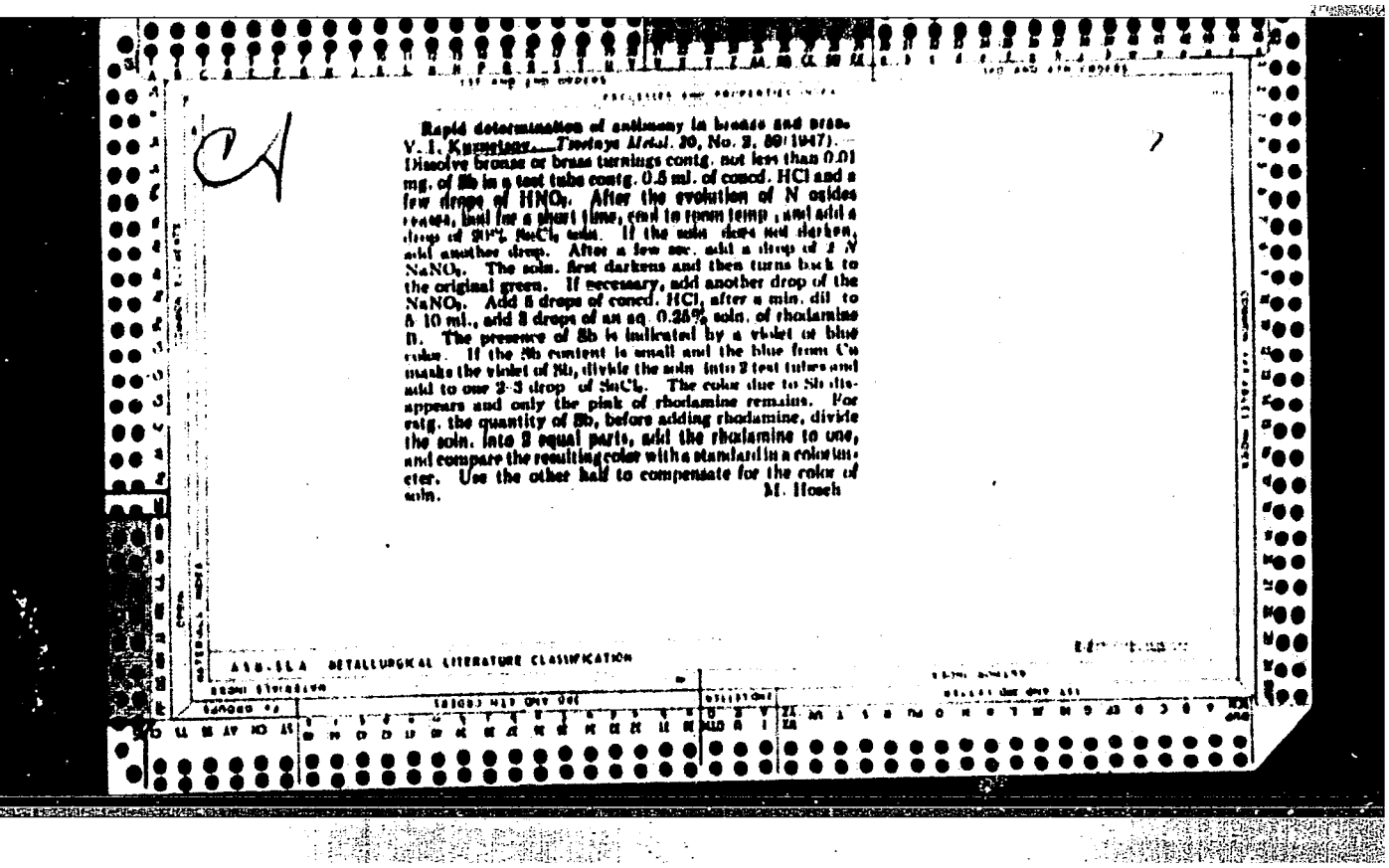
USSR/Chemistry - Iron Chlorides Feb 1947
Chemistry - Solvents, Organic

"The Extraction of Iron Chloride from Hydrochloric Acid Solutions With Organic Solvents," V. I. Kuznetsov, 6 pp

"Zhur Obshch Khim" Vol XVII, No 2

Extraction with diethyl ether, treated as the formation of oxonium compounds.

15T28



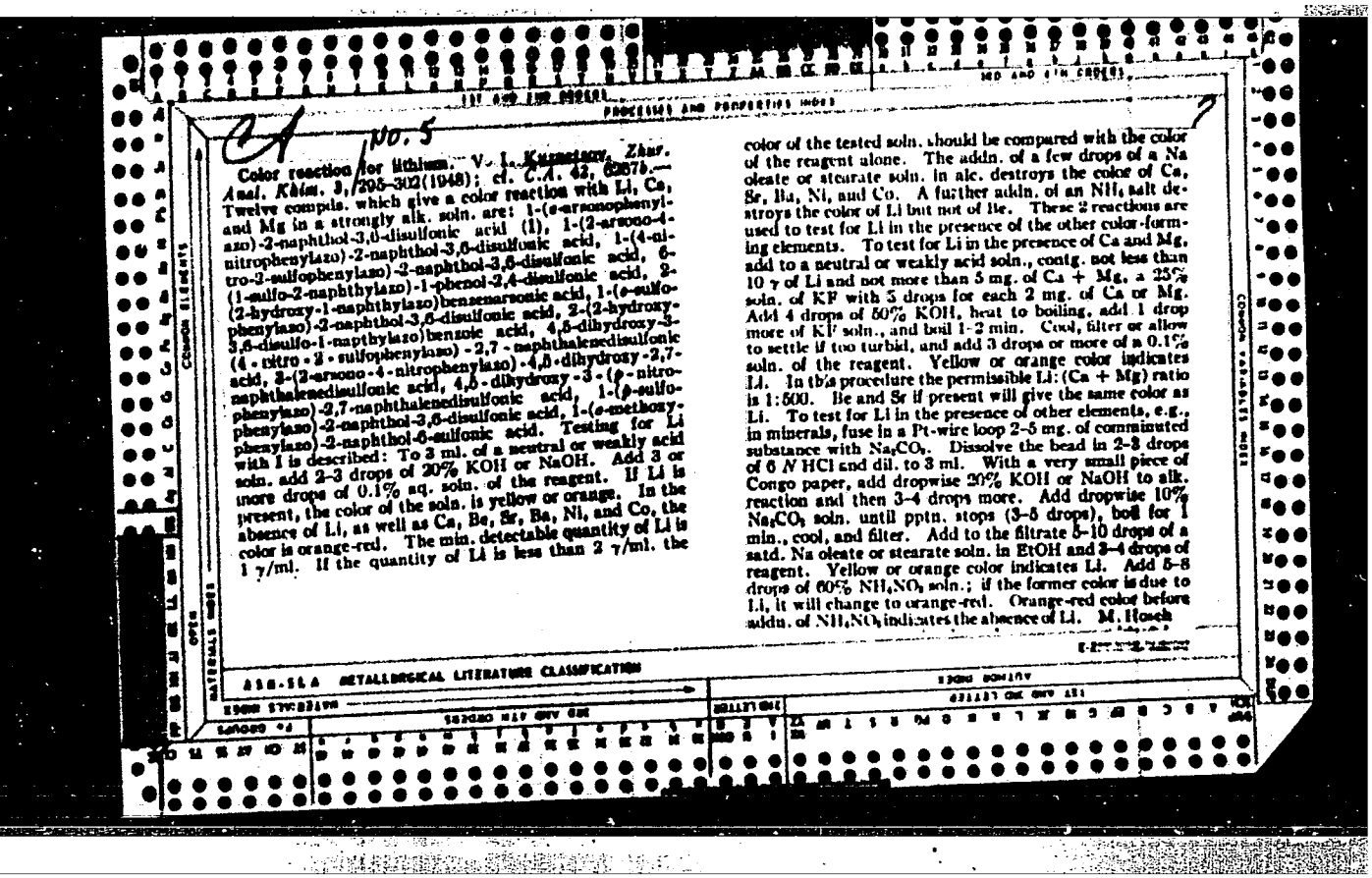
Rapid determination of antimony in bronze and brass. V. I. Kuznetsov. *Tsvetnye Metal.* 20, No. 2, 59 (1947). — Dissolve bronze or brass turnings contg. not less than 0.01 mg. of Sb in a test tube contg. 0.5 ml. of concd. HCl and a few drops of HNO_3. After the evolution of N oxides ceases, heat for a short time, cool to room temp., and add a drop of 20% $SnCl_2$ soln. If the soln. does not darken, add another drop. After a few sec. add a drop of 2 *N* $NaNO_2$. The soln. first darkens and then turns back to the original green. If necessary, add another drop of the $NaNO_2$. Add 5 drops of concd. HCl, after a min. dil. to 5–10 ml., and 2 drops of an aq. 0.25% soln. of rhodamine B. The presence of Sb is indicated by a violet or blue color. If the Sb content is small and the blue from Cu masks the violet of Sb, divide the soln. into 2 test tubes and add to one 2–3 drop of $SnCl_2$. The color due to Sb disappears and only the pink of rhodamine remains. For estg. the quantity of Sb, before adding rhodamine, divide the soln. into 2 equal parts, add the rhodamine to one, and compare the resulting color with a standard in a colorimeter. Use the other half to compensate for the color of soln.

M. Hosch

KUZNETSOV, V.I.

Kuznetsov, V.I. "On the internal dissociation, coloration, and chemical activity of intracomplex and cell salts," (reference), Soobshch. o. nauch. rabotakh chlenov Vsesoyuz. khim o-va im. Mendeleyeva, 1948, Issue 2, p. 18-21

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949



NO. 5

Color reaction for lithium.—V. I. Kuznetsov, *Zhur. Anal. Khim.* 3, 295–302 (1948); cf. *C.A.* 42, 6287b.—Twelve compds. which give a color reaction with Li, Ca, and Mg in a strongly alk. soln. are: 1-(*o*-arsonophenylazo)-2-naphthol-3,6-disulfonic acid (I), 1-(2-arsono-4-nitrophenylazo)-2-naphthol-3,6-disulfonic acid, 1-(4-nitro-2-sulfophenylazo)-2-naphthol-3,6-disulfonic acid, 6-(1-sulfo-2-naphthylazo)-1-phenol-2,4-disulfonic acid, 2-(2-hydroxy-1-naphthylazo)benzenearsonic acid, 1-(*o*-sulfophenylazo)-2-naphthol-3,6-disulfonic acid, 2-(2-hydroxy-3,6-disulfo-1-napthylazo)benzoic acid, 4,5-dihydroxy-3-(4-nitro-2-sulfophenylazo)-2,7-naphthalenedisulfonic acid, 3-(2-arsono-4-nitrophenylazo)-4,5-dihydroxy-2,7-naphthalenedisulfonic acid, 4,5-dihydroxy-3-(*p*-nitrophenylazo)-2,7-naphthalenedisulfonic acid, 1-(*p*-sulfophenylazo)-2-naphthol-3,6-disulfonic acid, 1-(*o*-methoxyphenylazo)-2-naphthol-6-sulfonic acid. Testing for Li with I is described: To 3 ml. of a neutral or weakly acid soln. add 2–3 drops of 20% KOH or NaOH. Add 3 or more drops of 0.1% aq. soln. of the reagent. If Li is present, the color of the soln. is yellow or orange. In the absence of Li, as well as Ca, Be, Sr, Ba, Ni, and Co, the color is orange-red. The min. detectable quantity of Li is 1 γ/ml. If the quantity of Li is less than 2 γ/ml. the color of the tested soln. should be compared with the color of the reagent alone. The addn. of a few drops of a Na oleate or stearate soln. in alc. destroys the color of Ca, Sr, Ba, Ni, and Co. A further addn. of an NH_4 salt destroys the color of Li but not of Be. These 2 reactions are used to test for Li in the presence of the other color-forming elements. To test for Li in the presence of Ca and Mg, add to a neutral or weakly acid soln., contg. not less than 10 γ of Li and not more than 5 mg. of Ca + Mg, a 25% soln. of KF with 3 drops for each 2 mg. of Ca or Mg. Add 4 drops of 50% KOH, heat to boiling, add 1 drop more of KF soln., and boil 1–2 min. Cool, filter or allow to settle if too turbid, and add 3 drops or more of a 0.1% soln. of the reagent. Yellow or orange color indicates Li. In this procedure the permissible Li:(Ca + Mg) ratio is 1:500. Be and Sr if present will give the same color as Li. To test for Li in the presence of other elements, e.g., in minerals, fuse in a Pt-wire loop 2–5 mg. of comminuted substance with Na_2CO_3. Dissolve the bead in 2–3 drops of 6 *N* HCl and dil. to 3 ml. With a very small piece of Congo paper, add dropwise 20% KOH or NaOH to alk. reaction and then 3–4 drops more. Add dropwise 10% Na_2CO_3 soln. until pptn. stops (3–5 drops), boil for 1 min., cool, and filter. Add to the filtrate 5–10 drops of a satd. Na oleate or stearate soln. in EtOH and 3–4 drops of reagent. Yellow or orange color indicates Li. Add 5–8 drops of 60% NH_4NO_3 soln.; if the former color is due to Li, it will change to orange-red. Orange-red color before addn. of NH_4NO_3 indicates the absence of Li. M. Hosch

KUZNETSOV, V. I.

PA 75T7

USSR/Chemistry - Colorimetry May 1948
Chemistry - Minerals

"Color Reactions for Detecting Small Concentrations of Dissolved Mineral Salts," V. I. Kuznetsov, All-Union Inst of Mineral Raw Materials, 4 pp

"Zavod Lab" Vol XIV, No 5

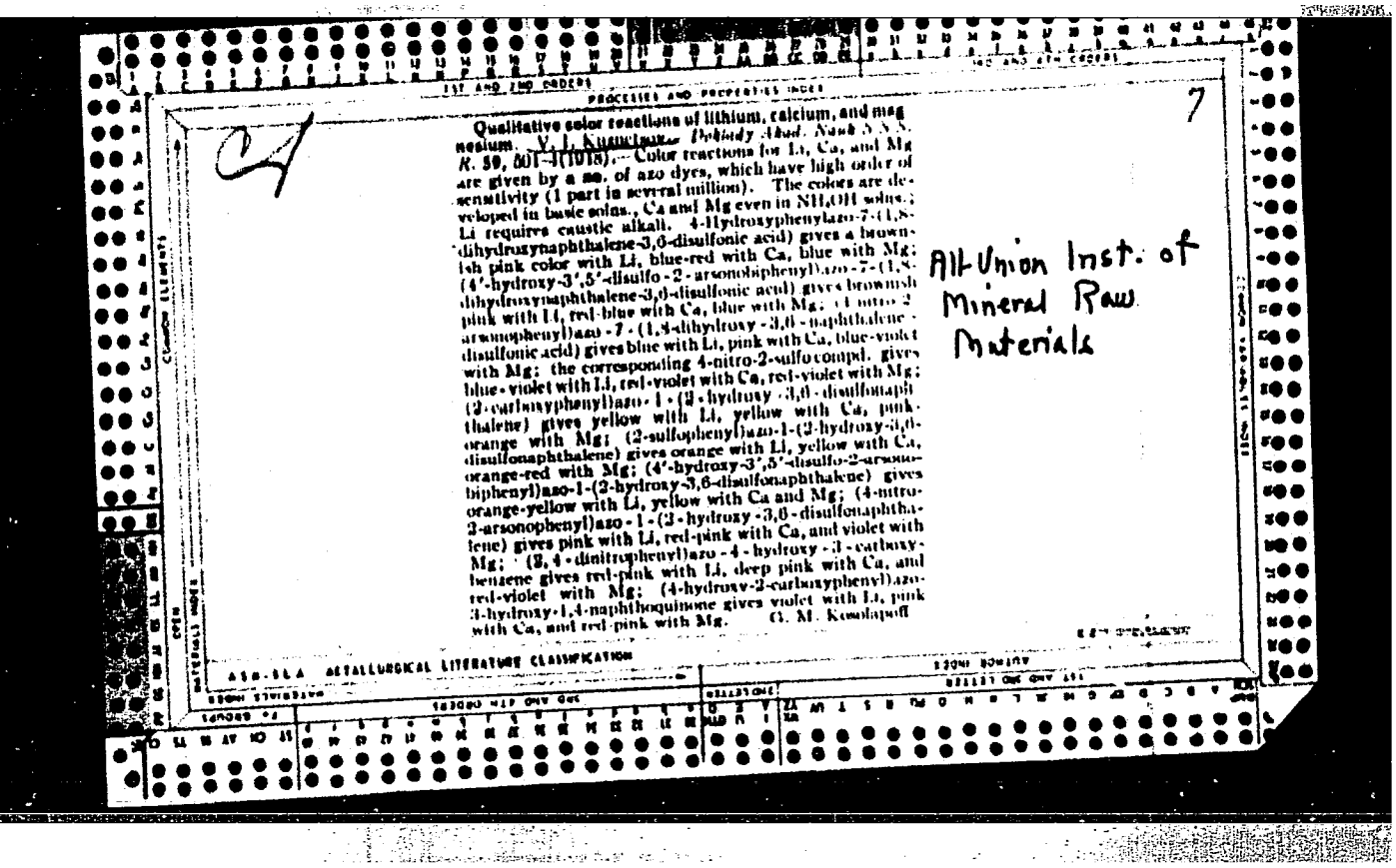
Small concentrations (1:1,000,000 for calcium) of mineral salts in solution can be detected by adding suitable reagent and noting resulting color change, which varies according to class of metal. Examples of such reagents are 2-oxynaphthalin (1-azo-2)-naphthalin-1-sulfo acid, and stilbene-4,4'-bis

75T7

USSR/Chemistry - Colorimetry (Cont'd) May 1948

[(azo-1) - 2-oxynaphthalin-2, 2'-disulfo acid], synthesis of which are described.

75T7



Qualitative color reactions of lithium, calcium, and magnesium. V. I. Kuznetsov. *Doklady Akad. Nauk S.S.S.R.* 59, 501–3(1948). Color reactions for Li, Ca, and Mg are given by a no. of azo dyes, which have high order of sensitivity (1 part in several million). The colors are developed in basic solns., Ca and Mg even in NH_4OH solns.; Li requires caustic alkali. 4-Hydroxyphenylazo-7-(1,8-dihydroxynaphthalene-3,6-disulfonic acid) gives a brownish pink color with Li, blue-red with Ca, blue with Mg; (4'-hydroxy-3',5'-disulfo-2-arsonobiphenyl)azo-7-(1,8-dihydroxynaphthalene-3,6-disulfonic acid) gives brownish pink with Li, red-blue with Ca, blue with Mg; (4-nitro-2-arsonophenyl)azo-7-(1,8-dihydroxy-3,6-naphthalene-disulfonic acid) gives blue with Li, pink with Ca, blue-violet with Mg; the corresponding 4-nitro-2-sulfo compd. gives blue-violet with Li, red-violet with Ca, red-violet with Mg; (2-carboxyphenyl)azo-1-(2-hydroxy-3,6-disulfonaphthalene) gives yellow with Li, yellow with Ca, pink-orange with Mg; (2-sulfophenyl)azo-1-(2-hydroxy-3,6-disulfonaphthalene) gives orange with Li, yellow with Ca, orange-red with Mg; (4'-hydroxy-3',5'-disulfo-2-arsonobiphenyl)azo-1-(2-hydroxy-3,6-disulfonaphthalene) gives orange-yellow with Li, yellow with Ca and Mg; (4-nitro-2-arsonophenyl)azo-1-(2-hydroxy-3,6-disulfonaphthalene) gives pink with Li, red-pink with Ca, and violet with Mg; (2,4-dinitrophenyl)azo-4-hydroxy-3-carboxybenzene gives red-pink with Li, deep pink with Ca, and red-violet with Mg; (4-hydroxy-2-carboxyphenyl)azo-3-hydroxy-1,4-naphthoquinone gives violet with Li, pink with Ca, and red-pink with Mg. G. M. Kosolapoff

All Union Inst. of Mineral Raw Materials

USSR/Chemistry - Colorimetry
Chemistry - Isomerism

Jan/Feb 49

"Color Reactions, Connected With a Separation of Residues," V. I. Kuznetsov, Moscow, 25 pp

"Uspekhi Khimii" No 1

Treats subject under: (1) nature of phenomenon, (2) determination of adaptability of color reaction to solid-phase type, (3) selectivity of the action (4) color solid-phase reactions for cations, (5) color solid-phase reactions for anions, (6) absorption indicators, (7) converted color solid-phase reactions, and (8) search for new organic reagents for use in color

28/49T5

[redacted]

USSR/Chemistry - Colorimetry (Contd)

Jan/Feb 49

solid-phase reactions. Concludes that described tautomeric conversion, also described by Krumholz, does not necessarily occur in some cases, and in others is difficult to distinguish.

28/49T5

[redacted]

KUZNETSOV, V. I.

KUZNETSOV, V. I.

35892

Zavisimost' Mineral'nogo Sostava Rud ot Vmeshcha Yushchikh Porod V odnom Rtutnom Mestoro Zh De Nii. Mineral. Sbornik (L'vov), No. 3, 1949, C. 63-74.

SO: Letopis' Zhurnal'nykh Statey, Vol. 39, Moskva, 1949

KUZNETSOV, V.I. PA 50/49T1

USSR/Academy of Sciences May 49
Chemical Sciences

"Annotations on Work Submitted in Competition for the D. I. Mendeleyev Award" 10½ pp

"Dok Ak Nauk SSSR" Vol LXVI, No 1

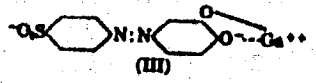
Among 16 works submitted for 1949 award are: V. I. Kuznetsov's "Internal Dissociation, Color and Chemical Activity of Intracomplex and Chelate Salts," V. K. Kozlov's "Theory of the Polarization of Real Molecules," and D. M. Frank-Kamenetskiy's "Diffusion and Heat Transmission in Chemical Kinetics."

50/49T1

CA

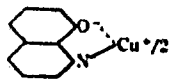
6

Internal dissociation, color, and chemical activity of inner-complex and cyclic salts. V. I. Kuznetsov (Inst. Mineral Raw Materials, Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 807-15(1950).—Since the color of the chelate Ga complex of Na 3,4-dihydroxyazobenzene-4'-sulfonate (I) is close to the orange color of the soln. of the 3-Me ether (II) of I in NaOH soln., it is concluded that, in the complex, one of the two Ga–O bonds is internally ionized, as expressed by the structure formula



(III)

I is yellow in acid and neutral soln.; it is deep rose in alk. soln., where both phenolate groups are ionized; the di-Me ether (IV), which is incapable of ionization, is yellow in neutral, acid, and alk. soln. In analogy with the capacity of simple phenols to azo-coupling, which is greatest in alk. phenolate soln. contg. PhO^- ions, small in neutral soln. contg. PhOH, and totally absent with phenol ethers PhOR, both II in alk. soln., and III in either alk. or mineral-acid soln. are capable of azo-coupling with disazosulfanilic acid, whereas the unionized I and IV are not. The behavior towards azo-coupling is a test for the inner structure of a complex; thus, the capacity for coupling of the Ga complex of o-$C_6H_4(OH)_2$, even in strong acid soln., as against the incapacity of o-$C_6H_4(OH)_2$ itself except in alk. soln., demonstrates the ionization of one O–Ga bond. With the Zr and Ge compds., more readily hydrolyzed than the Ga compd., o-$C_6H_4(OH)_2$ forms internally ionized chelate complexes in strongly acid soln. Whereas 8-hydroxyquinoline will not couple with diazosulfanilic acid in acid soln., it does so in the presence of a Cu salt (giving a raspberry-purple ppt.), which indicates the formation of an internally ionized complex



Whereas o-phenanthroline does not couple with diazonium salts, its Fe complex (but not the Cu complex) couples energetically with diazonium sulfanilate or p-nitroaniline-o-sulfonate. Less capable of azo-coupling than the original org. compd. is the Al complex of 8-hydroxyquinoline, towards diazosulfanilic acid; in this case, the O–Al bond is very little ionized, and similar to an O–Me bond.

N. Thon

KUZNETSOV, V. I. Doc Chem Sci

Dissertation: "Methods for Discovering the Color Reactions for Inorganic Ions." 15/11/50

Inst of General and Inorganic Chemistry im. N. S. Kurnakov, Acad Sci USSR

SO Vecheryaya Moskva
Sum 71

C.A. 2

Special cases of salt errors in colorimetric determinations of pH. V. I. Kuznetsov. *Zhur. Anal. Khim.* 5, 313–8 (1950).—Certain indicators, either because of their reaction with ions present in soln. or because of their being absorbed by suspended matter in soln., are apt to give erroneous indications of the true pH. Among the indicators reacting with metals are alizarin yellow GG and alizarin yellow R.

Generally, in this group belong indicators contg. 2 hydroxy groups, a hydroxy and a carboxy group, or a hydroxy and an azo group ortho to each other; or the grouping (I), where X and Y are hydroxy groups, X is :O and Y is a hydroxy group, or X is an amino and Y a hydroxy group. This group of indicators is likely to react with multivalent metals such as Mg, Al, Fe, Cu. Among the indicators absorbed by suspended matter, e.g., fine ppts., clay, and paper fibers, is methyl violet.

(I)

M. Hosch

USSR/Chemistry - Analysis, Aluminum Jul 50
Reagents, Rev

166T5

"Colorimetric Determination of Aluminum With New Reagent' Stilbazo,'" V. I. Kuznetsov, G. G. Karpo-vich, D. A. Drapkina, Sci Res Inst of Chem Reagents

"Zavod Lab" Vol XVI, No 7, pp 787-792

Describes new reagent "stilbazo" and its application. New method permits colorimetric determination of 0.1-5 gamma % of aluminum in 5-ml volume and determination of aluminum by colorimetric titration. After reduction with ascorbic acid, determination is not hampered by presence of iron in amounts up

PM 166T5

USSR/Chemistry - Analysis, Aluminum (Contd) Jul 50

to 0.1 mg in 5-ml volume. In absence of iron, influence of titanium up to 0.05 mg in 5 ml may be eliminated by adding some hydrogen peroxide. Presence of bivalent and alkali metals does not interfere with determination of aluminum.

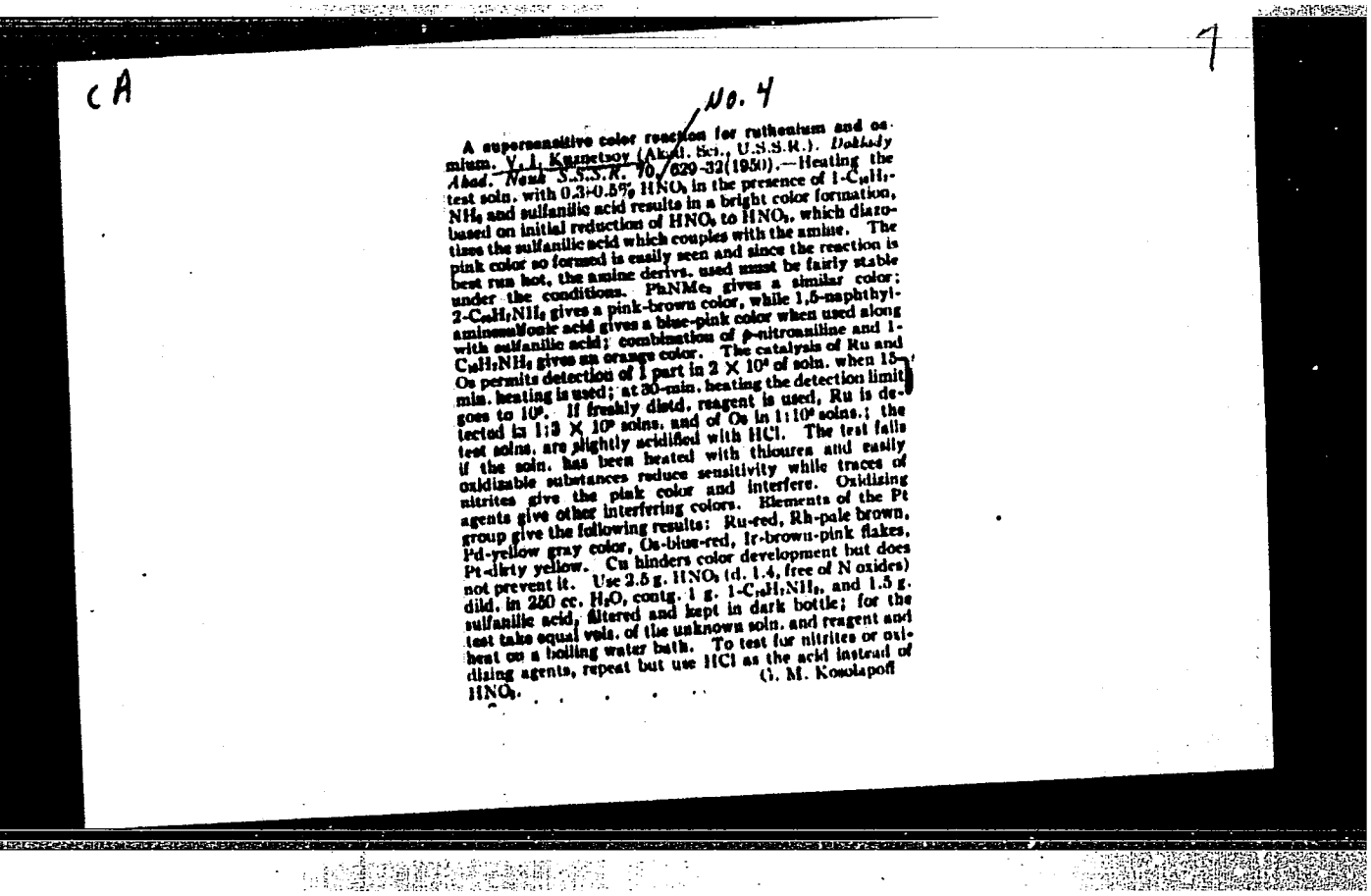
166T5

KUZNETSOV, V. I.

BA

AI- 6

Effect of pH on colour solutions of inner co-ordination and cyclic salts. V. I. Kuznetsov. *J. gen. Chem., USSR*, 1950, **20**, 816 – 820 [U.S. transl., 822–826].—The effects of pH on the colour of solutions of complex salts are tabulated for complexes based on both coloured and colourless org. compounds. The effects are interpreted as due to changes in the degree of intramol. ionisation of the complexes. O. D. SALTMARSH.



CA

No. 4

A supersensitive color reaction for ruthenium and osmium. V. I. Kuznetsov (Akad. Sci., U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 70, 629-32(1950).—Heating the test soln. with 0.3-0.5% HNO_3 in the presence of 1-$C_{10}H_7NH_2$ and sulfanilic acid results in a bright color formation, based on initial reduction of HNO_3 to HNO_2, which diazotizes the sulfanilic acid which couples with the amine. The pink color so formed is easily seen and since the reaction is best run hot, the amine derivs. used must be fairly stable under the conditions. $PhNMe_2$ gives a similar color; 2-$C_{10}H_7NH_2$ gives a pink-brown color, while 1,5-naphthylaminesulfonic acid gives a blue-pink color when used along with sulfanilic acid; combination of p-nitroaniline and 1-$C_{10}H_7NH_2$ gives an orange color. The catalysis of Ru and Os permits detection of 1 part in 2×10^6 of soln. when 15-min. heating is used; at 30-min. heating the detection limit goes to 10^6. If freshly distd. reagent is used, Ru is detected in $1:3 \times 10^6$ solns. and of Os in $1:10^6$ solns.; the test solns. are slightly acidified with HCl. The test fails if the soln. has been heated with thiourea and easily oxidizable substances reduce sensitivity while traces of nitrites give the pink color and interfere. Oxidizing agents give other interfering colors. Elements of the Pt group give the following results: Ru-red, Rh-pale brown, Pd-yellow gray color, Os-blue-red, Ir-brown-pink flakes, Pt-dirty yellow. Cu hinders color development but does not prevent it. Use 2.5 g. HNO_3 (d. 1.4, free of N oxides) dild. in 250 cc. H_2O, contg. 1 g. 1-$C_{10}H_7NH_2$, and 1.5 g. sulfanilic acid, filtered and kept in dark bottle; for the test take equal vols. of the unknown soln. and reagent and heat on a boiling water bath. To test for nitrites or oxidizing agents, repeat but use HCl as the acid instead of HNO_3.

G. M. Kosolapoff

CH

7

Color reaction of anions of the quadrivalent elements of the type $MeCl_6^{--}$. V. I. Kuznetsov, *Doklady Akad. Nauk S.S.S.R.* 70, 1011-12(1950)[?]; cf. *C.A.* 35, 3100. Treatment of 1-(*p*-dimethylaminophenylazo)anthraquinone-HCl, on paper strip, with various metal ions leads to color formation. Particularly noted are the following colors: $PtCl_4$ and $PdCl_4$ are yellow-brown, $IrCl_6^{--}$ and $RuCl_6^{--}$ are very pale pink, while $PtCl_6^{--}$, $PdCl_6^{--}$, and $IrCl_6^{--}$ are blue-violet. Since the reagent is moderately stable to oxidation-reduction agents, $PbCl_6^{--}$ may be detected in the presence of free Cl or ClO^-. Only $CeCl_6^{--}$ and $MnCl_6^{--}$ failed to give a color reaction, probably due to the strong oxidative action of these ions. Possibly the characteristic blue color is connected with the ion diam. of the MCl_6^{--} type (Sn, Pb, Te, Re, Pd, Pt, Ir).
G. M. Kondrat'eff

V.I. Vernadskiy Inst. Geochem. & Analytical Chem.

KUZNETOZOV, V. I.

176T10

USSR/Chemistry - Industrial Hygiene Mar/Apr 51

"Colorimetric Determination of Halowax (Polychlornaphthalenes)," V.I.Kuznetsov, Z.M. Pimenova, Industrial Lab, Sanitation and Epidemiol Sta, Kirov Rayon, Moscow

"Zhur Analit Khim" Vol VI, No 2, pp 131-135

Halowax dust is often present in the air of industrial establishments where this product is melted or treated in some other manner. According to GOST 1324-47, content of halowax in the air must not exceed 1 mg per cu m of air, because this product is quite poisonous, causing dermatitis and in acute cases yellow atrophy of

176T10

USSR/Chemistry - Industrial Hygiene Mar/Apr 51
(Contd)

the liver and death. To determine content of halowax, the air is filtered through absorbent cotton, halowax extracted from cotton with ether, and on evapn of ether reacted with dimethylaniline. Depth of resulting blue color, on comparison with a standard color scale, yields value for halowax content.

176T10

KUZNETSOV, V. I.

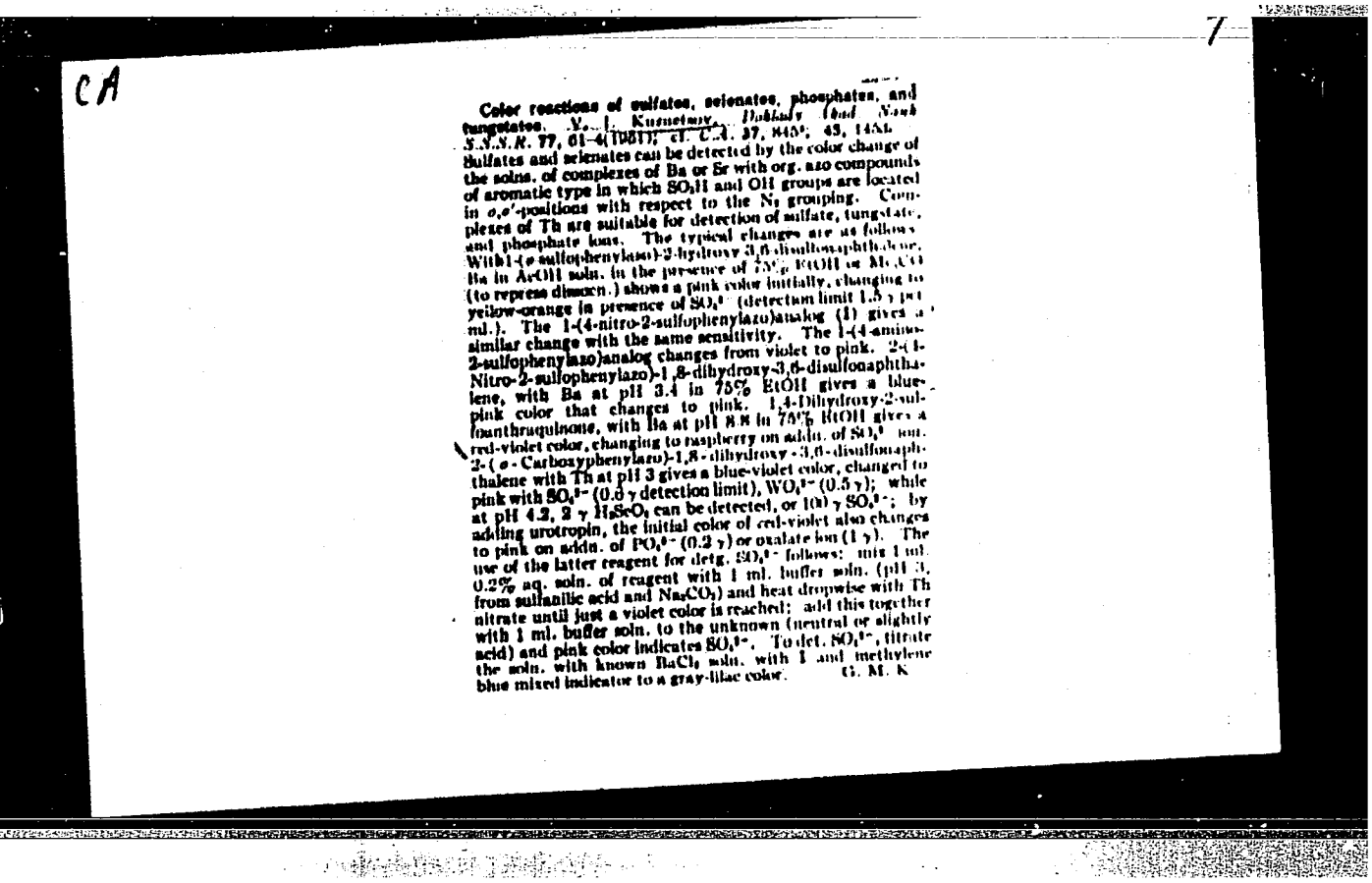
May/Jun 51

"Theoretical Bases of Color Reactions of Organic Reagents with Inorganic Ions," V. I. Kuznetsov, Inst. Geochem. and Anal. Chem. imeni Acad. V. I. Vernadskiy, Acad. Sci. USSR.

Zhur. Analit. Khim., Vol. VI, No. 3, pp. 139-148.

Examined theoretical bases of color reactions for determination of almost all elements, suggesting usefulness of analogy with simple hydrolysis. Org. Colorless reagents can give color reactions with ions of elements having "chromophoric action," colored reagents with any ion. Cyclic salts of org. reagents and elements often have "intramol.dissocn," whose variation produces color change. This concept makes possible prediction of color from ion, reagent, pH. "Solid phase" color reactions (pptn and suspensions), based on differences of color in dissolved and solid state, apply to any cation or anion. Mech used are: simple salt pptn. or suspension, (for noncomplex-forming, nonchromoforic ions, anions of high mol. wt.); formation of complex compound for Hg, Zn, Cu, Sb, Ga, Al, V^{++++}, Li, Ca, Mg); masking action by complex formation, or reaction of ion with complex colored compound to form more stable compound of ppt (for F-, Cl-, Br-, I-, SO_4--, H_2PO_4-). Kuznetsov mentions his discovery of several hundred new color reactions.

179T33



CA

Color reactions of sulfates, selenates, phosphates, and tungstates. V. I. Kuznetsov. *Uchënye Zapiski Permskogo Gosudarstvennogo Universiteta* 77, 61–4 (1957); cf. *C.A.* 37, 845⁵; 45, 1454i. Sulfates and selenates can be detected by the color change of the solns. of complexes of Ba or Sr with org. azo compounds of aromatic type in which SO_3H and OH groups are located in *o,o'*-positions with respect to the N₂ grouping. Complexes of Th are suitable for detection of sulfate, tungstate, and phosphate ions. The typical changes are as follows. With 1-(*o*-sulfophenylazo)-2-hydroxy-3,6-disulfonaphthalene, Ba in AcOH soln. in the presence of 75% EtOH or MeOH (to repress dissocn.) shows a pink color initially, changing to yellow-orange in presence of SO_4^{2-} (detectum limit 1.5 γ per ml.). The 1-(4-nitro-2-sulfophenylazo)analog (I) gives a similar change with the same sensitivity. The 1-(4-amino-2-sulfophenylazo)analog changes from violet to pink. 2-(4-Nitro-2-sulfophenylazo)-1,8-dihydroxy-3,6-disulfonaphthalene, with Ba at pH 3.4 in 75% EtOH gives a blue-pink color that changes to pink. 1,4-Dihydroxy-2-sulfoanthraquinone, with Ba at pH 8.8 in 75% EtOH gives a red-violet color, changing to raspberry on addn. of SO_4^{2-} ion. 2-(*o*-Carboxyphenylazo)-1,8-dihydroxy-3,6-disulfonaphthalene with Th at pH 3 gives a blue-violet color, changed to pink with SO_4^{2-} (0.5 γ detection limit), WO_4^{2-} (0.5 γ); while at pH 4.2, 2 γ H_2SeO_3 can be detected, or 10 γ SO_4^{2-}; by adding urotropin, the initial color of red-violet also changes to pink on addn. of PO_4^{3-} (0.2 γ) or oxalate ion (1 γ). The use of the latter reagent for detg. SO_4^{2-} follows: mix 1 ml. 0.2% aq. soln. of reagent with 1 ml. buffer soln. (pH 3, from sulfanilic acid and Na_2CO_3) and heat dropwise with Th nitrate until just a violet color is reached; add this together with 1 ml. buffer soln. to the unknown (neutral or slightly acid) and pink color indicates SO_4^{2-}. To det. SO_4^{2-}, titrate the soln. with known $BaCl_2$ soln. with I and methylene blue mixed indicator to a gray-lilac color. G. M. K

7

.0A

Color reactions of chloride, bromide, and iodide ions. V. I. Kuznetsov. *Doklady Akad. Nauk S.S.S.R.* 77, 281–4 (1931); cf. *C.A.* 45, 1453c.—For detection of Cl, Br, or I ions the following procedure is suggested. To 2 ml. of a 0.02% soln. of the Na salt of either 8-hydroxy-5-(*p*-sulfophenylazo)quinoline or 8-hydroxy-5-(*p*-nitro-*o*-sulfophenylazo)quinoline add 1 drop concd. AcOH then dropwise 0.005 *M* $Hg(NO_3)_2$ until red in color. Add a few drops of this to 1 ml. of neutral or slightly acidic (AcOH) soln. under test. Cl, Br, and I give a yellow-orange color, best compared with a blank. Usually 0.2–1.0 γ can be detected per ml. of soln. If $AgNO_3$ is used the AcOH is replaced by 10% NaOAc soln. The color can be used for colorimetry against a scale of standards and can be applied to colorimetric titration. The reagents are generally substances of the 8-hydroxyquinoline type forming colored products, after complex formation with Hg or Ag ions. At a pH too high for such color formation, the Hg and Ag complexes still form but almost no color change takes place. G. M. Kosolapoff

Determination of the sulfate ion in chromium baths. Michele Zappala. *Boll. lab. chim. provinciali* (Bologna) 1, No. 2, 23–4 (1950).—A method is described for detg. SO_4^{--} in the presence of CrO_4^{--} ion after reduction of the chromate with EtOH in very dil. HCl. S. A. Kalovereas

1932

KUZNETSOV, V.I.; KOSHELEVA, O.N.

New azo indicators of the methyl orange series and the relation between the structure and pH of their transition. J. Anal. Chem. U.S.S.R. 7, 61-7 '52 [Engl. translation].
(CA 47 no.19:9849 '53)

1. Inst. Chem. Reagents, Moscow.

C-2

BA

3872. **Colour reaction for dichloroethane.** V. I. Kuznetsov and Z. M. Il'inskova *J. anal. Chem., USSR*, 1952, 7, 89—91.—At 200° quinoline gives with 1 : 2-dichloroethane a red colour that can be used for the detection of the latter in presence of $CHCl_3$, CCl_4, xylene, chlorobenzene, 1 : 1-dichloroethane, and many other solvents including alcohols, ethers, esters, etc. 0·2—0·3 ml. of quinoline is heated in a test-tube with one drop of a solvent containing 1 : 2-dichloroethane at +190° for 3—4 min. With large amounts of 1 : 2-dichloroethane, rapid heating gives a bluish-red colour and prolonged heating a brown or brownish red colour. With small amounts, *e.g.* 5%, the colour is orange-yellow. 0·1 mg. can be detected if freshly distilled colourless quinoline is used. To detect 1 : 2-dichloroethane in air a stream is passed through a tube containing silica-gel. On being heated with quinoline the silica-gel becomes coloured if 1 : 2-dichloroethane is present. Similar colours are given by 1 : 2-dibromoethane, and ethyl chloride, bromide, and iodide. It is considered that the coloration is due to the formation of a cyanine dye.

G. S. SMITH.

Chem. Abs. Vol. 48, No. 8, 25 Apr 54

KUZNETSOV, V.I.

Chromophoric action of the elements. Uspekhi Khim. 21, 175-206 '52.
(CA 48 no.2:415 '54) (MLRA 5:2)

KUZNETSOV, V. I.

Gor'kiy - Chemistry, Analytical - Congresses

Conference on analytical chemistry in Gor'kiy. Zhur. anal. khim. 7, No. 4, 1952.

Regional conference held 4-6 June 52 called by Gor'kiy State U. Forty reports were heard, a number of them devoted to the theory of the action of org reagents, and to their utilization in analysis. V.I.Kuznetsov and L.M.Kul'berg reported on the effect of the peculiarities of the molecular structure of an org reagent on that reagent's reaction capability. B.A.Platunov pointed out that the completeness of the pptn of W by org reagents is detd by the nature of the precipitator and the state of the W in soln. V.M.Peshkova spoke on the ease with which dioxime complexes of Ni could be extracted during the colorimetric detection of Ni in the presence of Co and other elements. A.K.Babko reported on utilizing silicomolybdic acid and phosphomolybdic acid in analysis. V.B.Avilov was heard on the physicochem bases of the iodometric detection of As, Sb, Fe, Sn, Cr, and V, and on the theoretical bases of certain oxidizing-reducing reactions. A.M.Vasil'yev, V.F. Torpova, and A.A.Busygina reported on the possibility of separating Cu, Cd, and Zn by ionic exchange on Wofatit R with solns containing thiosulfate and acetates. Reports were also presented on sanitation-hygienic analysis. 261T27

Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

KUZNETSOV, V. I.

Earths, Rare

Color reaction of rare earth elements. Zhur. anal. khim., 7, No. 4, 1952.

(17. 255:24)

The reagent, arsenazo (benzene-2-arsonic acid - <1-azo-2> -1,8-dioxynapthalene-3, 6-disulfo acid) (Na-salt), dissolves in water with a rose color and forms a red-violet coloration when brought together with rare-earth elements in a neutral medium. This coloration permits the detection of these rare-earth elements in dilutions up to 1:3,000,00 Describes the detection of rare-earth elements in pure solns and points out ways of removing impediments to iron and other reacting elements. Also describes the method for detecting rare-earth elements in minerals, where part of the reacting elements are separated by co-precipitation (during the hydrolysis of stannic chloride) with the precipitating metastannic acid, while other reacting elements in soln are masked by ammonium salicylate.

261T23

Monthly List of Russian Accessions. Library of Congress, October, 1952.

Unclassified.

KUZNETSOV, V. I.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Inorganic Chemistry

3

O Chem

The extraction of quinquevalent vanadium from hydrochloric acid solutions with organic solvents. V. I. Kuznetsov. *J. Gen. Chem. U.S.S.R.* 22, 2187–[illegible] (translation).—See *C.A.* 47, 5831d. H. L. H.

9-2-54

KUZNETSOV, V.I., doktor khimicheskikh nauk; GLOBUS, R.L.; KARSKAYA, T.N.; MIKHAYLOV, G.I.; PEVTSOV, G.A.; PYATNITSKAYA, G.N.; ROZHDESTVENSKIY, M.S. [deceased]; SOKOLOV, N.I.

[Chemical reagents and preparations] Khimicheskie reaktivy i preparaty; spravochnik. Sostaviteli V.I.Kuznetsov [i dr.] Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1953. 668 p. (MLRA 7:4)
(Chemical tests and reagents)

(3)

Syntheses with complex compounds. I. Preparation of azo dyes from pyrocatechol. V. I. Kuznetsov and A. A. Nemodruk (V. I. Vernadskii Inst. Geochem. and Anal. Chem., Acad. Sci. U.S.S.R., Moscow). *Sbornik Statei Obshchei Khim.* 2, 1375–81(1953).—To 5.5 g. *o*-$C_6H_4(OH)_2$ and 18.5 g. $Al_2(SO_4)_3 \cdot 18\ H_2O$ in 50 ml. H_2O with ice cooling was added PhN_2Cl from 4.7 ml. $PhNH_2$, 40 ml. H_2O, 7 ml. H_2SO_4 (or HCl), and 3.5 g. $NaNO_2$. The mixt. was treated with 50 ml. 20% NaOAc over 40 min. yielding a red ppt. of the *Al deriv.* of *3,4-dihydroxyazobenzene*. This mixt. was treated with 15 ml. concd. HCl and the resulting brown ppt. of *3,4-dihydroxyazobenzene* is sepd. in 72% yield, m. 165° (from EtOH). By the usual procedure, PhN_2Cl and an alk. soln. of catechol gave only gas and tar; in acid soln. no coupling took place. Similarly, 1-$C_{10}H_7N_2Cl$ (or sulfate) gave 81% *1-(3,4-dihydroxyphenylazo)naphthalene*, cherry red, m. 201.5° (from EtOH). From *p*-toluidine was obtained 80% *4'-methyl-3,4-dihydroxyazobenzene*, deep cherry red, m. 175° (from EtOH), while *o*-anisidine similarly gave 77% *2'-methoxy-3,4-dihydroxyazobenzene*, red-brown, m. 149° (from EtOH), and *m*-xylidine gave *2,4-dimethyl-3',4'-dihydroxyazobenzene*, red, m. 183°. Similarly were obtained *3,4-dihydroxy-3'-methyl-6'-methoxyazobenzene*, 79%, m. 162°, and *3,4-dihydroxy-2'-carboxyazobenzene*, 75%, m. 182°. The formation of the Al salt prevents the oxidation of catechol by the diazonium compds. G. M. Kosolapoff

KUZNETSOV, V.I.; BUDANOVA, L.M.

Determination of manganese by the persulphate method using cobalt as catalyst. J. anal. Chem. USSR, '53, 8, 55-60. (MLRA 6:2)
(BA - C pt.9:2470 '53)

Co instead of Ag can be used as a catalyst for the oxidation of Mn to the permanganate by ammonium persulfate or potassium persulfate for the subsequent volumetric or colorimetric detn of Mn. The mthod of oxidation and the method for detg the permanganate formed are the dame as when Ag is used. In view of the small amount of Co salt added, and especially if added as a mixt with Ni or Cu, the soln analyzed does not have the rosy tint characteristic of Co salt solns. 261T34

1. KUZNETSOV, V. I.; KOZYREVA, L. S.

2. USSR (600)

4. Vanadium

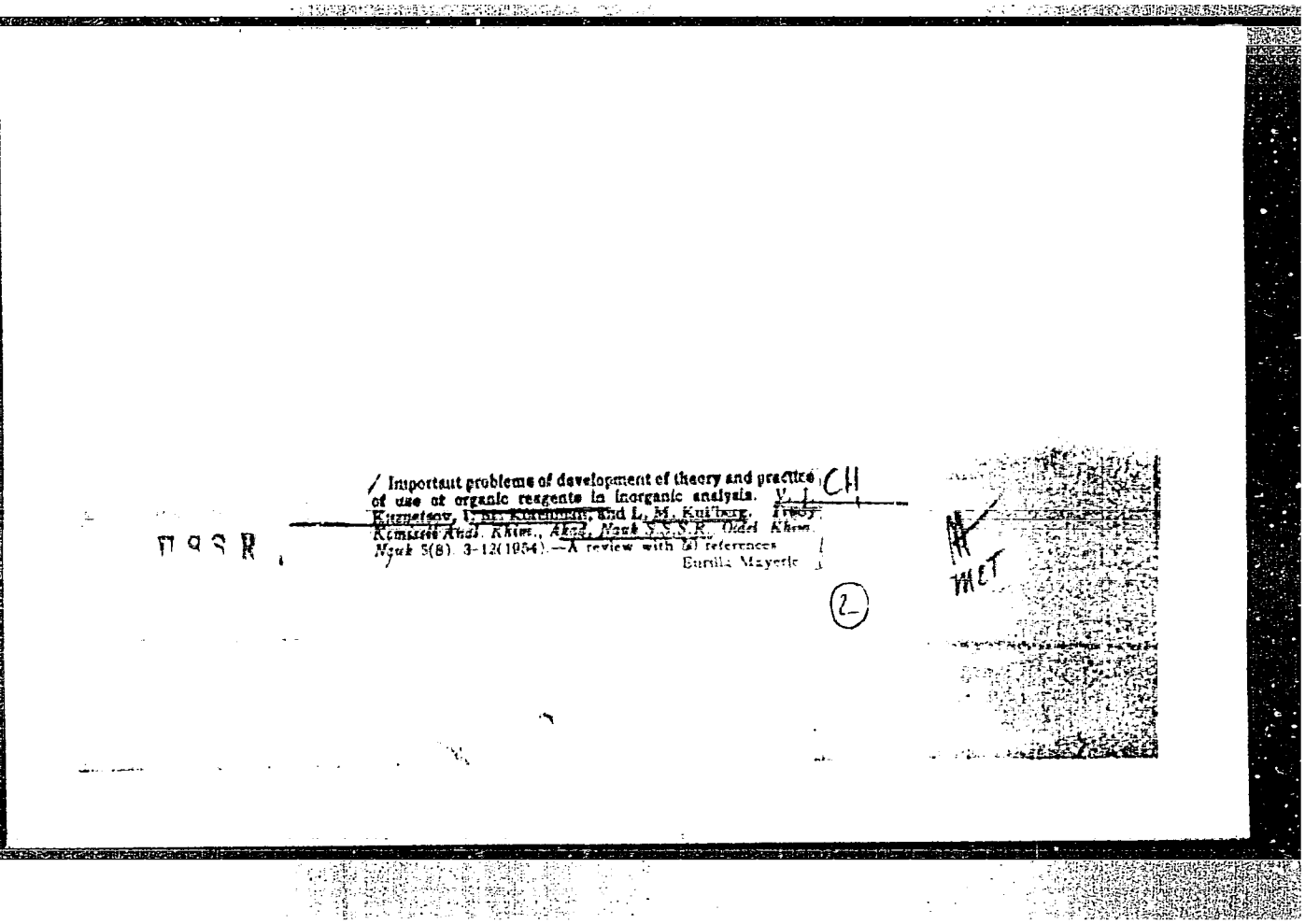
7. Analytical reactions of tetravalent vanadium, Zhur. anal. khim., 8, No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April, 1953, Uncl.

KUZNETSOV, V.I.; KOZYREVA, L.S.

Analytical reactions of quadrivalent vanadium. Zhur. Anal. Khim. 8, 90-104 '53. (MLRA 6:4)
(CA 47 no.20:10405 '53)

1. All-Union Sci. Research Inst. Chem. Reagents, Moscow.



Important problems of development of theory and practice of use of organic reagents in inorganic analysis. V. I. Kuznetsov, I. P. Alimarin, and L. M. Kul'berg. *Trudy Komissii Anal. Khim., Akad. Nauk S.S.S.R., Otdel Khim. Nauk* 5(8): 3-12(1954).—A review with 51 references.
Eurila Mayerle

USSR

Color reaction of zinc with methyl violet and potassium ferrocyanide. V. I. Kuznetsov and I. N. Kozyrev. *Trudy Komissii Anal. Khim., Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 5(8), 80-9(1954). cf. C.A. 43, 7904b.—On ppta. of Zn by $K_4Fe(CN)_6$ in the presence of methyl violet some methyl violet enters into the ppt. but not stoichiometrically. The reaction can be used for [illegible] Zn. To detect Zn in a pure soln., add 1 drop of dil. methyl violet soln. to the test soln. and, if the soln. is not acid enough, add dil. HCl dropwise until the color is green-blue. Add 1 drop of 0.2% $K_4Fe(CN)_6.3H_2O$ soln. and the color turns yellow if Zn is present. Alkali salts in concns. not much above 3% do not interfere. Cu^{++}, V^{++}, Cr^{++}, and Fe^{++} interfere. To remove them add *N* NaOH to the soln. until it is strongly basic to litmus. After 15-20 min. filter off the ppt., and add *N* HCl to the filtrate until it is acid to litmus. After addn. of 1 drop 5% NH_4OH soln. heat the mixt. 10 min. on a boiling H_2O bath. After cooling, Zn is detected as above. To det. Zn in pure solns., place 1 ml. of the neutral soln., contg. not more than 5-6 γ Zn, in a test tube and add 0.4 ml. H_2O, 0.3 ml. *N* HCl, 0.2 ml. of 0.01% methyl violet.

(over)

V. T. KUZNETSOV

soln., and 0.1 ml. of 0.2% $K_4Fe(CN)_6.3H_2O$. Compare the color with similarly prepd. Zn standards contg. 0-0.7 γ Zn. To det. Zn in the presence of other elements, place the slightly acid soln. in a 25-ml. volumetric flask, dil. to approx. 15 ml., and make just basic to litmus with *N* NaOH. Add another 3.3 ml. *N* NaOH. Dil. the soln. to vol., mix, and, after standing 20 min., filter. In a 100-ml. conical flask place 20 ml. of filtrate and 2.8 ml. *N* HCl. The soln. should be only weakly acid to Congo red. Then add 0.8 ml. 5% hydroxylamine sulfate. Heat to boiling, cool, and place 1 ml. in a test tube with 0.4 ml. H_2O. To this, and to a blank contg. 1.4 ml. H_2O, add 0.3 ml. *N* HCl and 0.2 ml. 0.01% methyl violet. If the colors do not match, add 1-2 drops *N* NaOH to the test soln. so that the colors match. If this NaOH is needed, place a new 1-ml. portion of soln. in a third tube and mix with 0.3 ml. *N* HCl, and dil. H_2O. To 1.7 ml., add 0.2 ml. 0.01% methyl violet, and 0.1 ml. 0.2% $K_4Fe(CN)_6.3H_2O$. Compare with standards prepd. at the same time. Zn was detd. in mixts. contg. different amts. of Zn, Fe, Cu, Cr, V, and Co. The error varied from −7.4 to +8.0%.

Eurilla Mayerle

KUZNETSOV, V. I.

USSR/Chemistry - Precipitants

Card 1/1 : Pub. 145 - 4/14

Authors : Kuznetsov, V. I.

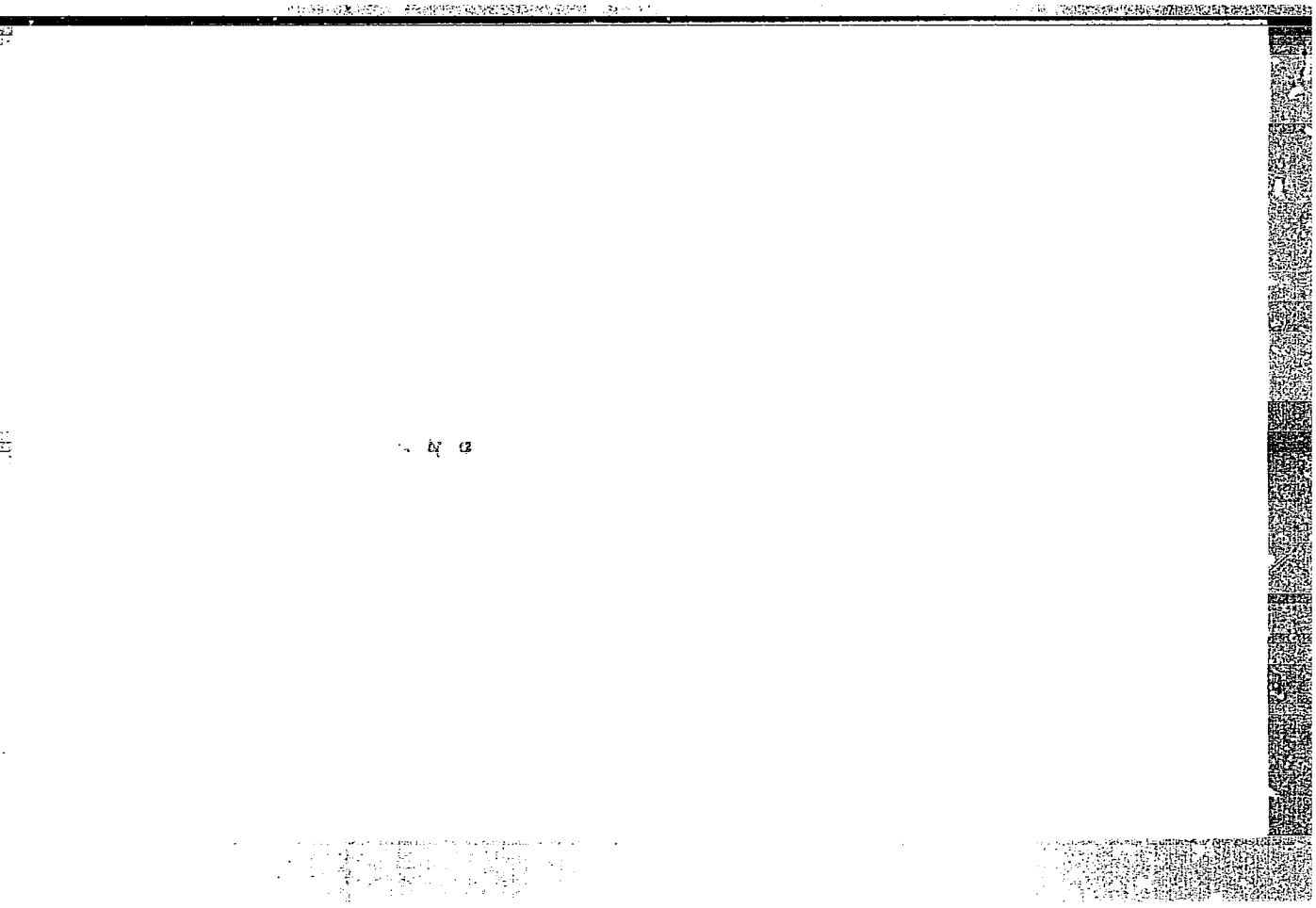
Title : Organic co-precipitants (collectors). Part 1.-Theoretical bases of the effect of organic co-precipitants

Periodical : Zhur. anal. khim. 9/4, 199-207, Jul-Aug 1954

Abstract : The importance of organic co-precipitants for preliminary concentration of micro-amounts of elements and consequent determination of the latter by well known methods is discussed. The advantages of organic co-precipitants over inorganic are described. Intra-complex, complex, as well as normal salts, of elements with greater organic part are considered the most suitable precipitating agents. Less soluble cation-salts of methyl violet or methylene blue and the salts of organic cations with heavy, volatile inorganic or organic anions, are among the best co-precipitants. Twenty-one references: 12-USSR; 4-German; 3-USA; 1-Hungarian and 1-Swedish (1936-1953).

Institution : Acad. of Sc. USSR, The V. I. Vernadskiy Institute of Geochemistry and Analytical Chemistry, Moscow

Submitted : January 27, 1954



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210007-2"

KUZNETSOV, V. I.

AID P - 1119

Subject : USSR/Chemistry

Card 1/1 Pub. 119 - 2/5

Author : Kuznetsov, V. I. (Moscow)

Title : Chemical theoretical principles of isolation of elements by extraction

Periodical : Usp. khim., 23, no. 6, 654-696, 1954

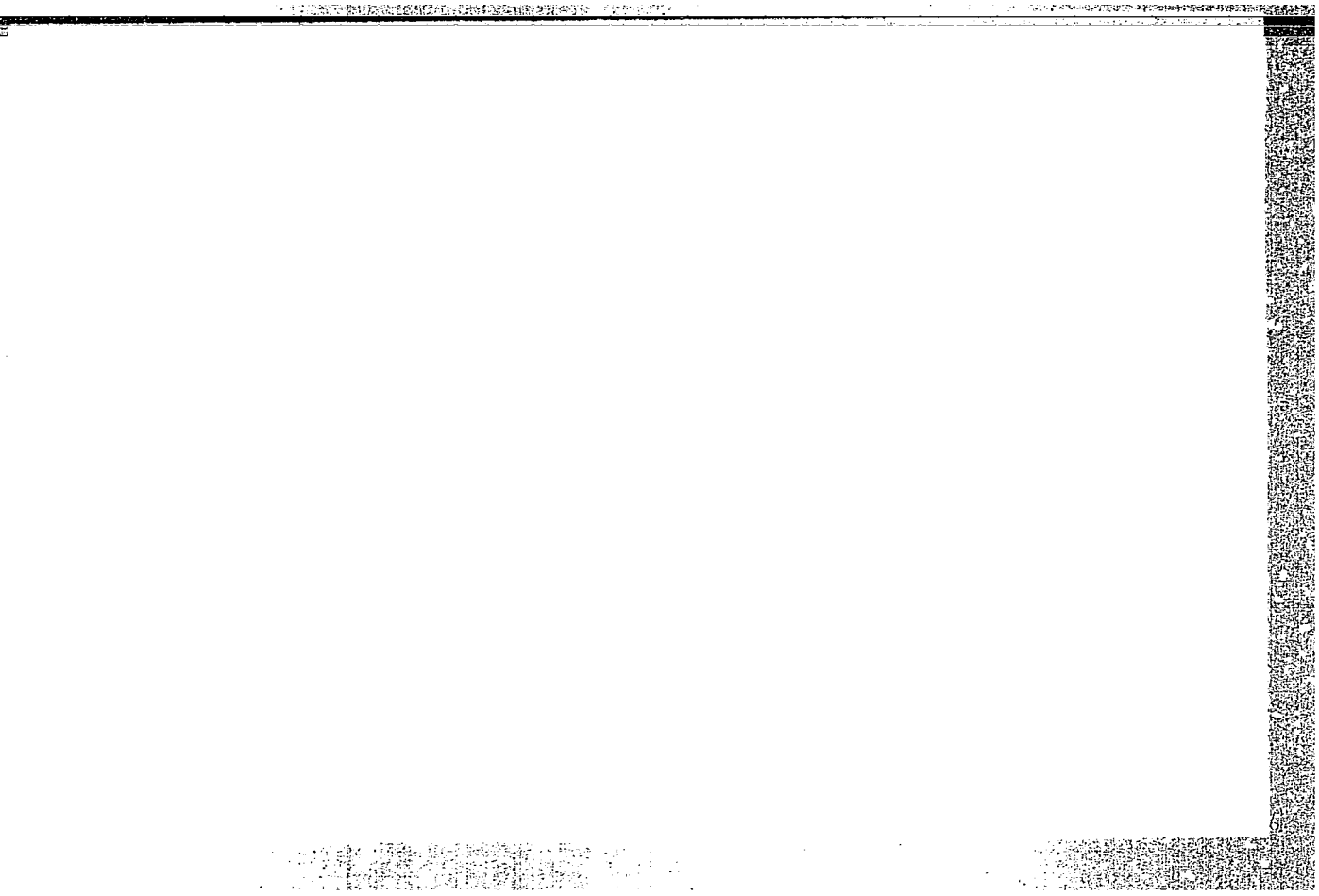
Abstract : Review of various types of extraction, including extraction in the form of onium salts, extraction involving water-insoluble salts, and extraction based on physical distribution. Fifteen tables, 460 references (75 Russian: 1895-1952).

Institution : None

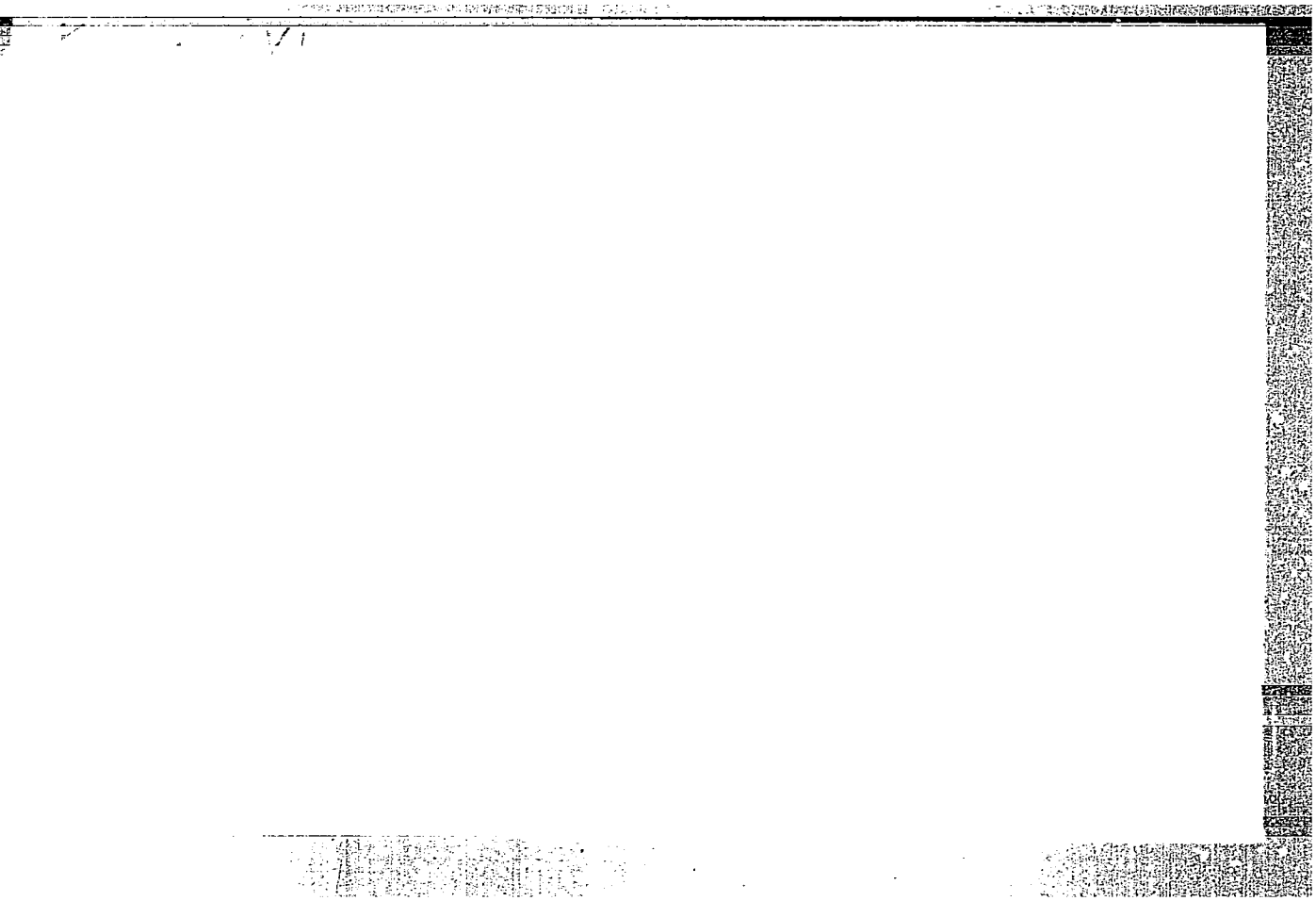
Submitted : No date

USSR .

The molecular heat capacity of organic compounds with different degrees of hydrogenation. V. I. Kuznetsov. *Zhur. Obshchel. Khim.* 24, 1949-52(1954). C.A. 49, 4331i.—Changes in structure of org. compds., such as decrease in amt. of free rotation of a bond by introducing a double bond, or aromatization, may make a greater difference in heat capacity than that produced by loss of H atoms. H. M. Leicester



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210007-2"



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210007-2"

7704

UTILIZATION OF ORGANIC COPRECIPITANTS IN ANALYTICAL CHEMISTRY. V. I. Kuznetsov. p.301-19 in Meetings of the Division of Chemical Sciences, Session of the Academy of Sciences of the U.S.S.R. on the Peaceful Use of Atomic Energy. July 1-5, 1955. Moscow, Publishing House of the Academy of Sciences of the U.S.S.R. 1955. 378p. (In Russian)

The author along with others elaborated methods of coprecipitation of Cu, Sr, Zn, Cd, In, Tl, Ti, Sn, Zr, Hf, P, Nb, Ta, Cr, Mo, W, Ni and other elements with organic coprecipitants. In some cases with simultaneous separation from almost all other elements. Even from 10^{-10} — 10^{-11} mol. solutions coprecipitations are carried out quantitatively. All the experiments were carried out with the aid of radioactive isotopes. Organic coprecipitants are useful for preliminary concentration and separation of microquantities of element for the purpose of their subsequent determination by spectral, polarographic or chemical methods. They are also useful for improvement of the existing and elaboration of new methods of isolation of radioactive isotopes without carriers, for estimation of the stability of complex compounds and for many other purposes. (auth)

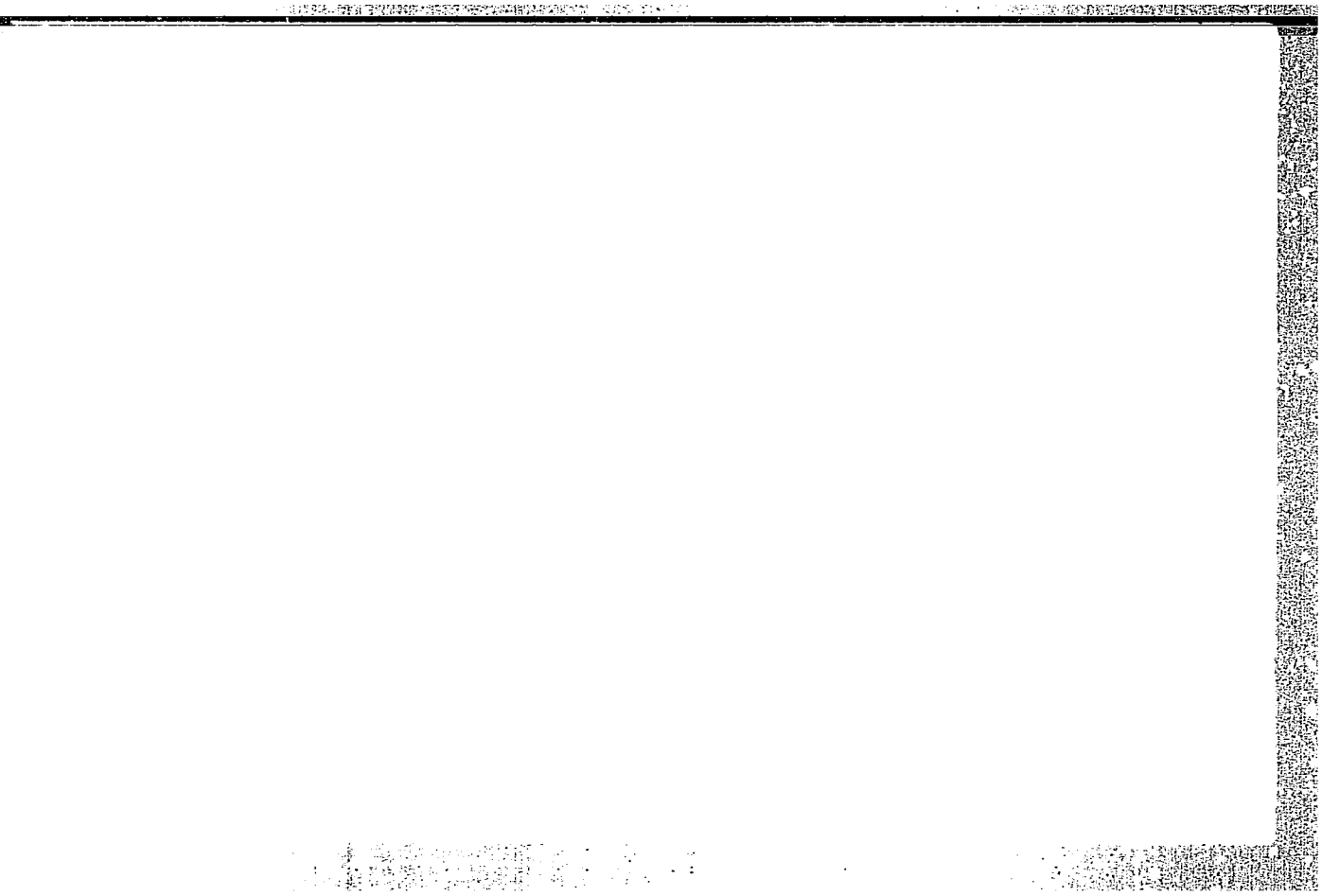
Organic coprecipitants (collectors). Coprecipitation of indium. V. I. Kuznetsov and G. V. Myasoedova. *Primenenie Organicheskikh Reaktivov v Anal. Khim., Akad. Nauk S.S.S.R., Inst. Geokhim. i Anal. Khim.* 1955, 24–8.—Small quantities of In, down to 1 γ in 20,000 ml., were sepd. from other elements and subsequently concd. by conversion to an iodide anion and collecting the latter with 6% aq. methyl violet (reagent). To 250 ml. of dil. acid (0.2–0.5*N* H_2SO_4) contg. In and not over 150 mg. of elements reacting with I (Hg, Pb, Bi, Sb, Sn, Cu, Zn, Cd) add not over 2 g. KI or preferably NH_4I, shake, and add dropwise 25 ml. of reagent. Filter after 20–30 min. and wash with 50–100 ml. of wash soln. (150 ml. 0.5*N* H_2SO_4 + 0.25 ml. reagent + 0.05 g NH_4I). To the combined filtrate add 35 g. KI or preferably NH_4I and, dropwise, 10 ml. of reagent. Filter, wash with 30–50 ml. wash soln., dry, and ignite in muffle at 350–450°. The residue may contain some Zn and K if KI was used. If desired, dissolve the residue in 1–2 ml. 6*N* H_2SO_4 and reppt. In as before. M. Hosch

4018 AEC [illegible]

ORGANIC COPRI[illegible] PLANTS IN ANALYTICAL CHEMISTRY

V. I. Kuznetsov [illegible] CONFERENCE OF THE ACADEMY OF [illegible] ON THE PEACEFUL USES OF ATOMIC [illegible] 1955 SESSION OF THE DIVISION OF CHEMICAL SCIENCE. (Translation). 10p.

This paper was originally abstracted from the Russian and appeared in Nuclear Science Abstracts as NSA 9 7704.

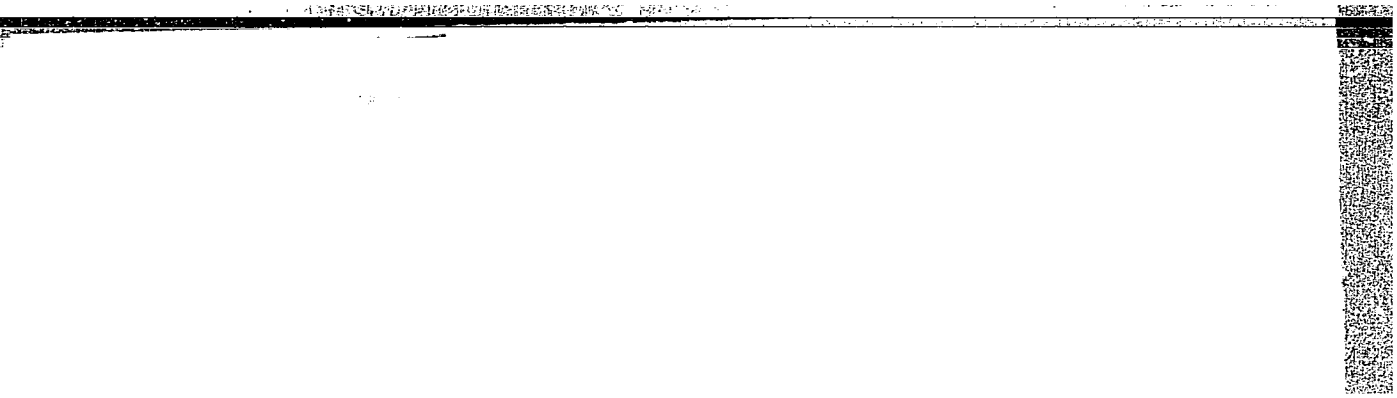


APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210007-2"

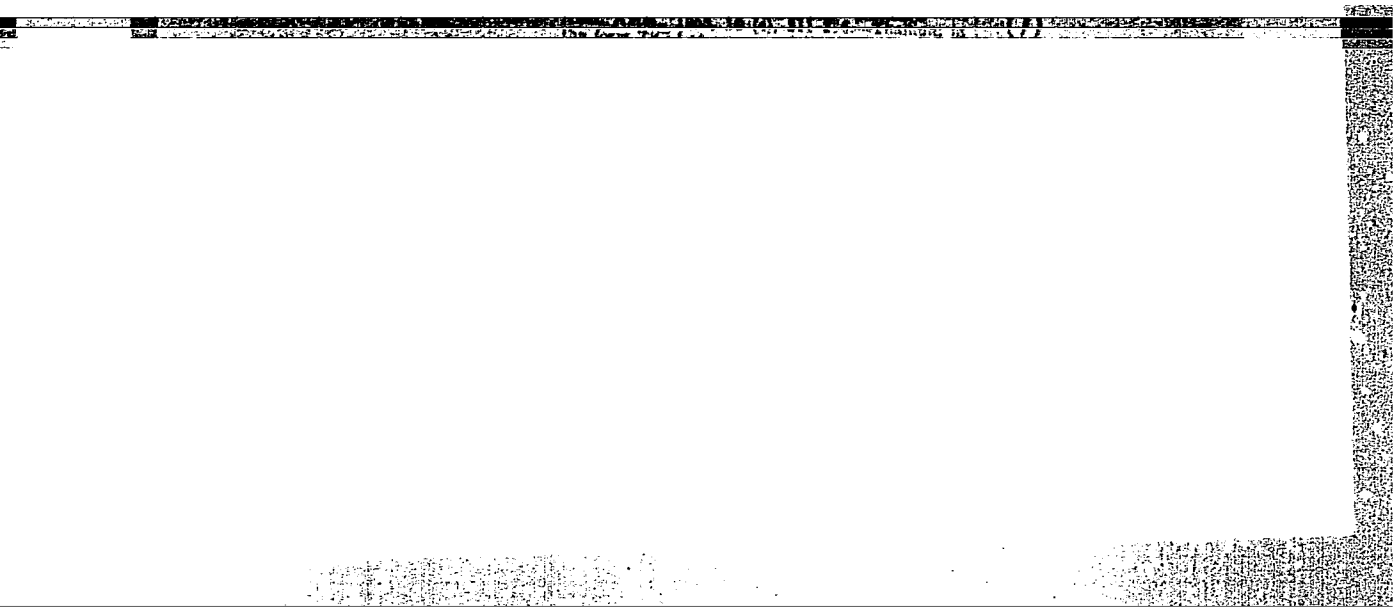
USSR

7719. Organic co-precipitants. II. Co-precipitation of tungsten with organic co-precipitants. V. I. Kuznetsov, V. N. Oboshin and E. S. Pal'shin. *Zh. Anal. Khim. SSSR*, 1955, **10** (1), 32-37. — Complete pptn. of W from acid solutions cannot be attained by the use of any one of the many precipitants that have been proposed, since W in acid solutions is present both as ions of varied character and as colloidal particles. The mixed precipitant described by Platunov (*Uest. Leningrad Univ.*, 1947 **12**, 101), methyl violet and tannin, is recommended. Complete pptn. occurs at a dilution of 1 in 10^{14}. The method is restricted to solutions containing no other elements pptd. by tannin. G. S. SMITH

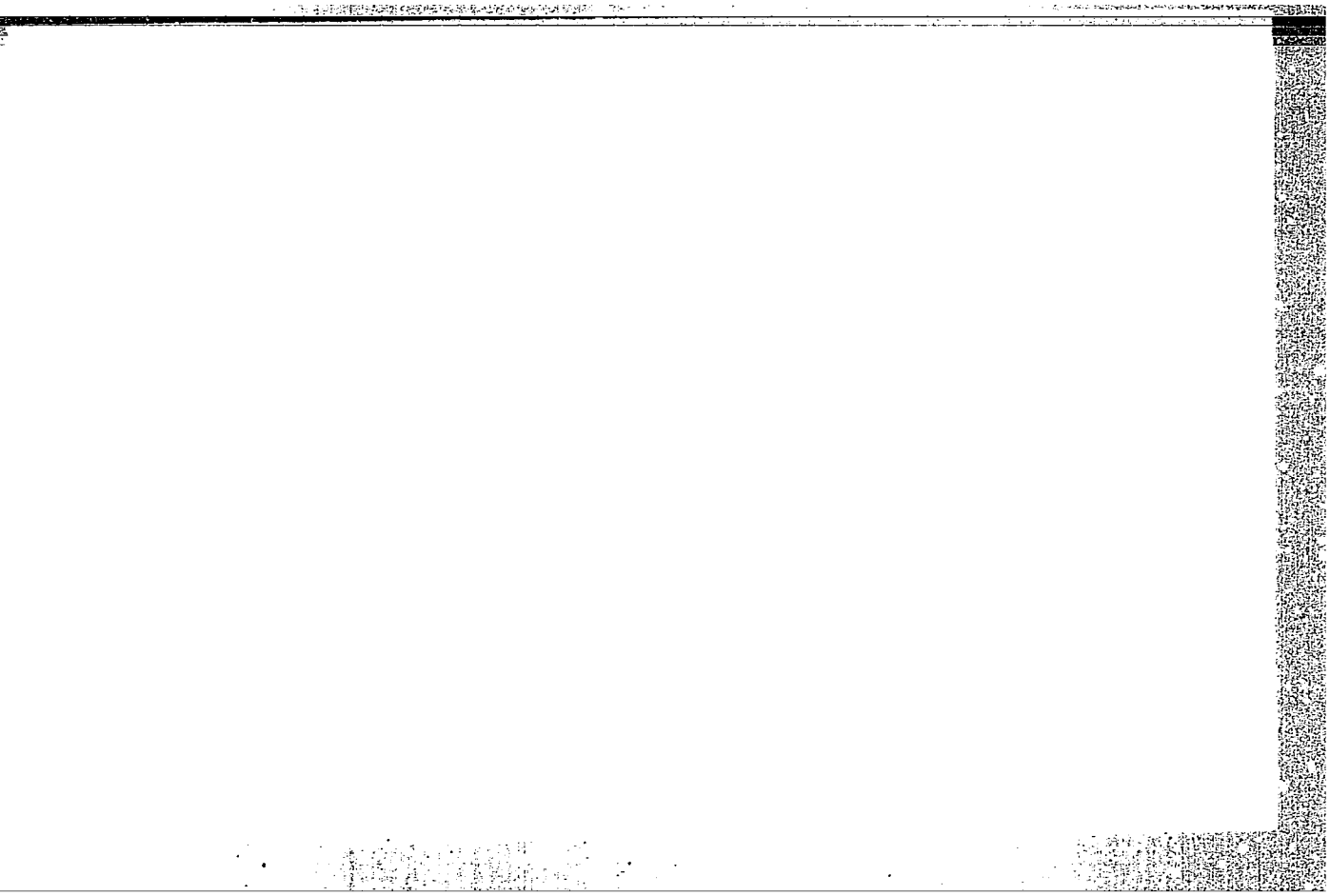
CH (2)



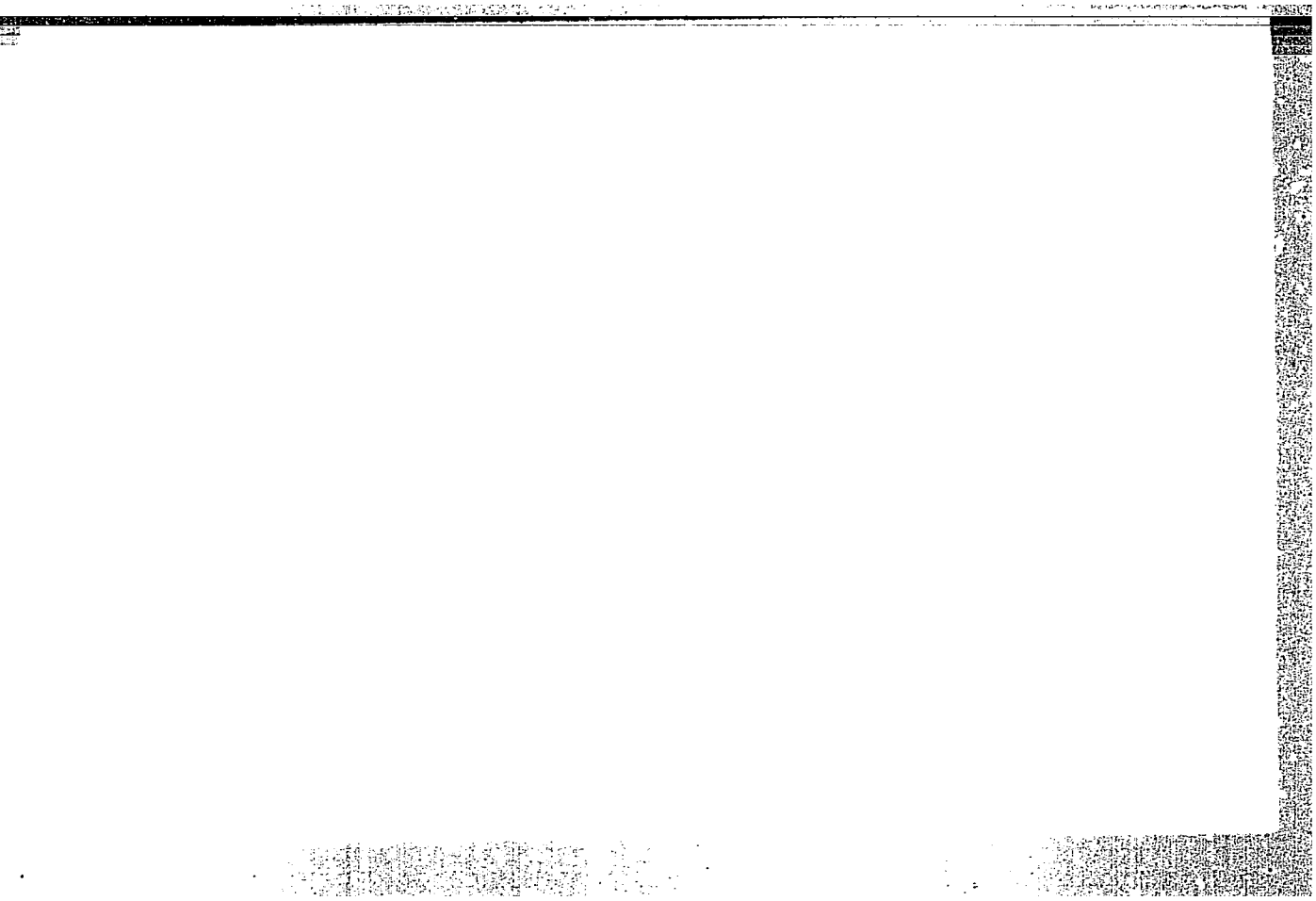
APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210007-2"



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210007-2"



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210007-2"



APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928210007-2"