NEDIN, V.V., doktor tekhn.nauk; [illegible]EYKOV, O.D., kand.tekhn.nauk; BOSHNYAKOV, Ye.N.

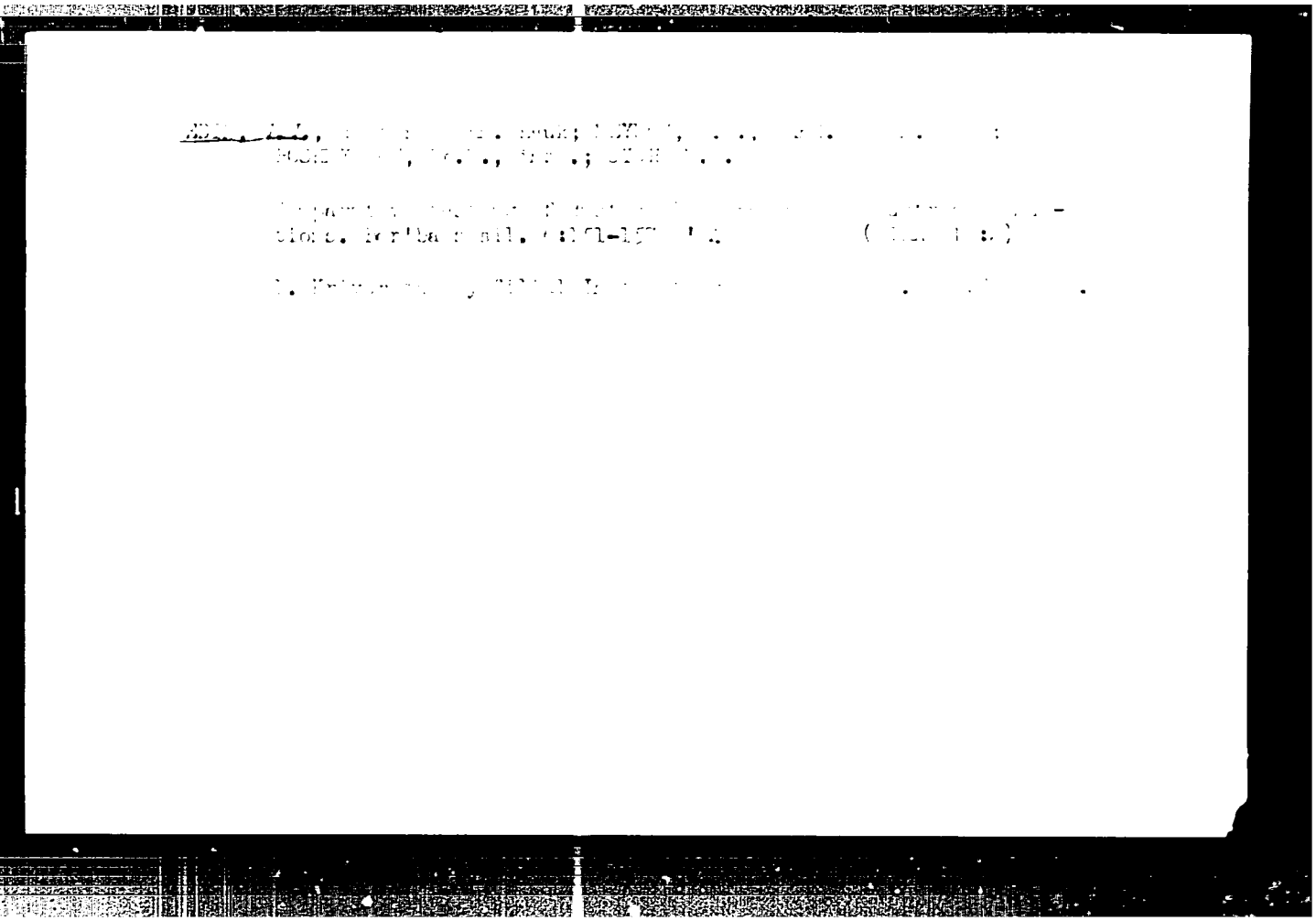
Controlling dust in the housings of crushers with a cascade arrangement of equipment. Bor'ba s sil. 5:218-229 '62. (MIRA 16:5)

1. Krivorozhskiy filial Instituta gornogo dela AN UkrSSR.
(Crushing machinery) (Dust--Prevention)

MEDIN, V.V., doktor tekhn.nauk; NEYKOV, O.D., kand.tekhn.nauk; DANCHENKO, P.I., inzh.

Removing dust from the air around underground receiving bunkers. Gor. zhur. no.9:68-71 S '62. (MIRA 15:9)

1. Krovorozhskiy filial Instituta gornogo dela AN UkrSSR.
(Mine dusts--Removal)



NEDIN, Valentin Vasil'yevich; NEYKOV, Oleg Damianovich; KULIKOV, V.V., retsenzent; STEBAKOV, B.A., otv. red.

[Dust control in mines] Bor'ba s pyl'iu na rudnikakh. Moskva, Nedra, 1965. 198 p. (MIRA 18:8)

MEDIVAL, A; ERMAN, D; SPICER, F.

Epidemic of typhoid fever in the hospital in Vinkovci during 1952-53. Higijena, Beogr. 6 no.3-4:261-272 '54.

1. Higijenski zavod, Osije, Opca bolnica, Vinkovci.
(TYPHOID FEVER, epidemiology,
epidemic in hosp.)

L 37708-66 T JK

ACC NR: AP6027716 SOURCE CODE: GE/0038/66/020/002/0323/0325

AUTHOR: Nedjalkov, Stancke (Doctor; Sofia); Draganov, Mirtscho (Doctor; Sofia); Pejtschev, Boris (Doctor; Sofia)

ORG: Institute of Veterinary Immunology, Sofia, Bulgaria

TITLE: Guinea pig disease caused by Cl. perfringens type A

SOURCE: Archiv fur experimentelle Veterinarmedizin, v. 20, no. 2, 1966, 323-325

TOPIC TAGS: animal disease, epidemiology, pathology, animal disease therapeutics, drug treatment, clostridium

ABSTRACT: Epizootological, clinical, pathological-anatomical, and bacteriological data were presented for cases of guinea pig disease caused by Cl. perfringens type A. This disease occurred on an epidemic scale with a high mortality rate. Treatments with intramuscular injection of 3000 units antiperfringens serum type A per 500 g. weight provided effective remedy. With adequate diet following this treatment, the guinea pigs regained perfect health in a short time. [JPRS: 36,599]

SUB CODE: 06 / SUBM DATE: 01Mar65 / ORIG REF: 004 / OTH REF: 002

Card 1/1

0917 1216

GEORGIEV, Iv.; NEDKOV, G.; IORDANOV, B.

A typical form of "serous" meningitis and meningoencephalitis with Coxsackie virus as a possible etiologic factor. Suvrem med., Sofia no.7:69-73 '61.

1. Katedra po nervni bolesti pri Visshiia meditsinski institut, Sofiia, Rukov. na katedrata prof. S. Bozhinof. 2. Katedra po epidemologiia i infektsiozni bolesti pri VMI, Sofiia Rukov. na katedrata prof. P. Berberev.

(MENINGOENCEPHALITIS virol) (MENINGITIS virol)
(COXSACKIE VIRUSES infect)

DIMITROV, M.; [illegible]EDKOV, N.

Eye injuries and induction of cataract by ionizing radiations. Khirurgiia, Sofia 11 no.8:728-735 1958.

1. Sofiiski okruzhen onkologichen dispanser G. Lekar: M. Dimitrov.

(RADIATIONS, inj. eff.
cataract & other eye inj. (Bul))
(EYE, eff. of mediations,
ionizing (Bul))
(CATARACT, etiol. & pathogen.
radiation inj. (Bul))

MEDKOV, M.

New method of formation of Filatov's tubular flap with transposition of both sutures in opposite direction. Khir. i ortop. 3 no.3:158-163 1950. (CLML 20:5)

1. Colonel, Medical Corps, specialist in plastic-restorative surgery.

Sofia, Zhivotnovudstvo, Vol 10, No 2, February 1962 (12)

1. "Production is Now Better and Cheaper," an interview with Ivan [illegible], Chief Zoologist at the cooperative farm in the village of Kozloduy (Vratsa okrug); pp 3-6.

2. "New Organization of Labor in Livestock Raising at the State Farm in Stara Zagora," Valko KABAKOV and Blagovest SIVINOV; pp 7-11.

3. "The Advantages (of Concentrated Feeds) Are Obvious from the Very Beginning," Todor DIMITROV, Chief Zoologist at the cooperative farm in Dulovo; pp 12-13.

4. "Specialization and Concentration on Hog Raising ... State Farms," Vasil Lazarov of the "G. Dimitrov" ... (Agricultural Statistical Institute); pp 1[illegible].

5. "Joint Fattening Farm of the Cooperative Farms in Sliven okrug," Borislav SAVOV; pp 21-24.

6. "The Possibilities for Producing More Lamb," Neiko NEDKOV of the State Livestock Breeding Improvement Inspectorate, Plovdiv; pp 25-29.

7. "Hay Flour -- a Substitute for Concentrated Fodder," K. [illegible]OEV, Senior Zoologist, Okrug People's Council, Razgrad; pp 30-31.

8. "Potatoes -- an Important Reserve for Strengthening the Fodder Base," Kostadin GANCHEV (Zoologist with the Blagoevgrad Okrug Committee of the Bulgarian Communist Party) and Dimitur KAYDZHIEV; pp 32-34.

9. "The Case for Using Fodder Crops," Stefan DIMITROV, Junior Scientific Collaborator at the regional livestock scientific research institute in Stara Zagora; pp 35-40.

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00113

NEDKOV, N.; DENEV, B.

Achievements of the Plant 12 in the economy of metals.
Mashinostroene 11 no.9:42-43 S '62.

Distr: 4E2c(j)/4E3d/4E3b

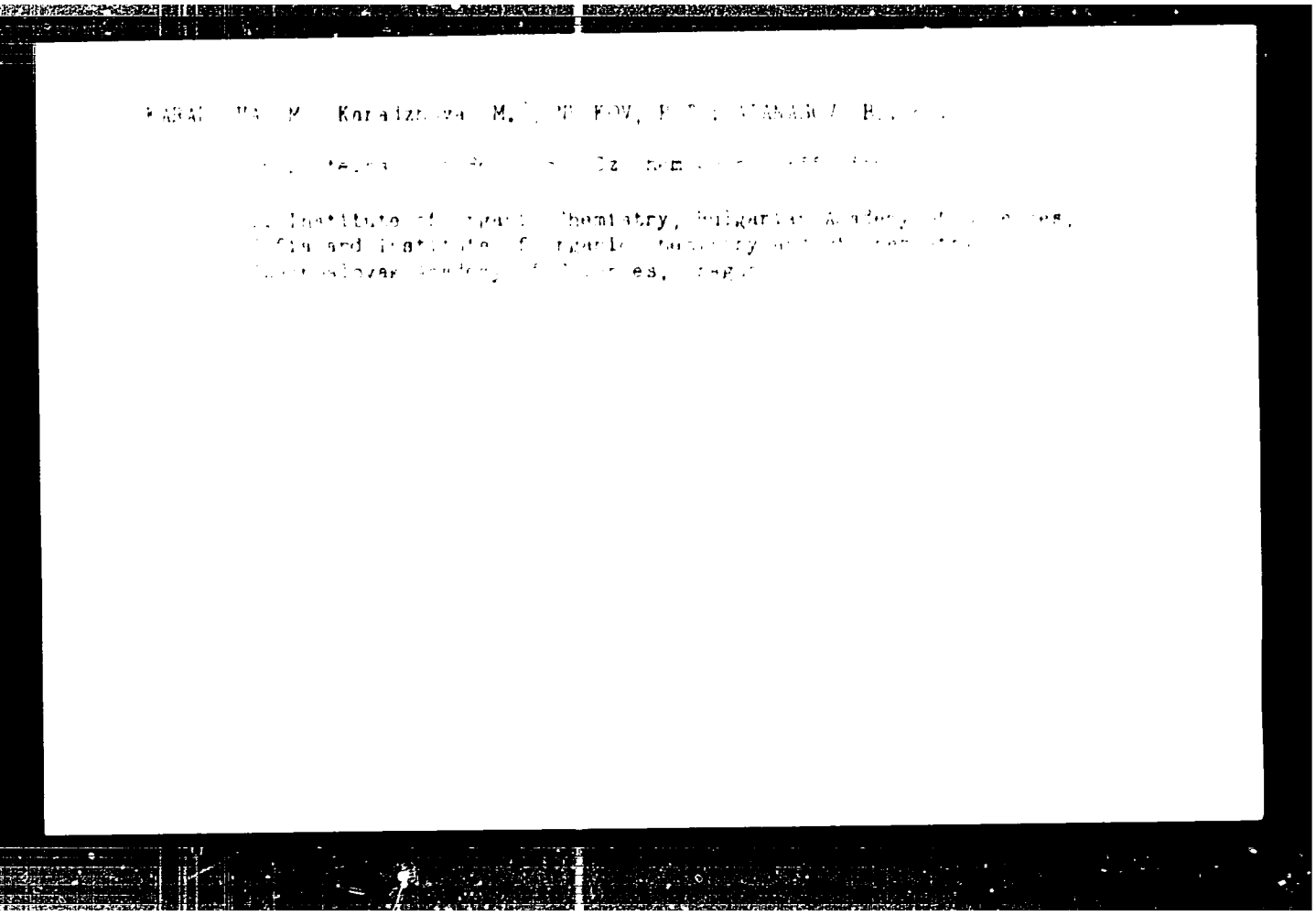
Reaction of some dialkyl esters of phosphorous acid (dialkyl phosphites) with furfural and its derivatives. I. Reaction with furfural. M. Kirilov and P. Nedkov (Univ. Sofia, Bulgaria). *Compt. rend. acad. bulgare sci.* 10, 305-12 (1957)(in Russian).—The Abramov reaction (*C.A.* 45, 2855i) of dialkyl phosphites with carbonyl compds. was studied using furfural (I). To equimolar amts. of twice-distd. I and freshly distd. $(RO)_2POH$ was added dropwise a catalyst [either piperidine (II) or NaOMe–MeOH soln. (III)] until addn. of fresh catalyst did not cause a temp. rise. The resulting yellow mixts. gradually became pale. The dialkyl α-hydroxyfurfurylphosphonates thus prepd. were recrystd. from Et_2O if solids, or vacuum distd. if liquids, and distn. temps. kept below 160° to avoid decompn. The following $(\alpha\text{-}C_4H_3O)CH(OH)PO(OR)_2$ were prepd. (R, m.p. or distn. temp./mm., % yield, catalyst, n_D^{20} given): Me, 47–8°, 38, II, —; Et, 154°/0.7, 72, III, 1.4823; Et, 148°/0.5, 84, II, 1.4833; Pr, 140°/0.09, 85, III, 1.4760; iso-Pr, 90.5–1.5°, 87, III, —; iso-Bu, 143°/0.2, 69, III, 1.4700.

N. J. Birkbeck

NELKOV, P.; MOZAKIEV, L.; KARADZOVA, M., VELEV, V.

Method of producing plasmin from placenta serum for therapeutic purposes. Dokl. Bolg. akad. nauk 17 no.4:401-403 '64.

1. Submitted by Academician A. Spasov.



TASHEV, T. A., prof.; NEDKOVA-BRATANOVA, N.; SHARANKOV, Em., dots.

Determination of the higher nervous system in peptic ulcer.
Nauch. tr. ISUL, Sofia 2 no.1:3-21 1953.

1. Katedra po vutreshni bolesti sus stomashno-chrevni zaboliavaniia i lechebno khranene i katedra po nevrologiia i psikhiatriia. Zav. katedrata: prof. T. A. Tashev.
(PEPTIC ULCER, physiology,
higher nervous funct.)
(CENTRAL NERVOUS SYSTEM, in various diseases,
peptic ulcer, higher nervous funct.)

TASHEV, T. A., prof.; HEDKOVA-BRATANOVA, N.

Sleep therapy of peptic ulcer. Nauch. tr. ISUL, Sofia 2 no.1: 23-35 1953.

1. Katedra po vutreshni bolesti sus stomashno-chrevni i chernodrobni saboliavaniia i lechebno khranene. Zav. katedrata: prof. T. A. Tashev.

(PEPTIC ULCER, therapy,
sleep ther.)
(SLEEP, therapeutic use,
peptic ulcer.)

NEDKOVA, N.; GACHEVA, Iord.; BRAILSKI, Khr.; TSONKOVA, D.

Combined therapy of peptic ulcer with sleep therapy associated with ultraviolet block of the cervical and paravertebral autonomic ganglia. Suvrem. med., Sofia 5 no.5:79-89 1954.

1. Iz Klinikata po gastroenterologiia s lechebno khranene (zav. katedrata: prof. T.Tashev i Katedrata po fizioterapiia (zav. katedrata: dots. S.Kircheva) pri ISUL.

(PEPTIC ULCER, therapy,
sleep ther. with ultraviolet block of autonomic ganglia)
(ULTRAVIOLET RAYS, therapeutic use,
peptic ulcer, ultraviolet block of autonomic ganglia with sleep ther.)
(SLEEP, therapeutic, use,
peptic ulcer, with ultraviolet block of autonomic ganglia)
(GANGLIA, AUTONOMIC,
ultraviolet block in peptic ulcer, with sleep ther.)

NEDKOVA, N.; TOSHKOV, As.; KOEN, R.; GENOV, V.

Etiology of chronic colitis; preliminary communication. Suvrem. med., Sofia 5 no.9:85-91 1954.

1. Iz Klinikata po gastro-enterologiia pri ISUL. Direktor: prof. T.Tashev, RIEM. Direktor: Vl.Kalaidzhiev i RIMP. Direktor: Dreiski.
(COLITIS, etiology and pathogenesis,)

HEDKOVA-BRATANOVA, H.

Bilio-hepatic form of labliasis. Suvrem. med., Sofia 5 no.9:98-103 1954.

1. Is Vutreshnata klinika za stomashno-chrevni i chernodrobni bolesti i lechebno khranene pri ISUL (direktor: prof. T.Tashev)

(LIVER, diseases,
giardiasis)
(BILIARY TRACT, diseases,
giardiasis)
(GIARDIASIS,
biliary tract & liver)

NEDKOVA-BRATANOVA, N.; BALABANOV, G.

Etiology, clinical aspects and treatment of chronic ulcerative colitis. Suvrem. med. Sofia 8 no.7:67-75 1957.

1. Iz Katedrata na gastroenterologii i deitetika pri VSUL. Zav. katedrata: prof. T. Tashev.
(COLITIS, ULCERATIVE
etiol. & ther. of chronic cases)

NEDKOVA-BRATANOVA, N.; NEDEVA-RADKOVA, V.

Etiology, clinical aspects and treatment of chronic infectious colitis. Suvrem. med., Sofia 8 no.7:74-84 1957.

1. Iz Katedrata na stomashno-chrevni zabolivaniia i dietetika - ISUL Zav. katedrata: prof. T. Tashev. Katedrata po epidemiologiia i mikrobiologiia pri ISUl - Sofiia Zav katedrata: prof. D. Khadzhidimova.

(COLITIS,
infect., etiol. & ther. in chronic cases)

BULGARIA

N. NEDKOVA-BRATANOVA, Department of Nutrition at the Bulgarian Academy of Sciences (Institut po khranene pri BAN) Director Prof T. TASHEV, [Sofia.]

"Dysbacterioses in Chronic Enterocolitis."

Sofia, Suvremenna Meditsina, Vol 14, No 5, 1963; pp 29-33.

Abstract: Data on 32 men and 58 women with enterocolitis 1961-1962, most following antibiotic treatment. Therapy was symptomatic in 25, chemotherapeutic in 23 (long-acting sulfonamides, nitrofurantoin, analgesic combinations.) Some of the cases were ascribed to corticosteroid treatment for infectious diseases without concomitant antibiotic 'umbrella.' Three patients succumbed despite complex, energetic therapy. Comprehensive bacteriologic data are given. Two tables.

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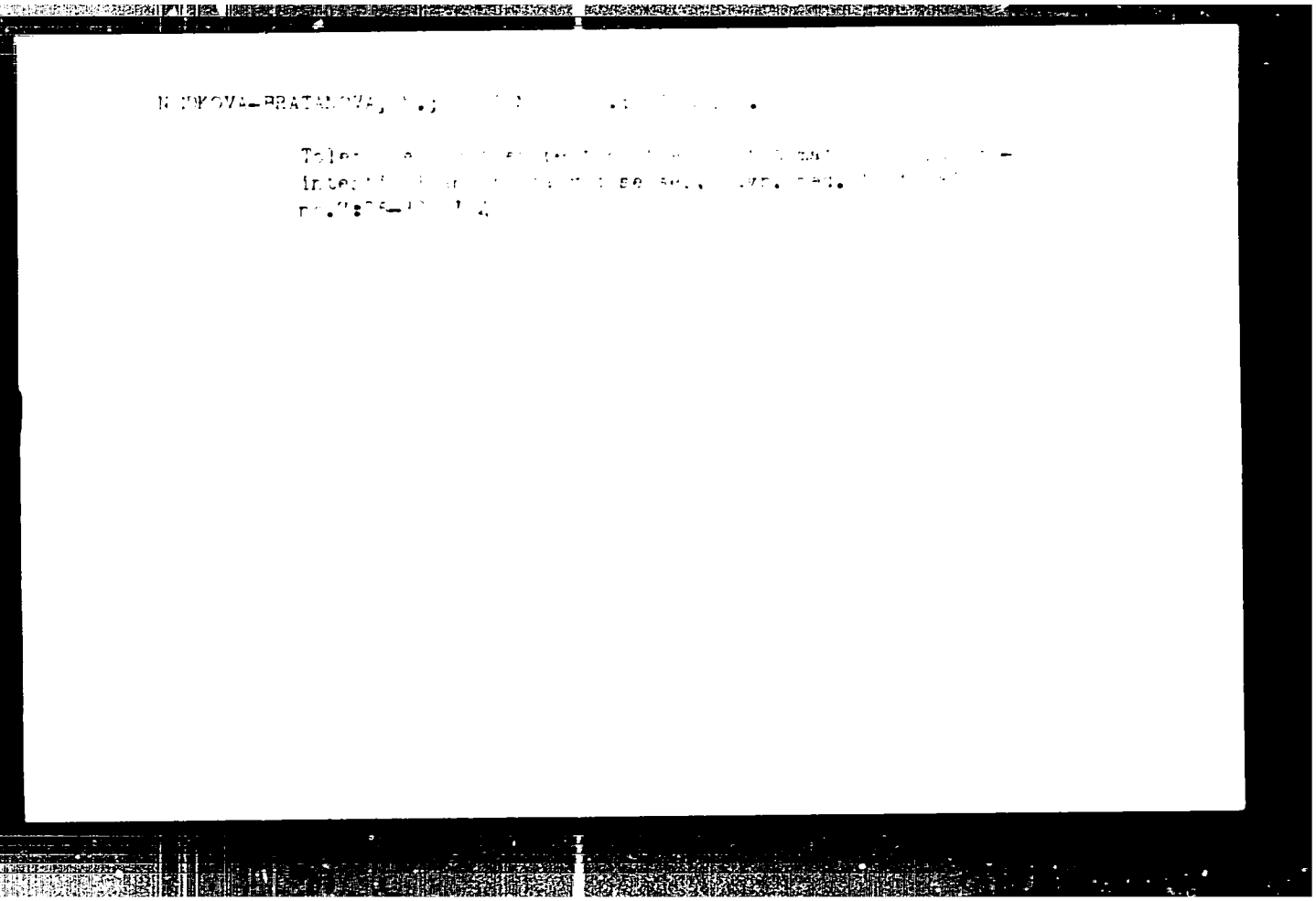
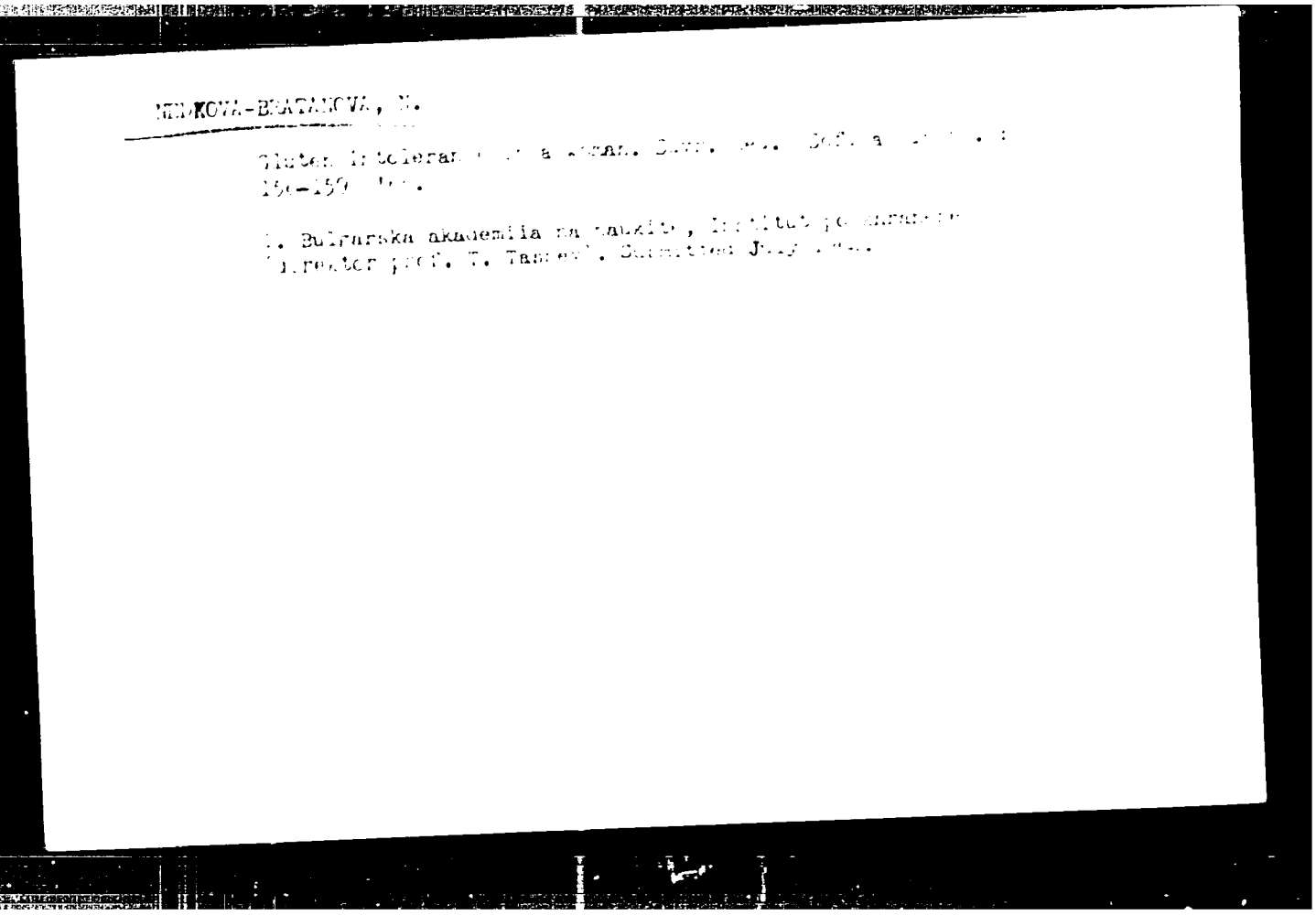




MENKOVA-BOYANOVA, N.

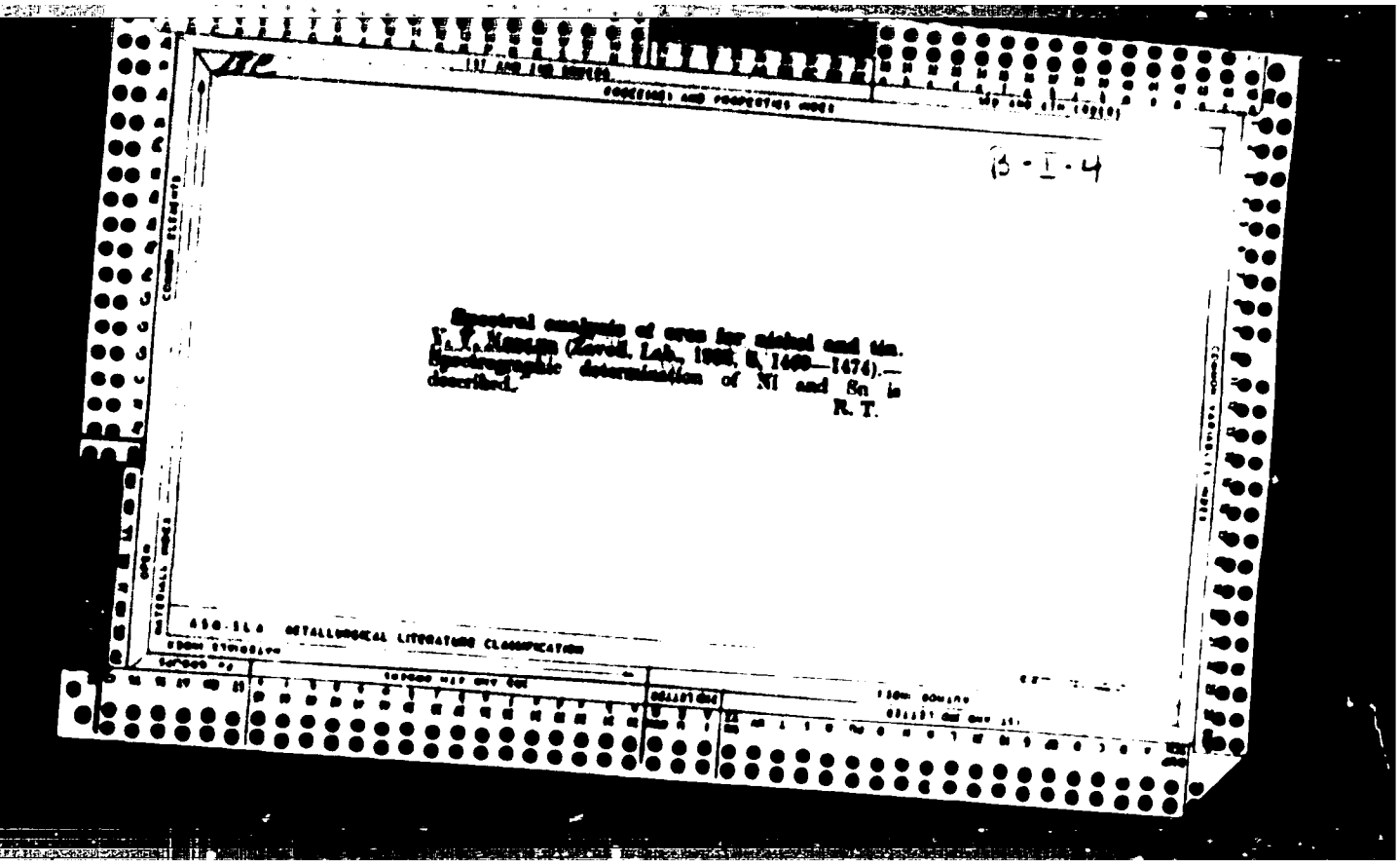
Gluten intolerance [illegible]. Dokl. Bolg. akad. nauk 3 no.2:
155-159 1950.

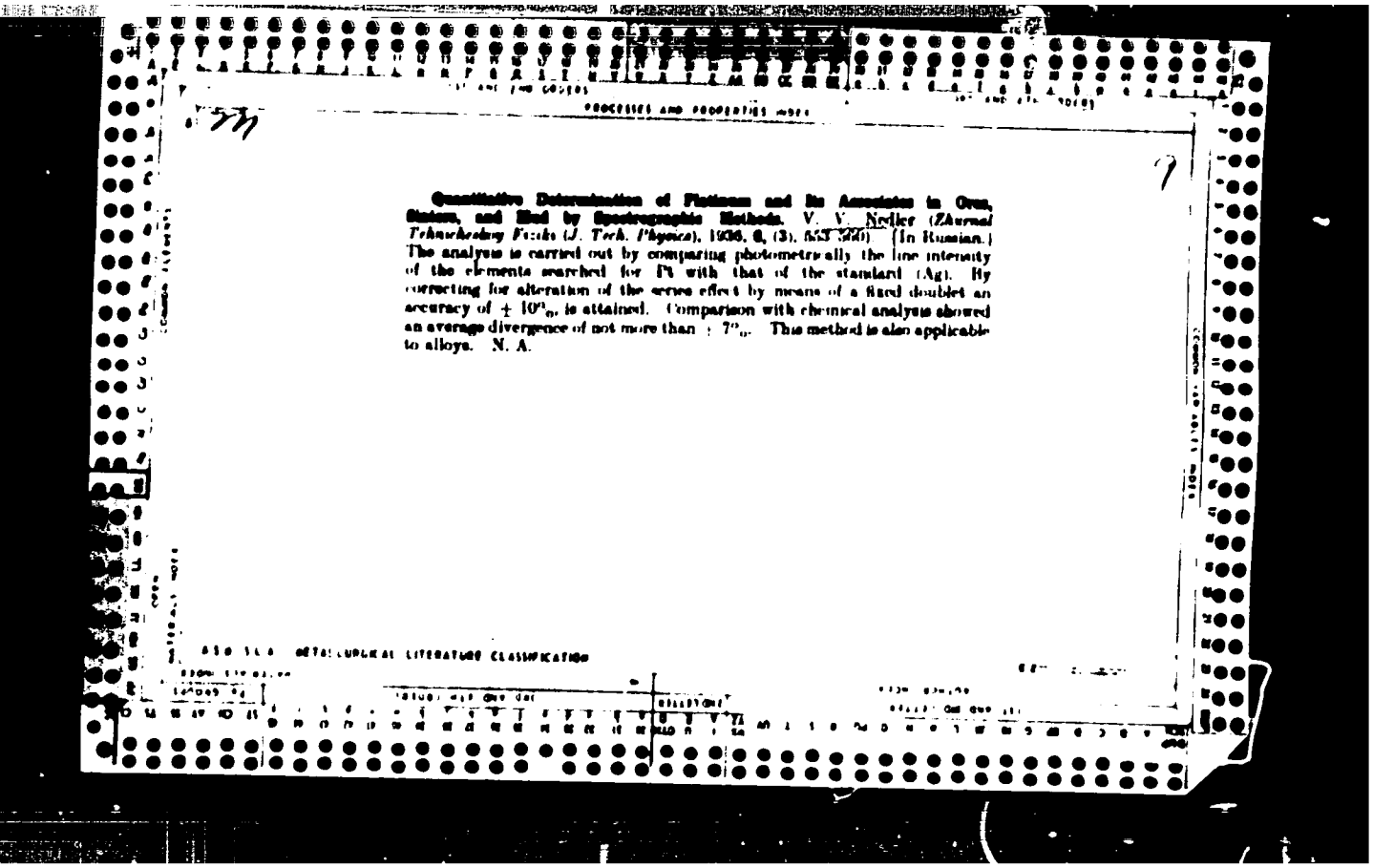
1. Bulgarska akademiia na naukite, Institut po [illegible]
Direktor prof. T. Tanev. Submitted June [illegible]

MILCU, M., Academician St.; HEDLER, M.

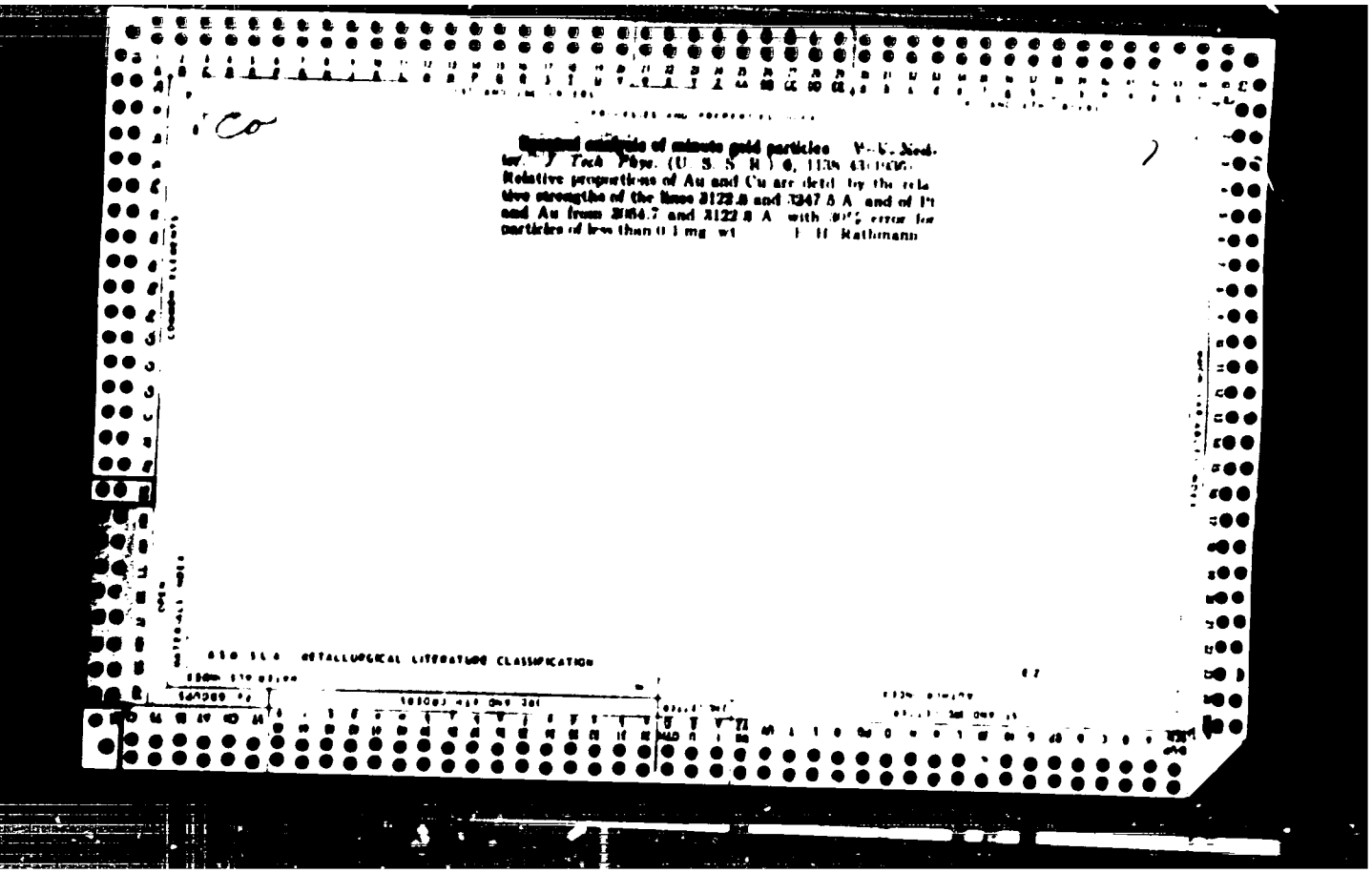
Reactive dysthyreosis in acute rheumatism and its therapy. Probl. reumat. Bucur. no.5:41-43 1958.

(RHEUMATIC HEART DISEASE, complications
thyroid funct. disord., evolution & ther.)
(THYROID GLAND, diseases
funct. disord. in rheum. heart dis., ther.)

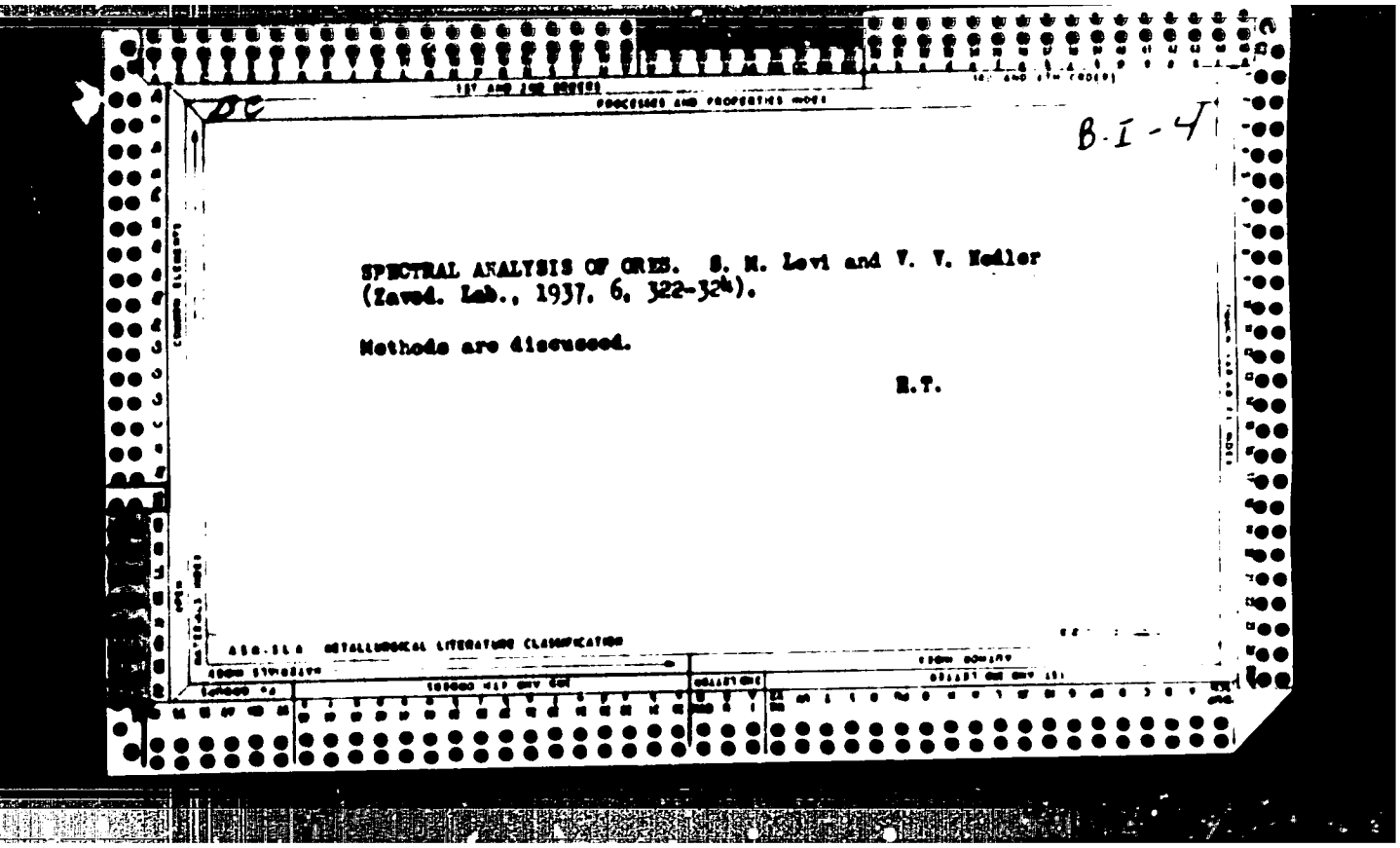




Quantitative Determination of Platinum and Its Associates in Ores, Slutens, and Slud by Spectrographic Methods. V. V. Nedler (*Zhurnal Tekhnicheskoy Fiziki (J. Tech. Physics)*, 1936, 6, (3), 553-560) [In Russian.] The analysis is carried out by comparing photometrically the line intensity of the elements searched for (Pt with that of the standard (Ag). By correcting for alteration of the screen effect by means of a fixed doublet an accuracy of $\pm 10\%$ is attained. Comparison with chemical analysis showed an average divergence of not more than $\pm 7\%$. This method is also applicable to alloys. N. A.



Compound emission of minute gold particles V. V. Nod-
ov. Zh. Tekh. Fiz. (U. S. S. R.) 6, 1138 (1936).
Relative proportions of Au and Cu are detd. by the rela-
tive strengths of the lines 3123.8 and 3247.5 A. and of Pt
and Au from 2864.7 and 3122.8 A. with 20% error for
particles of less than 0.1 mg. wt. I. H. Rathmann



B-I-4

SPECTRAL ANALYSIS OF ORES. S. M. Levi and V. V. Kedler (Zavod. Lab., 1937, 6, 322-324).

Methods are discussed.

R.T.

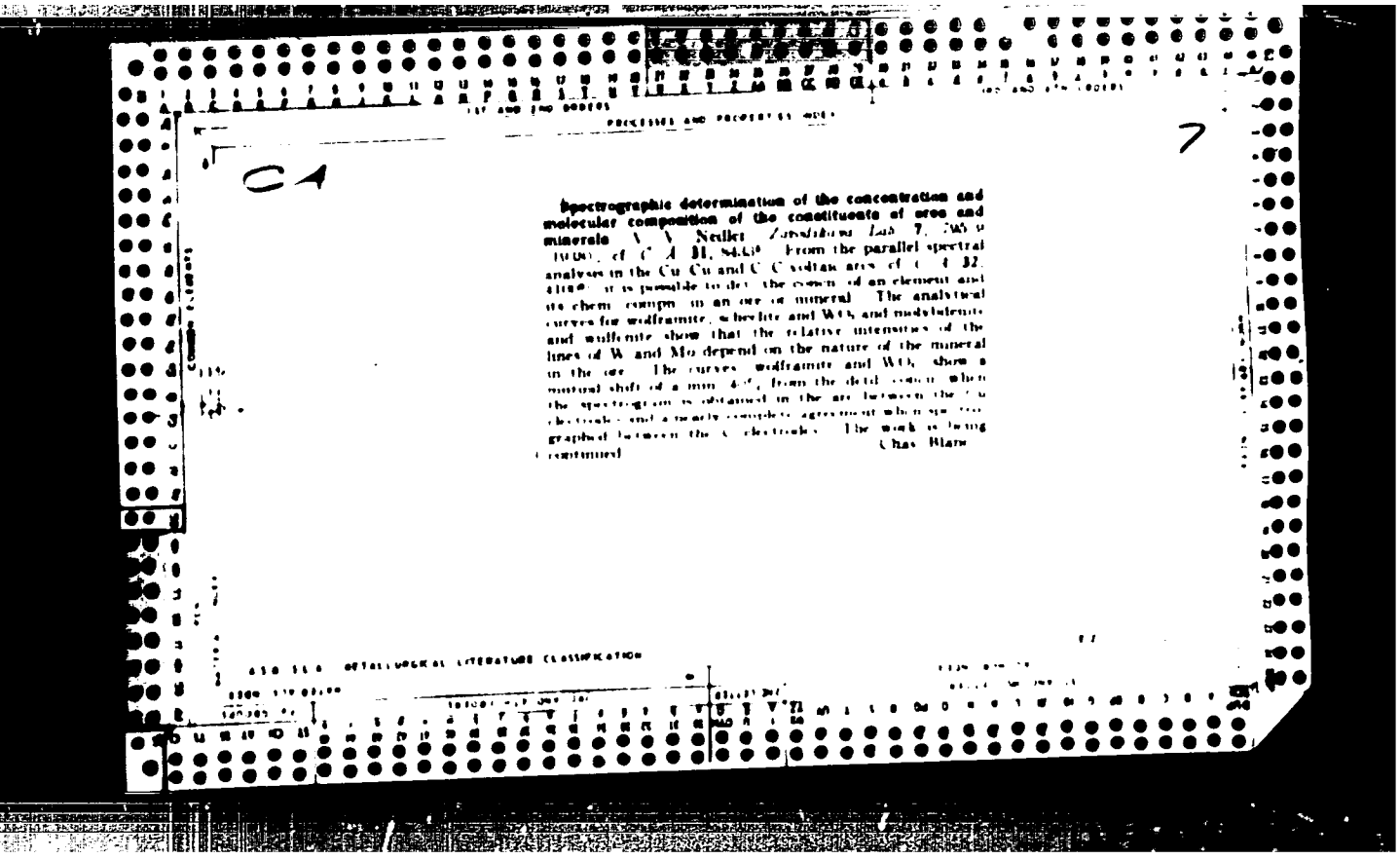
PROCESSES AND PROPERTIES INDEX

Ca

7

Spectrographic analysis of tin, tungsten and molybdenum in gold slimes and ores. [illegible] 7, [illegible] In the spectral analysis of Au ores and slimes by the [illegible] arc method with the use of logarithmic [illegible] of Sn, Mo and W can be [illegible] A. 31, [illegible] the [illegible] of the lines [illegible] measured by the relative intensity of the lines [illegible] adding NaCl, [illegible] and other salts which are not present in the sample. The details of procedure are [illegible] investigated. [illegible] Blanc

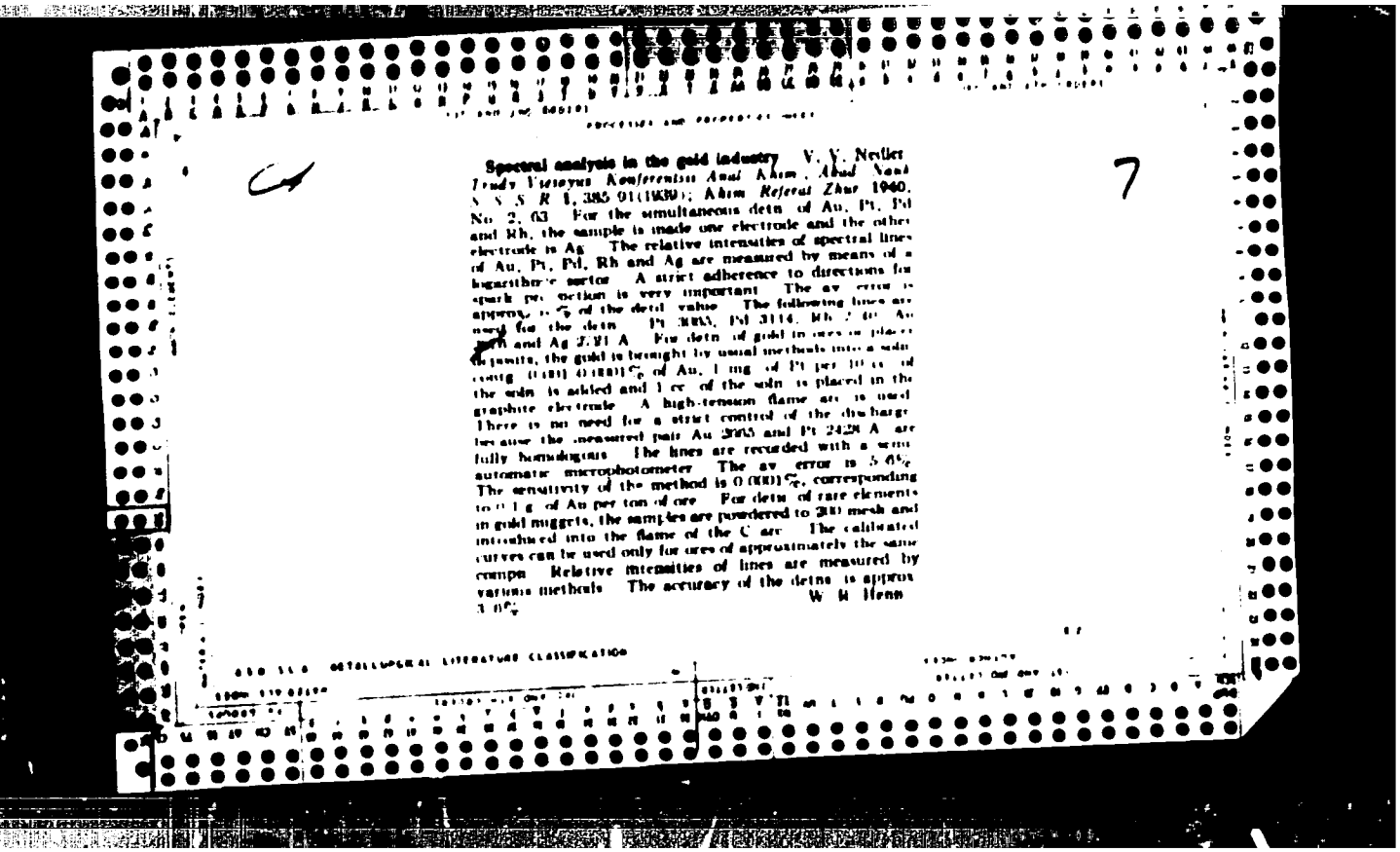
METALLURGICAL LITERATURE CLASSIFICATION



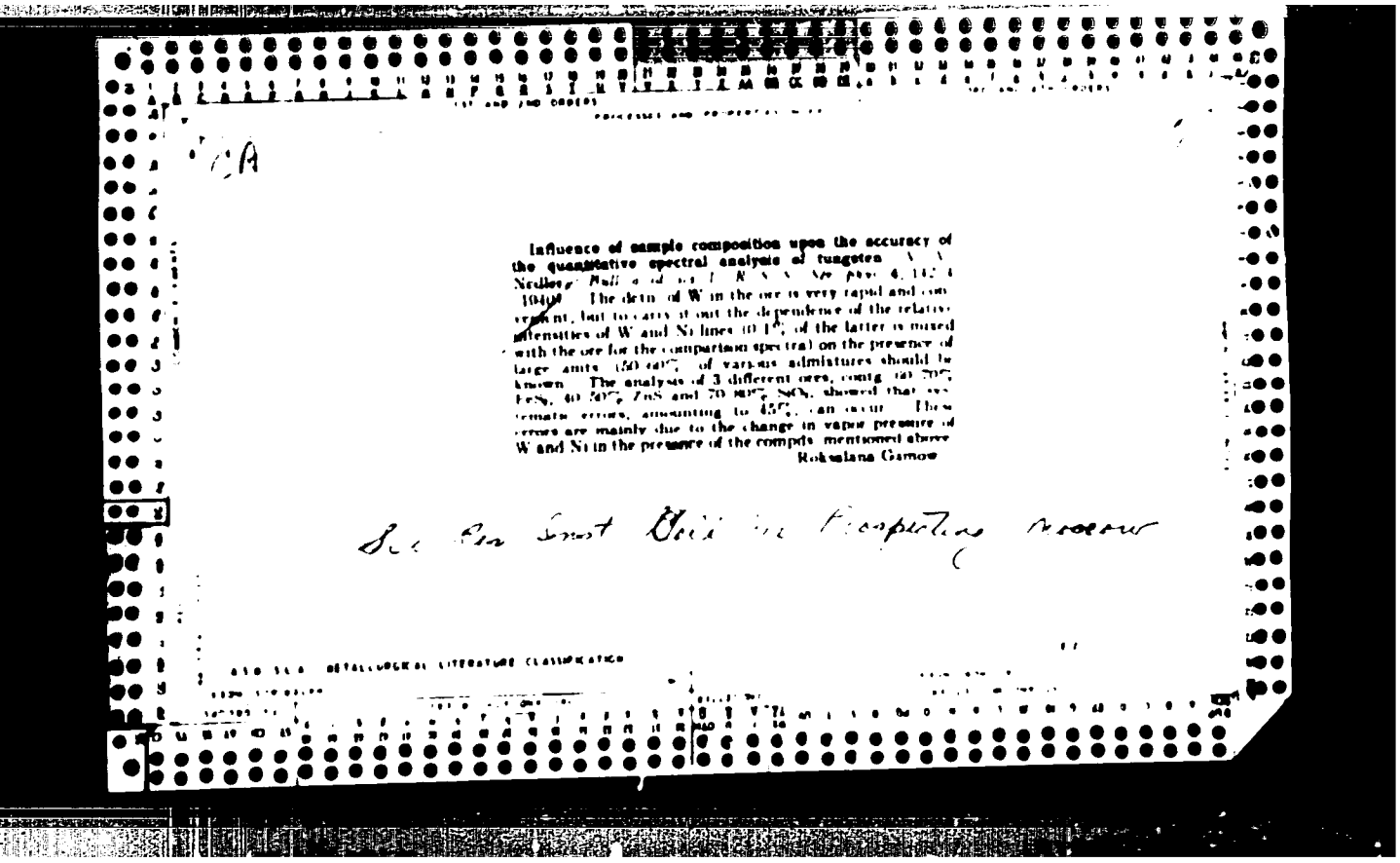
Spectrographic determination of the concentration and molecular composition of the constituents of ores and minerals V. V. Nesiki *Zavodskaya Lab.* 7, 745-9 (1938); cf. *C. A.* 31, 8446[6]. From the parallel spectral analyses in the Cu-Cu and C-C-sulfan arcs of [illegible] it is possible to det. the content of an element and its chem. compn. in an ore or mineral. The analytical curves for wolframite, scheelite and W-Cu and molybdenite and wulfenite show that the relative intensities of the lines of W and Mo depend on the nature of the mineral in the ore. The curves wolframite and W-Cu show a mutual shift of 4 mm. 4-6, from the detd. content when the spectrogram is obtained in the arc between the Cu electrode and a nearly complete agreement when the [illegible] graphite between the C electrodes. The work is being [illegible]

Chas. Blanc

(continued)



Spectral analysis in the gold industry V. V. Nevlet *Trudy Vsesoyuz. Konferentsii Anal. Khim. Anal. Nauk S.S.S.R.* 1, 385-91 (1939); *Khim. Referat. Zhur.* 1940, No. 2, 63. For the simultaneous detn. of Au, Pt, Pd and Rh, the sample is made one electrode and the other electrode is Ag. The relative intensities of spectral lines of Au, Pt, Pd, Rh and Ag are measured by means of a logarithmic sector. A strict adherence to directions for spark procedure is very important. The av. error is approx. ± % of the detd. value. The following lines are used for the detn.: Pt 3083, Pd 3114, Rh 3 [illegible] Au and Ag 3 [illegible] A. For detn. of gold in ores or placer deposits, the gold is brought by usual methods into a soln. contg. (0.01) (0.001)% of Au, 1 mg. of Pt per 10 cc. of the soln. is added and 1 cc. of the soln. is placed in the graphite electrode. A high-tension flame arc is used. There is no need for a strict control of the discharge because the measured pairs Au 3065 and Pt 2428 A. are fully homologous. The lines are recorded with a [illegible] automatic microphotometer. The av. error is 5.6%. The sensitivity of the method is 0.(00)1%, corresponding to 0.1 g. of Au per ton of ore. For detn. of rare elements in gold nuggets, the samples are powdered to 200 mesh and introduced into the flame of the C arc. The calibrated curves can be used only for ores of approximately the same compn. Relative intensities of lines are measured by various methods. The accuracy of the detns. is approx. 3.0%. W. H. Henn

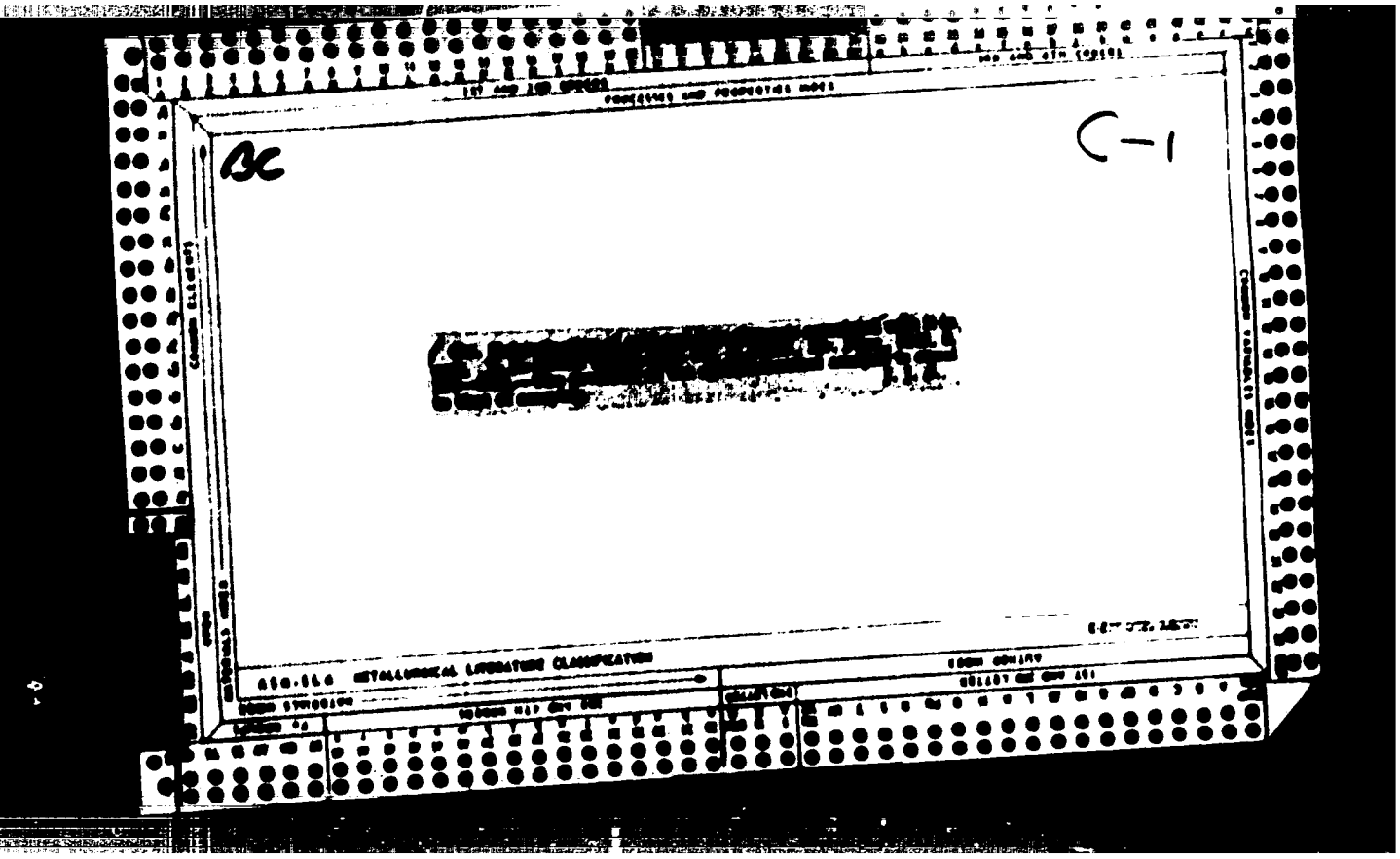


CIA

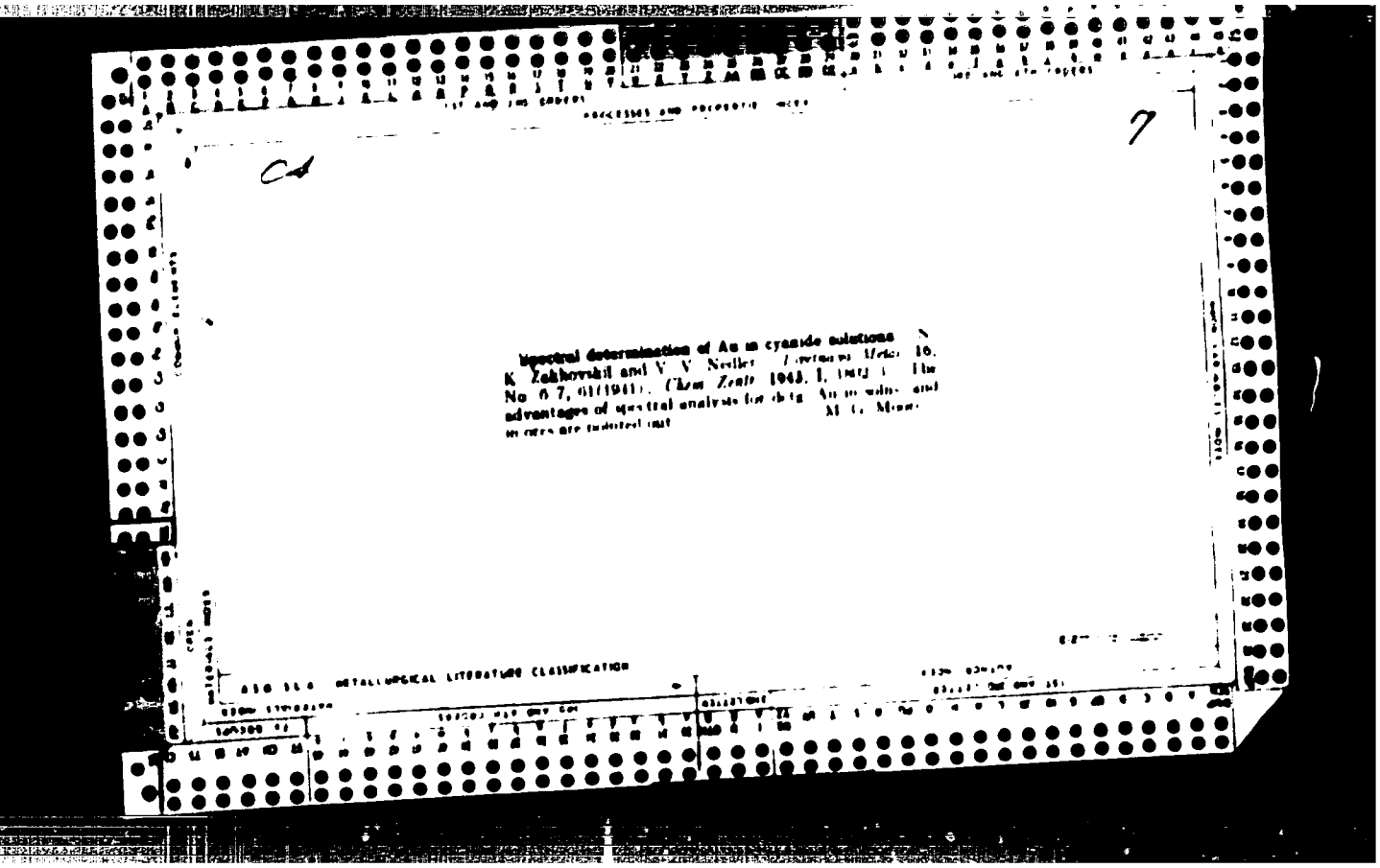
Influence of sample composition upon the accuracy of the quantitative spectral analysis of tungsten [illegible] Nedlec, Bull. [illegible] 1940. The detn. of W in the ore is very rapid and convenient, but to carry it out the dependence of the relative intensities of W and Ni lines (0.1% of the latter is mixed with the ore for the comparison spectra) on the presence of large amts. (50-60%) of various admixtures should be known. The analyses of 3 different ores, containing 70% FeS, 40-70% ZnS and 70-80% SiO2, showed that considerable errors, amounting to 45%, can occur. These errors are mainly due to the change in vapor pressure of W and Ni in the presence of the compds. mentioned above.

Rokuslana Garnow

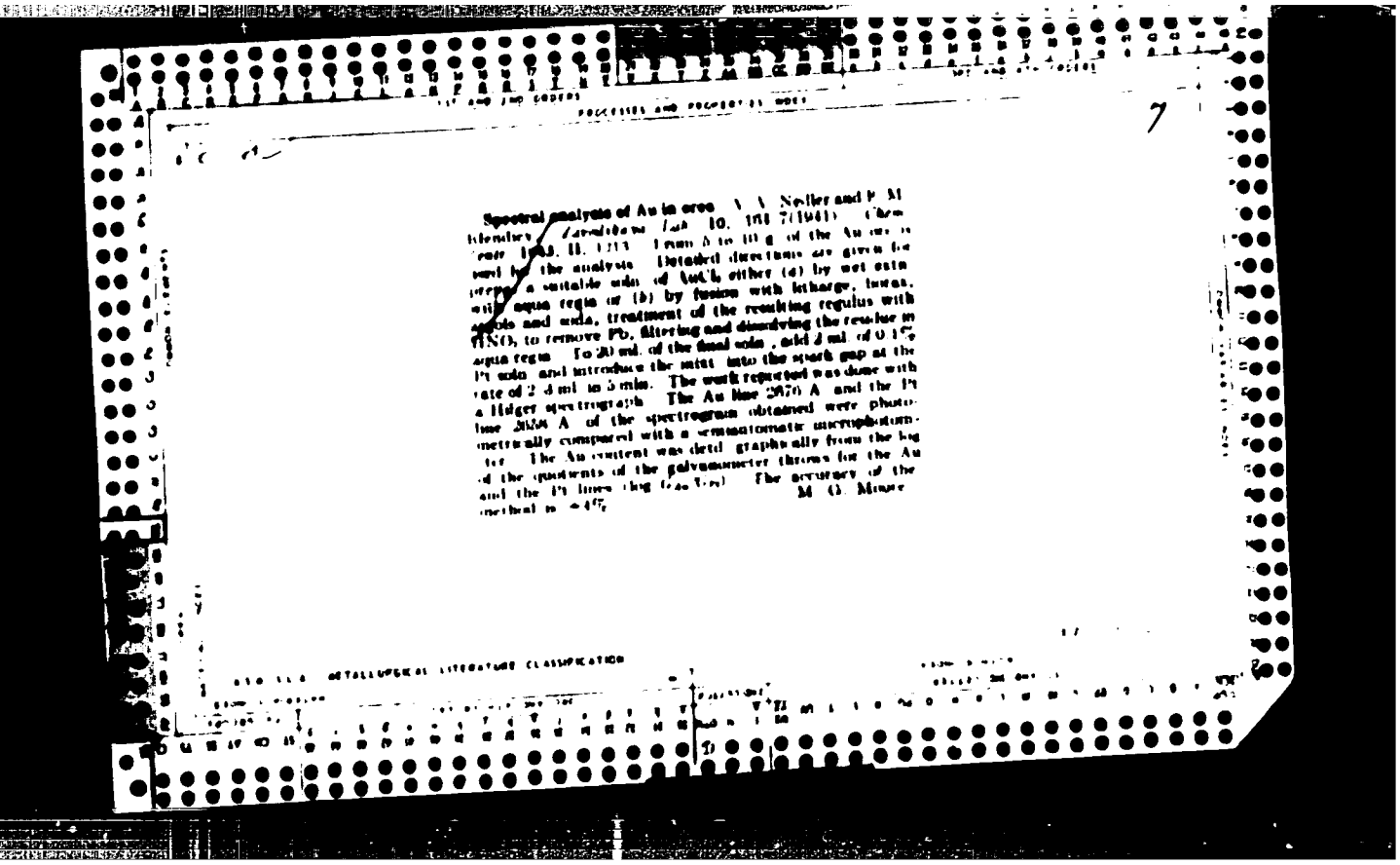
See Fe Smelt Data in Properties Manual



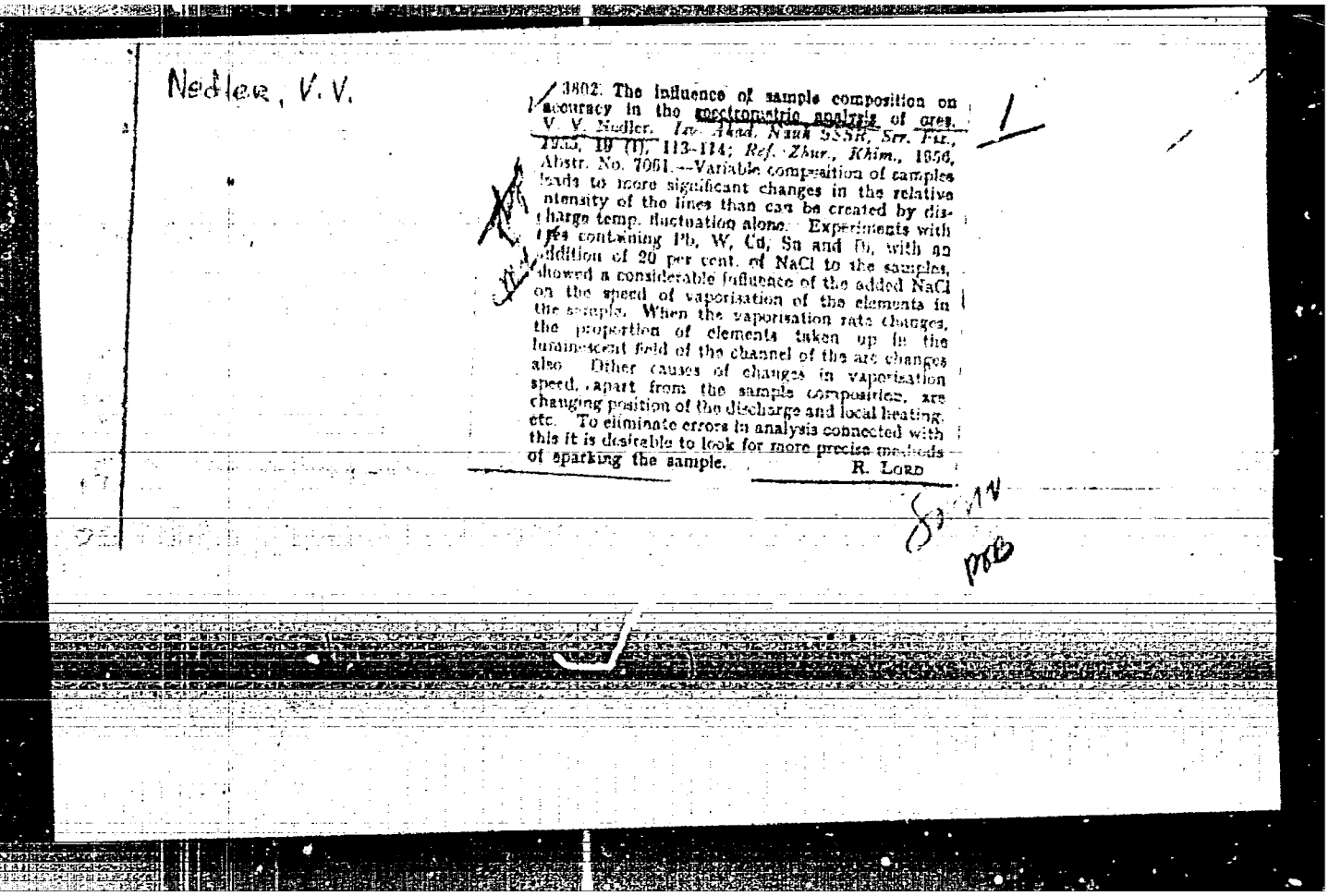
APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00113



Spectral determination of Au in cyanide solutions
K Zakhovskii and V V Nesterr
No 6 7, 611(1941). Chem Zentr 1943, I, (No) 1
advantages of spectral analysis for
in ores are pointed out



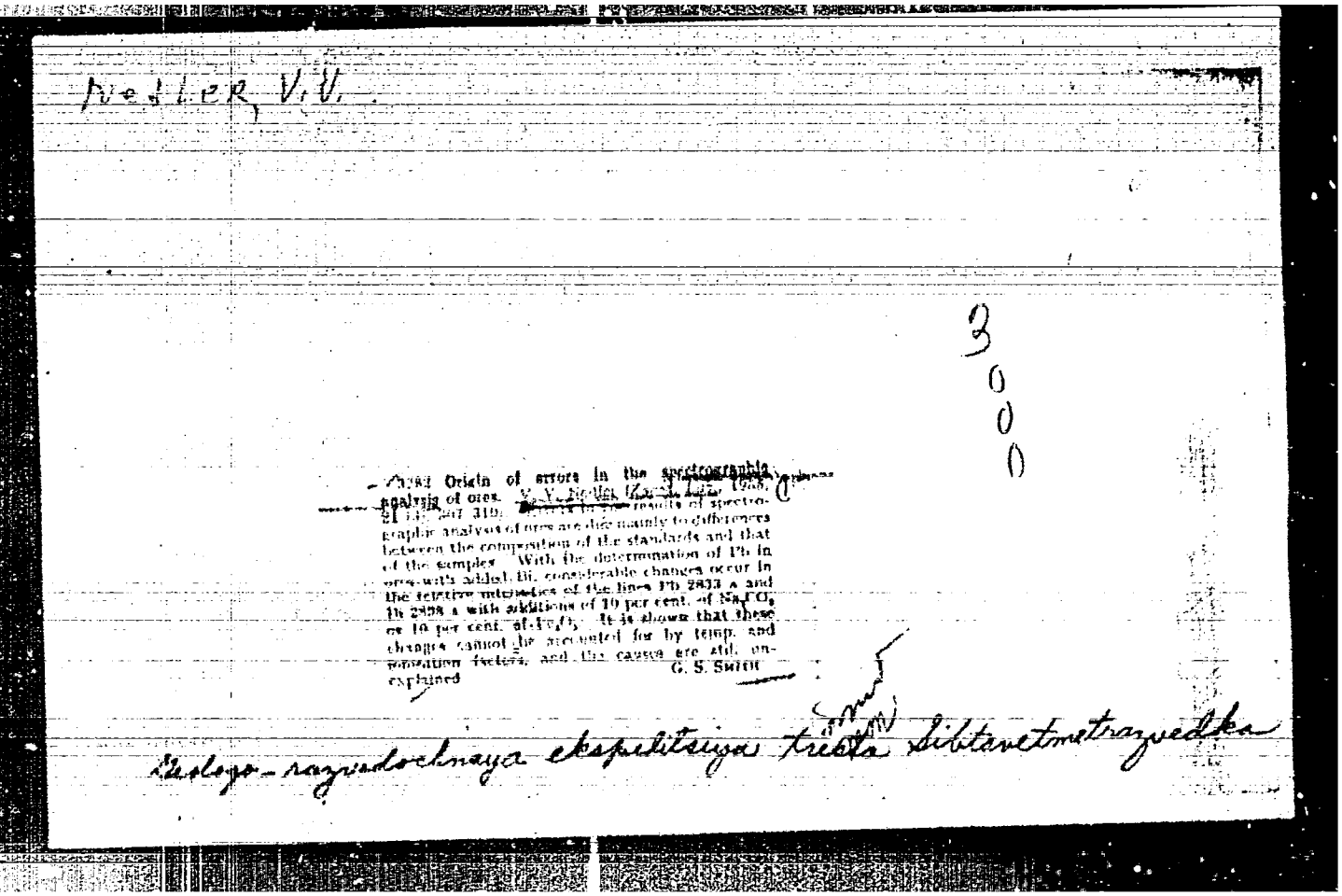
Spectral analysis of Au in ores. V. V. Neller and P. M. [illegible] Zavodskaya Lab. 10, 181 7(1941). Chem. Zentr. 1943, II, 1213. From 0.1 to 10 g of the Au ore is used for the analysis. Detailed directions are given for preparing a suitable soln. of Au(Cl)$_3$ either (a) by wet extn. with aqua regia or (b) by fusion with litharge, borax, soda and soda, treatment of the resulting regulus with HNO_3 to remove Pb, filtering and dissolving the residue in aqua regia. To 20 ml. of the final soln., add 2 ml. of 0.1% Pt soln. and introduce the mixt. into the spark gap at the rate of 2-4 ml. in 5 min. The work required was done with a Hilger spectrograph. The Au line 2870 A. and the Pt line 2850 A. of the spectrograms obtained were photometrically compared with a semiautomatic microphotometer. The Au content was detd. graphically from the log of the quotients of the galvanometer throws for the Au and the Pt lines (log I_{Au}/I_{Pt}). The accuracy of the method is ±4%. M. G. Mayer



Nedler, V. V.

3802. The influence of sample composition on accuracy in the spectrometric analysis of ores. V. V. Nedler. *Izv. Akad. Nauk SSSR, Ser. Fiz.*, 1955, 19 (1), 113-114; *Ref. Zhur., Khim.*, 1956, Abstr. No. 7061.—Variable composition of samples leads to more significant changes in the relative intensity of the lines than can be created by discharge temp. fluctuation alone. Experiments with ores containing Pb, W, Cu, Sn and Bi, with an addition of 20 per cent. of NaCl to the samples, showed a considerable influence of the added NaCl on the speed of vaporisation of the elements in the sample. When the vaporisation rate changes, the proportion of elements taken up in the luminescent field of the channel of the arc changes also. Other causes of changes in vaporisation speed, apart from the sample composition, are changing position of the discharge and local heating, etc. To eliminate errors in analysis connected with this it is desirable to look for more precise methods of sparking the sample.

R. Lord



Nesterov, V.V.

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Origin of errors in the spectrographic analysis of ores. V. V. Nesterov. Zavod. Lab. 1950, 16, 317-21. The errors in the results of spectrographic analyses of ores are due mainly to differences between the composition of the standards and that of the samples. With the determination of Pb in ores with added Bi, considerable changes occur in the relative intensities of the lines Pb 2833 a and Pb 2898 a with additions of 10 per cent. of Na_2CO_3 or 10 per cent. of Fe_2O_3. It is shown that these changes cannot be accounted for by temp. and evaporation factors, and the causes are still unexplained. G. S. Smith

Geologo-razvedochnaya ekspeditsiya tresta Sibtsvetmetrazvedka

MEDLER, V.V.

Spectroscopic analysis of ore and metallometric samples.
Zav.lab.21 no.9:1056-1059 '55. (MLRA 9:1)

1.Geologorazvedochnaya ekspeditsiya tresta Sibtsvetmetrazvedka
(Ores--Spectra)

Translation from: Referativnyy zhurnal, Geologiya, [illegible], No. 3, 1957, p. 94 (USSR)

AUTHOR: Belyayev, V. V.

TITLE: Causes of Lowered Accuracy in Spectral Analysis of Geological Samples, and Means of Improvement (Prichiny ponizhennoy tochnosti spektral'nogo analiza geologicheskikh prob i puti k yeye povysheniyu)

ABSTRACT: Bibliographic entry of the author's dissertation for the degree of Candidate of Technical Sciences, presented to the Vses. In-t mineral'n. syr'ya (All-Union Mineral Institute), Moscow, 1956.

ASSOCIATION: Vses. In-t mineral'n. syr'ya (All-Union Mineral Institute)

Card 1/1

NEDIN R, V.V.; MALIKOV, V.V.

Tenth conference on spectroscopy. Geokhimiia no.8:80-82 '56.
(Spectrum analysis) (MLRA 10:2)

AUTHOR: Nedler, V.V. 32-11-26/60

TITLE: The Spectrographical Determination of Low Niobium Content in Ores and in Products Manufactured From Them (Spektrokhimicheskoye opredeleniye malykh kolichestv niobiya v rudakh i produktakh ikh pererabotki)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 11, pp. 1336-1337 (USSR)

ABSTRACT: In the introduction to this paper it is said that the problem of the universal application of spectral analysis with respect to geological samples in a raw-material state has as yet not been finally solved. This would, however, according to what is said here, be possible if a standardisation of such samples were introduced, which can be attained by suitable preparation of the samples. A small dose of the sample was dissolved in hydrofluoric acid with an addition of sulphuric acid. Niobium was precipitated by the addition of "titanine". The precipitation together with the filtrate was dried and annealed at 1000°. In this way standardisation of the sample and an increase of the niobium concentration was attained. The finely ground precipitation was then mixed with the 10-fold volume of the fine quarts sand with 1% ThO_2 content (inner standard), and by means of a special device, which is provided with a vibrator. This mixture is conveyed in a thin current (through a funnel) to the arc of the lamp where it is burnt. In the analysis the spectro-

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The Spectrographical Determination of Low Niobium Content in Ores and in Products Manufactured From Them

graph "Hilger-E-384" and the arc generator "ДГ-1" were used. The amperage was 16 A, distance between the electrodes 5 mm. The determination of niobium was carried out according to 6 spectral standards. Graduation diagrams were set up according to coordinates Δ S-lg C. Photometrization of the lines Nb 3163.40-Th 3154.73 (concentration 0.02-0.4%) and Nb 2927.81-Th 2942.86 (0.08-0.1%) was carried out on the microphotometer "МФ-2". Possible error ± 4.5%. In the case of an ordinary burning of the sample in the arc (powder sample mixed with carbon powder) the possible error amounted to ± 11.4%. The final possible error in spectrochemical analysis amounted in this case to ± 17.1%. There are 4 Slavic references.

ASSOCIATION: "Nigrizoloto" Institute (Institut "Nigrizoloto")

AVAILABLE: Library of Congress

Card 2/2

AUTHORS: Malimov, V. V., and Neiter, V. V.

TITLE: Tenth Conference on Spectroscopy (X soveshchaniye po spektroskopii)

PERIODICAL: Zavodskaya Laboratoriya, 1956, Vol. 22, No. 1, pp. 119-124 (U.S.S.R.)

ABSTRACT: The conference was held in Lvov from the 4th to the 14th of July, 1956. It was organized by the Spectroscopy Commission of the Section of Physico-mathematical Sciences of the Academy of Sciences of the USSR. About 1,500 delegates attended and there were 325 reports. The work was divided into two sections: section on molecular spectroscopy and section on atomic spectroscopy. The names of the principal persons making reports are given along with the subjects covered by them. The authors recommend more appearances without reports or discussion urging the use of conferences to solve organizational problems and for the formation of scientific schools.

ASSOCIATION:

PRESENTED BY,

SUBMITTED:

AVAILABLE:

Card 1/1

AUTHORS: Koritskiy, V.G., Nalim v, V.V., Neiler, V.Y., Pyatskiy, S.M., Rusanov, A.K., Filimonov, L.N.

TITLE: A Short Survey of the Development of the Emission Spectral Analysis in the USSR (Kratkiy ocherk razvitiya emissionnogo spektral'nogo analiza v SSSR).

PERIODICAL: Uspekhi Fiz. Nauk, 1[illegible], Vol. [illegible] No. [illegible] pp. [illegible] USSR

ABSTRACT: A voluminous investigation of the flame spectra from a Bessemer converter (Bessemer vskiy konvert [illegible] was published in 18[illegible] by D.K. Chernov. D.K. Chernov further found several interesting laws with respect to the relation between the flame spectrum and certain stages of the Bessemer process. All these laws, however, were of an entirely qualitative character. First publications on spectroscopy were published in the Soviet Union at the end of the twenties. [illegible] S.G. Landsberg turned his interest to questions of the spectral analysis, and together with his students he started the systematic elaboration of the [illegible] spectral analysis. From [illegible] to [illegible] at the investigations were published in the scientific [illegible] of the Soviet Union, and this number [illegible] to the present. This indicates a

Card 1/[illegible]

53-2-8/9

A Short Survey of the Development of the Emission Spectral Analysis in the USSR

very wide range : the research dealing with this subject. The majority of this papers were published in the journal "Zavodskaya laboratoriya" (Plant Laboratory) and "Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya". The first section of this survey deals with apparatus for the spectral analysis. In the machine-building industry spectral analysis is utilized for the control of the casting of iron and non ferrous metals as well as for the control of semifinished products, single parts and finished products parts. By these means the metals delivered to the plants are also controlled. Spectral analysis was emphyed to a special degree in the automobile plant "ZIL". In iron metallurgy the spectral analysis is used for the express-analysis of steel during its production and for the final analysis, the so-called "marking analysis". Further possibilities of application in iron metallurgy are enumerated. In the metallurgy of non-ferrous metals and in ferrous metallurgy as well the most important methods of analysis are applied with success. The spectral analysis also makes possible a fast and practically simultaneous determination of the useful elements contained in the mineral raw materials. There are 11 figures, 4 tables and 34 Slav. references.

Card 1/2

USSR

AVAILABLE:

NEDLER, V.V.; FRISHBERG, A.A.

Reasons for the improvement of reproducibility in spectrum analysis by sprinkling and blowing the sample through the arc. Fiz.sbor. no.4:105-109 '58. (MIRA 12:5)

1. Nauchno-issledovatel'skiy institut "Nigrizoloto."
(Spectrum analysis)

SOV

AUTHORS: Malyuov, V. V., Medler, V. V.

TITLE: Estimation of the Results of the Semi-Quantitative Spectrographic Analysis by Means of Poisson's Distribution (Otsenka rezul'tatov oliskolichestvennogo spektrografi-cheskogo analiza pri pomoshchi raspredeleniya Puassona)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol. 13, Nr , pp. 379-387 (USSR)

ABSTRACT: Generally the results of the semi- quantitative spectrographic analysis are given by means of several discrete values. From the variety of analyses, however, and from the plate mistakes, where it can be concluded that results of the analysis fall to a normal Gauss distribution. If the law of distribution of errors, however, is not known, it is impossible to make any definite statement concerning the frequency of occurrence of one or the other deviation or the value of the square error. In accordance with Lyapunov's theorem the curve of maximum values is normal distributed.

Card 1/

[illegible] tion of the Results of the Quantitative Determination [illegible]
[illegible] Means of Linear Regression

puted if the effects of the arbitrary factors A [illegible]
tributed at random are summed up. This is only true [illegible]
condition that none of the summands has the value of more than
of the rest of the quantities. Taking the [illegible]
are for the straying of the arbitrary quantities it
evident that the normal distribution of all [illegible]
butions corresponds to the limiting case for [illegible]
tribution is the distribution of continuous [illegible]
tical work, however, all measuring results are [illegible]
discrete, so that they can only be a whole
multiple of the smallest unit which is fixed by the measuring
instrument and as on the other hand the computations are always rounded. In the quantitative analysis the separation is lower than the observed modification of the value x to be measured; therefore this factor can be neglected in good approximation and can be regarded as [illegible]
ous quantity. In the semi-quantitative analysis this is different so that regularly calibrated scales [illegible]
influence on the distribution of the results of the [illegible]

Card 2/4

Estimation of the Results of the Semi-Quantitative Spectrographic Analysis by Means of Poisson's Distribution

This influence is the preponderating factor. A systematic error enters the unordered normal distribution, and the distribution becomes essentially discrete. Thus the conditions for a normal distribution are not satisfied. In this case a Poisson distribution can be expected, which can be regarded as a special case of the normal distribution (Ref 7). Poisson's theorem reads:

$$P_{\lambda}(m) = \frac{\lambda^m . e^{-\lambda}}{m!},$$

where λ denotes the average number of the points falling to the range t, $m = 0,1,2\ldots$, and $P_{\lambda}(m)$ the probability that m points fall into the measuring range t. If Poisson's distribution is satisfied with accuracy $\sigma^2 = \lambda$ holds. In the course of the investigations known quantities of 9 different elements were semi-quantitatively determined. It became evident that the frequency of the distribution of the experimental results agreed well with the values to be expected according to Poisson's distribution. It was interesting that

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Estimation of the Results of the Semi-Quantitative Spectrographic Analysis by Means of Poisson's Distribution

the frequency of large errors (m=2, m=3) - inevitable in semi-quantitative determinations - corresponded well to the frequencies computed after Poisson. In order to be able to judge objectively the probability of deviations of the experimental frequencies from the computed ones, criteria were set up for the conformity. This paper is a detailed account of the whole complex of problems. There are 1 figure, 3 tables, and 12 references, 8 of which are Soviet.

ASSOCIATION: Institut nauchnoy informatsii AN SSSR, TsNIGRI, Moskva (Institute of Scientific Information AS USSR and Moscow Central Scientific Research Institute of Geological Prospecting)

SUBMITTED: February 18, 1957

1. Spectrographic analysis—Errors 2. Data—Analysis 3. Random distribution 4. Mathematics

Card 4/4

AUTHORS: Nedler, V.V., Ginzburg, V.L. 32-24-4-54/67

TITLE: The Third Conference of Spectroscopy Analysts of Nonferrous Metallurgy (Tret'ye soveshchaniye spektroskopistov-analitikov tsvetnoy metallurgii)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 4, pp. 507-508 (USSR)

ABSTRACT: The above mentioned conference took place at Moscow from November 15 to November 20, 1957; it was called by the Scientific-Technical Society of Nonferrous Metallurgy, and was attended by 255 representatives of 175 organizations. The contributions made by I.E. Britske (Gintsvetmet, Moscow) and N.S. Poluektova (Ukrgiredmet, Odessa) dealt with questions of flame photometry. The report delivered by L.I. Kononenko dealt with the method of determining zirconium, hafnium, molybdemum and vanadium. An interesting contribution was made by Ya.D. Raykhbaum, Ye.S.Kostyukova, and V.D. Malykh (Irgiredmet, Irkutsk) under the title "On some Causes of the Influence Exercised by Chemical Composition on the Results of Ore Analyses". A detailed report by N.A. Makulova (Giprotsvetmetobrabotka, Moscow) dealt with investigations of the rule governing the transition of test material to the emission

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clouds. A.A.Frishberg and V.V. Nedler (Nigrizoloto, Moscow) spoke about problems of the physical-chemical theory in connection with chemical reactions during the formation of volatile compounds in the electric arc. V.L. Ginzburg (Noril'skiy Combine) gave a report on the development of a method of determining the temperature intensity of electrodes. The following contributions dealing with special methods of spectral analysis deserve mentioning: The reports by D.M. Shvarts, L.N. Kaporskiy and V.V. Portnova (Gipronikel', Leningrad) and I.S. Nilova (Severonikel' Monchegorsk), which deal with the analysis of zinc, thallium and antimony; the reports by S.M. Solodovnik (Giredmet, Moscow) and others on the analysis of silicon, silicon dioxide and silicic acid; the reports by V.P. Khrapay and G.M. Gusev on the increase of sensitivity in determinations of microadmixtures in silver; the contributions made by N.A. Sin'kov and D.M. Livshits (Noril'sk Combine) deal with the analysis of solutions containing platinum metals. The report delivered by V.O. Khandros and L.N.Filimonov (Giprotsvetmetobrabotka) deals with the problems of the application of quantometers. A.G. Krest'yaninov, Yu.I. Stakheyev and Ya.D.Raykhbaum (Irgiredmet) were the first to use photoelectric apparatus for the

The Third Conference of Spectroscopy Analysts of Nonferrous Metallurgy 32-24-4-64/67

direct analysis of ores for lithium. The contribution made by V.V.Nedler dealt with attempts made at using the horizontal electric arc, stabilized by an air current. The reports concerning standards published by the institutes Gintsvetmet, Giprotsvetmetobrabotka, VIAM (all at Moscow), TsNIIolovo (Novosibirsk), Irgiredmet (Irkutsk), Gipronikel' (Leningrad), VNIItsvetmet (Ust'-Kamenogorsk), Ukrgiredmet (Odessa) confirm the work performed by these institutes during recent years. The necessity of centralizing the publishing of standards was stressed, and the industrial production of high-quality spectral carbons and an increased distribution of ordinary spectral carbons was urgently demanded.

1. Metallurgy--USSR 2. Spectroscopy--USSR

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NEILER VV

24(4) PHASE I BOOK EXPLOITATION SOV 3548

Lontsikh, Samuil Vladimirovich, Vsevolod Vasil'yevich Neiler, and Yakov Davidivich Raykhbaum

Spektral'nyy analiz metallometricheskikh prob (Spectrum Analysis of Metallometric Samples) Moscow, Gosgeoltekhizdat, 1959. 117 p. Errata slip inserted. 4,500 copies printed.

General Ed.: A.K. Rusanov, Professor; Ed. of Publishing House: N.B. Nekrasova; Tech. Ed.: V.V. Bykova.

PURPOSE: This handbook is intended for geological prospectors and laboratory personnel engaged in spectrum analysis of metals.

COVERAGE: The handbook deals with methods of spectrum analysis and apparatus for metallometric samples. It describes laboratory procedures, semiquantitative spectrum analysis of geological samples, and spectrum analysis based on evaporation of samples from the electrode crater as well as on air jet injection of samples into the arc discharge. It also describes methods of sampling and the interpretation of analytical results. The

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data were provided by various scientific institutes and organizations, including the Irgiredmet, TsNIGRI, Sibtsvetmetrazvedka, VIMS, and VSEGEI. The authors thank M.M. Kler, A.P. Solovov, Ye.A. Sergeyev, A.F. Li, I.S. Vakhromeyev, Ye.S. Kostyukov, P.A. Stepanov, Ye.M. Kvyatkovskiy, V.M. Khokhlov, S.M. Solodovnik, S.M. Melamed, M.S. Leshchinskiy, and I.I. Smolyak. There are 41 references: 34 Soviet, 6 English, and 1 German.

TABLE OF CONTENTS:

Spectrum of Metallometric (Cont.) SOV 3348

AVAILABLE: Library of Congress (TN 560 .L6)

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NEDLER, V.V.

21(0),24(0) PHASE I BOOK EXPLOITATIO[illegible] SOV 3[illegible]

Akademiya nauk SSSR. Fizicheskiy institut

Issledovaniya po eksperimental'noy i teoreticheskoy fizike, [sbornik] (Studies on Experimental and Theoretical Physics; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 304 p. Errata slip inserted. 2,300 copies printed.

Ed.: I. L. Fabelinskiy, Doctor of Physical and Mathematical Sciences; Eds. of Publishing House: A. L. Chernyak and V. G. Berkgaut; Tech. Ed.: Yu. V. Rylina; Commission for Publishing the Collection in Memory of Grigoriya Samuilovich Landsberg: I. Ye. Tamm (Chairman), Academician; M. A. Leontovich, Academician, P. A. Bazhulin, Doctor of Physical and Mathematical Sciences, S. L. Mandel'shtam, Doctor of Physical and Mathematical Sciences, I. L. Fabelinskiy, Doctor of Physical and Mathematical Sciences, F. S. Landsberg-Baryshanskaya, Candidate of Physical and Mathematical Sciences; and G. P. Motulevich (Secretary), Candidate of Physical and Mathematical Sciences.

PURPOSE: This book is intended for physicists and researchers engaged in the study of electromagnetic radiations and their role in investigating the structure and composition of materials.

COVERAGE: The collection contains 30 articles which review investigations in spectroscopy, sonics, molecular optics, semiconductor physics, nuclear physics, and other branches of physics. The introductory chapter gives a biographical profile of G. S. Landsberg, Professor and Head of the Department of Optics of the Division of Physical Technology at Moscow University, and reviews his work in Rayleigh scattering, [illegible] gases, spectral analysis of metals, etc. No personalities are mentioned. References accompany each article.

MANDEL'SHTAM, S.L.; NEDLER, V.V.

Sensitivity of emission spectrum analysis. Opt.i spektr. 10 no.3:390-397 Mr '61. (MIRA 14:8)
(Spectrum analysis)

IVANOV, N.P.; NEDLER, V.V.; ANDRIKANIS, E.N.

Use of a hot hollow cathode in the analysis of titanium oxide. Zav.lab. 27 no.7:836-838 '61. (MIRA 14:7)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometall'icheskoy promyshlennosti.
(Titanium oxide--Spectra)

NALIMOV, V.V.; NEDLER, V.V.; MEN'SHOVA, N.P.

Metrological evaluation during the detection of small concentrations by emission spectral analysis. Zav.lab. 27 no.7:861-865 '61. (MIRA 14:7)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti.
(Spectrum analysis)

NALIMOV, V.V.; NEDLER, V.V.; ARAKEL'YAN, N.A.

Increase in the sensitivity of emission spectrum analysis using information on the line contour. Zav.lab. 28 no.3:324-329 '62. (MIRA 15:4)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti.
(Spectrum analysis)

S/032/62/028/006/007/029
B104/B101

AUTHORS: Yetler, V. V., and Arakel'yan, N. A.

TITLE: Analysis of pure metals

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 6, 1962, 67[illegible] - 67[illegible]

TEXT: Papers published between 1956 and 1961 dealing with the determination of impurity concentrations in metals and graphite are here discussed. Analytical methods involving enrichment of impurities and spectral analysis methods are considered. The sensitivity of spectral analysis methods may be improved by a more effective excitation of the atoms in the spectrum excitation zone and by a decrease of atom losses from the spectrum excitation zone through diffusion.

Card 1/1

NEDLER, V. V. and BURMISTROV, M. P.

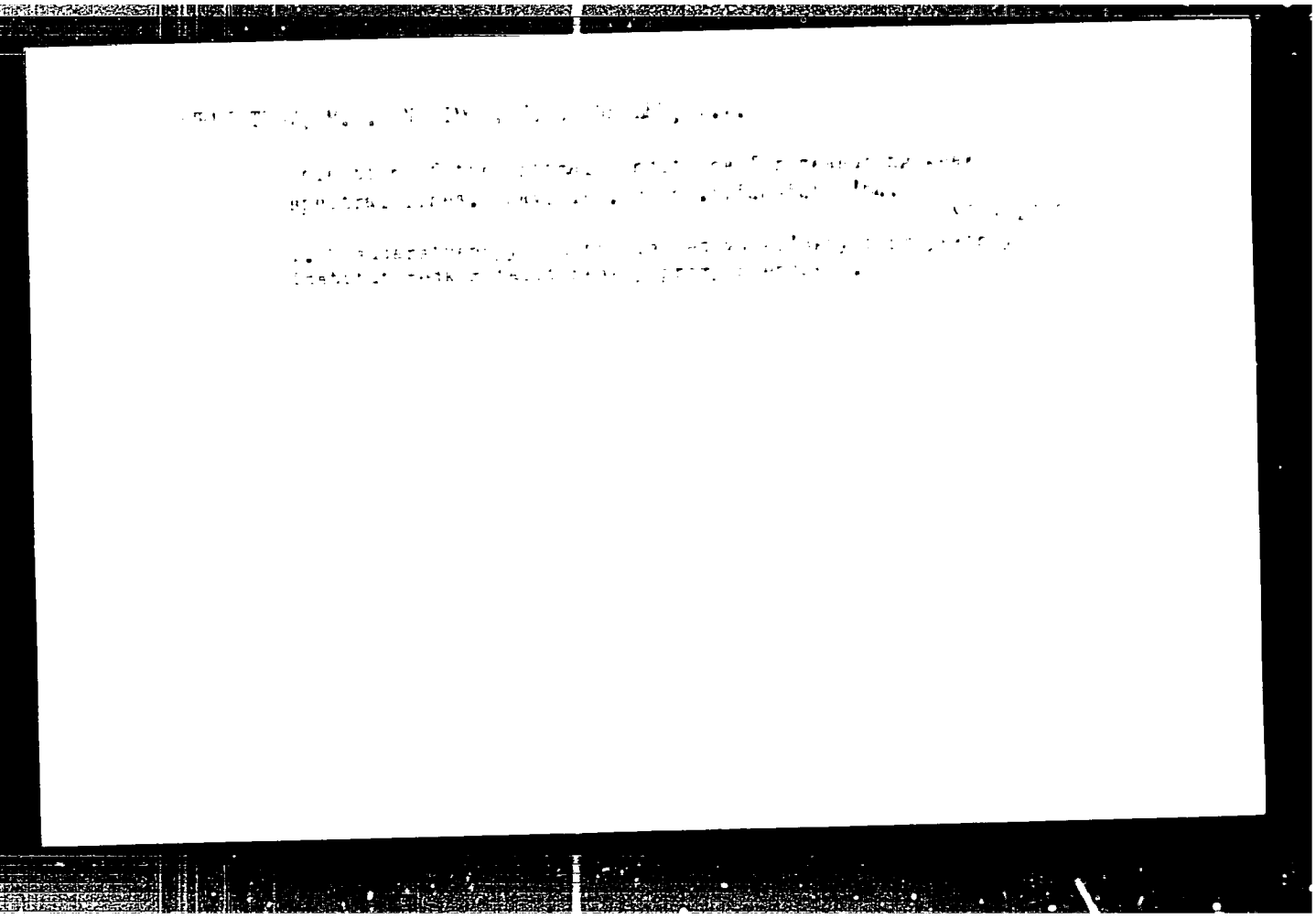
"Some methods of increasing sensitivity in spectral analysis"

Report presented at a symposium on the mathematical processing of analytical data was held on 5 March 1964 at the Institute of Geochemistry an. Analytical Chemistry, Acad. Sci. USSR

(State Design and Planning Scientific Research Institute of the Rare Metals Industry)

NEDLER, V.V., kand.tekhnich.nauk

Advances of emission spectral analysis. Zav. lab. [illegible] (MIRA [illegible])
156-162 '64.



BURMISTROV, M.P.; NEDLER, V.V.; POLYAKOVA, S.P.

Certain means used for increasing the sensitivity of spectrum analysis during photographic recording of the spectrum. Zav. lab. 30 no.6:694-696 '64 (MIRA 17:8)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti.

24(3) SOV/56-37-2-30/36

AUTHORS: Bychkov, Yu. A., Gurevich, L. E., ~~Hedlin, S. M.~~

TITLE: Thermoelectric Phenomena in Strong Magnetic Fields in Metals With Different Fermi Surfaces

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 2(8), pp 534-539 (USSR)

ABSTRACT: This is an accurate investigation of several thermoelectric phenomena on the basis of the quasiclassical theory of the kinetic phenomena in metals placed in strong magnetic fields developed by I. M. Lifshits, M. Ya. Azbel' and M. I. Kaganov. If an electric field and a temperature gradient exist in the metal, the distribution function f of the particles is no longer given by $f_0 = \left\{\exp\left[(\varepsilon - \mu)/kT\right] + 1\right\}^{-1}$, but it differs from f_0 by a certain quantity f_1, i.e. $f = f_0 + f_1$ is a solution of the corresponding kinetic equation. The existence of the additional term f_1 causes the current density vector $\vec{j}$ and the thermal flux vector $\vec{q}$ to differ from zero. They are related to f_1 by the following expressions:

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Thermoelectric Phenomena in Strong Magnetic Fields in Metals With Different Fermi Surfaces

$\vec{j} = \frac{2e}{(2\pi\hbar)^3}\int \vec{v} f_1 dp$, $\vec{q} = \frac{2}{(2\pi\hbar)^3}\int (\varepsilon - \zeta)\vec{v} f_1 dp$. In the general case $\vec{j}$ and $\vec{q}$ may be written as follows:

$$j_i = \frac{a_{ik}}{T} E_k + b_{ik} \frac{\partial}{\partial x_k}\left(\frac{1}{T}\right), \quad q_i = \frac{\alpha_{ik}}{T} E_k + d_{ik} \frac{\partial}{\partial x_k}\left(\frac{1}{T}\right).$$

In the presence of a magnetic field the kinetic coefficients are functions of the vector $\vec{H}$. The asymptotic behavior of a thermoelectromotive force in a strong magnetic field is studied. If the dependence of the α_{ik} upon $\vec{H}$ is known, it is easy to obtain the asymptotic characteristics β_{ik} and μ_{ik} by applying the symmetry relations. Actually, the asymptotic characteristics of the Peltier-coefficients are everywhere determined first. In the first section of this article the case of a closed Fermi surface is discussed. In order to determine the dependence of the tensor β_{ik} upon the magnetic field strength the

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Thermoelectric Phenomena in Strong Magnetic Fields in Metals With Different Fermi Surfaces

behavior of the quantities a_{ik} and c_{ik} must be known. The authors make recourse extensively to the results of the papers by I. M. Lifshitz and V. G. Peschanskiy (Ref 2). In this section the following two possibilities are investigated: a) The number of particles and holes is not equal. b) These numbers are equal. Explicit expressions for the tensor β_{ik} are derived for both cases. In the second section the case of a closed Fermi surface is investigated. The behavior of the thermoelectric coefficients near the following special directions of the magnetic field is studied: a) The magnetic field is so directed that a layer of open trajectories exists forming a unidimensional set; b) The directions of the magnetic field forming open trajectories constitute a two-dimensional domain; c) The vector has a distinguished direction in the domain of the open trajectories, if the trajectories are closed. The tensors a_{ik}, c_{ik} and β_{ik} are written down explicitly. By this method the character of the asymptotic behavior of the thermoelectric coefficients near all three kinds of

SOV/56-37-2-30/56

Thermoelectric Phenomena in Strong Magneti Fields in Metals With Different Fermi Surfaces

si gularities have been deter ined. The authors express their gr titude to Academician L. Landau for discussing the work, Yu A. Bychkov also expresse his gratitude to I. M Khalatnikov an I. M. Lifshits for valua e discussions. There are 4 oviet references.

ASSOCIATION: Ins titut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences, USSR)
Ler ingradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Le ingrad Physical and Technical Institute of the Academy of Sciences, USSR)

SUBMITTED: March 19, 1959

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SOV/56-37-3-27/62

24(3)

AUTHORS: Gurevich, L. E., Nedlin, G. M.

TITLE: The Thermoelectric Coefficients of Metals in Strong Magnetic Fields and the Effect of Electron Entrainment by Phonons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 3(9), pp 765-775 (USSR)

ABSTRACT: The present paper aims at investigating the behavior of the thermoelectric tensor in strong magnetic fields if the electron Larmor frequency is greater than the collision frequency; for this purpose the authors make use of the methods suggested by Lifshits, Azbel', and Kaganov. Lifshits and Peschanskiy (Ref 3) already investigated the asymptotic behavior of the thermoelectric tensor in strong magnetic fields, without, however, taking the effect of electron entrainment by phonons into account. This is now done in the present paper. Considerations apply to the range of low temperatures, where $T \ll \Theta$ (Θ is the characteristic Debye temperature and T the temperature of the sample). In the first part of the paper the linearized equations of motion for the electron- and phonon

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The Thermoelectric Coefficients of Metals in Strong Magnetic Fields and the Effect of Electron Interchange by Phonons

distribution functions are investigated; the existence of a temperature gradient, a gradient in chemical potential, and of a magnetic field in the z-direction are assumed. These equations are investigated inter al. with respect to phonon drift velocity. The second part of the paper deals with the solution of the equation of motion in the case of a scattering of the electrons on lattice defects and of electrons among one another. The following 3 cases are dealt with separately: 1) Closed trajectories with ε = const and p_z = const, which are within the boundaries of a lattice cell. 2) Open trajectories, and 3) approximation to the "critical direction" (Lifshits, Peschanskiy) for closed and open trajectories. In the third part of this paper the scattering of electrons on phonons is finally investigated. It was found that the effect of the increase of the number of electrons by phonons considerably changes the asymptotic values of the tensor for high field strengths, and also its dependence on the magnetic field direction with repsect to the crystal axis (in the case of

The Thermoelectric Coefficients of Metals in Strong Magnetic Fields and the Effect of Electron Entrainment by Phonons

complex topology of the Fermi surface). There are 8 Soviet references.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physico-technical Institute of the Academy of Sciences, USSR)

SUBMITTED: April 4, 1959

NEDLIN, G.M.

Possible structures of magnetic ordering in YMn$_2$ type crystals.
Fiz. tver. tela 6 no.9:2708-2714 S '64.
(MIRA 17:11)

1. Institut poluprovodnikov AN SSSR, Leningrad.

NEDLIN, G. M.

Cand Phys-Math Sci, Diss -- "On the theory of thermoelectric effects in metals and semiconductors in a strong magnetic field taking into account the capture of electrons by phonons". Leningrad, 1961. 12 pp, 22 cm (Min of Educ RSFSR. Leningrad State Ped Inst imeni A. I. Gertsen. Dept of Theor Phys and Astron), 220 copies, No charge, 12 ref in bibl at end of text (KL, No 9, 1961, p 175, No 24260).
[61-55895]

28095

S/181/62/004/010/[illegible]/[illegible]
B104/B102

24 37 0 (1043, 1160, 1537)

AUTH: [illegible] L. E., and Moshkin, B. M.

TITLE: Thermo-emf of semiconductors in a quantizing magnetic field with account of the entrainement of electrons by phonons

PERIODICAL: Fizika tverdogo tela, v. 4, no. 10, 1962, 2774-2780

TEXT. The thermo emf has been studied for a non-degenerate electron gas. The entrainement of electrons by phonons in a strong, quantizing magnetic field H ($\hbar\omega > T$, where ω denotes the electron Larmor frequency) has been taken into account. The magnetic field is assumed to be perpendicular to the temperature gradient. In an unevenly heated crystal phonons interact with electrons and an oriented flow of the latter arises. This entrainement of electrons by phonons has been studied jointly with the effect of the temperature gradient on the electrons while determining the therm.-emf. For a case where an electric field $\vec{E}$, a temperature gradient ∇T, and a gradient of the chemical potential $\nabla\zeta$ exist, the total current j_i is calculated as

$$j_i = \sigma_{ik}E_k - \beta_{ik}\nabla_k T \text{ with } \vec{E} = \vec{\mathcal{E}} - \frac{1}{e}\nabla\zeta, \text{ and}$$

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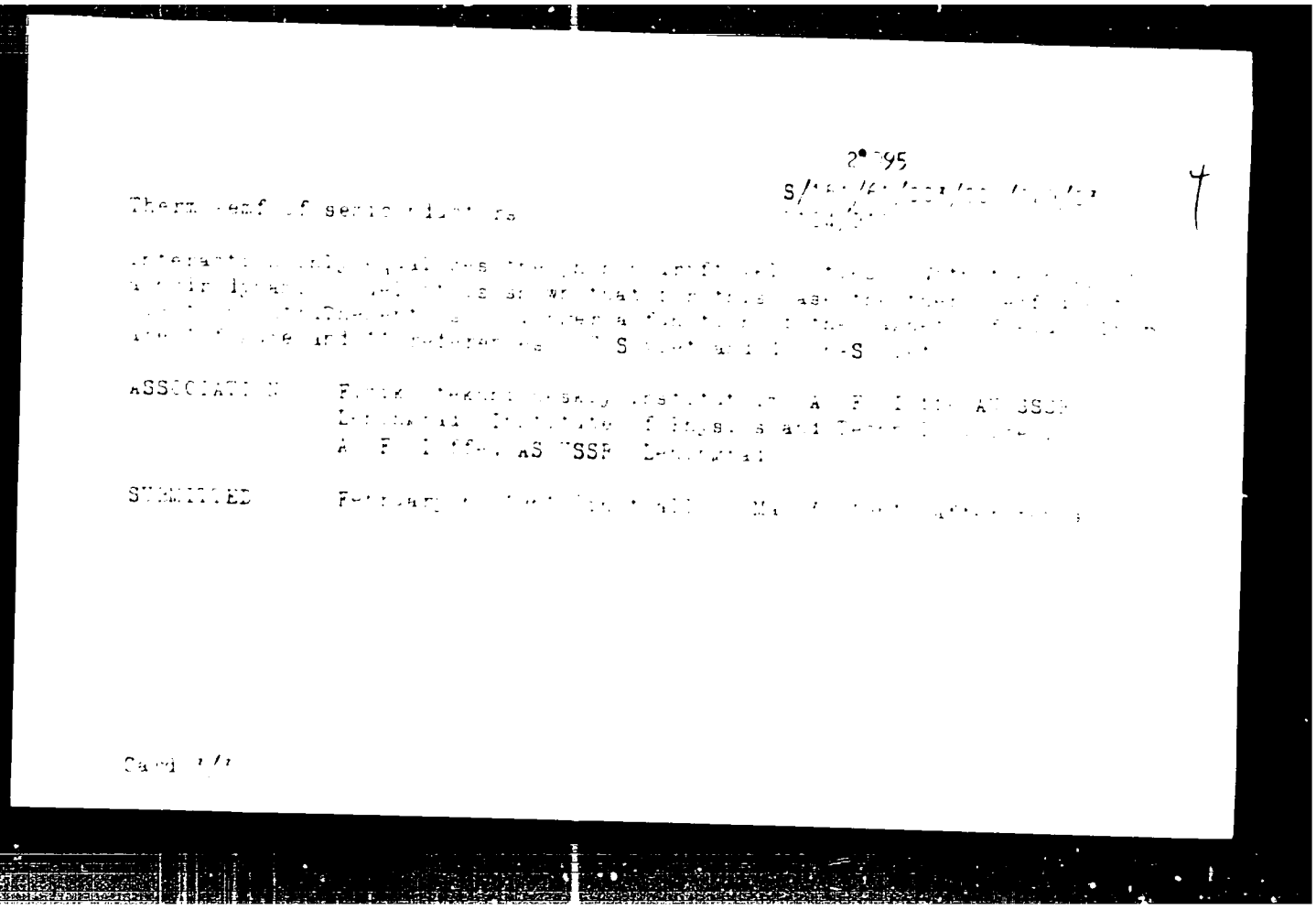
B104/B180

Thermo-emf of semiconductors

$E_i = \alpha_{ik} \nabla_k T = [illegible] \beta_{ik} \nabla_k T$ The tensors α and β are [illegible] and the phonon distribution function is set up. Detailed studies show that the following inequality will hold for semiconductors if the magnetic field is not too strong: $H < H_c \simeq [illegible] T^2$ oersteds, and if the condition $\hbar\omega/T > 1$ is satisfied.

$\frac{\hbar\omega}{T} \cdot \frac{ms^2}{T} < 1$ where m denotes the effective electron mass and s the velocity of sound. In this case, the Herring mechanism is valid and the electrons interact with long-wave phonons, which are relaxing on short wave (thermal) phonons. The thermo-emf due to entrainement in magnetic fields is greater by a factor of $\hbar\omega/T$ than the thermo-emf due to entrainement without magnetic field. In superhigh magnetic fields ($H \gtrsim H_c$) however the electrons interact also with thermal phonons. In this case the hydrodynamic analogy suggested by C. Herring (Phys. Rev., [illegible], 1954; 96, 914, 1954) is not valid. The thermo-emf is [illegible] in a form [illegible] the magnetic field. The model of Herring has to be replaced by another one modified which is [illegible] the last section of this paper. It is assumed that [illegible] at high [illegible]

Card 2/[illegible]



S/056/61/040/003/013/031
B102/B205

24.4500

AUTHORS: Gurevich, L. E., Nedlin, G. M.

TITLE: Quantum-kinetic equation in the presence of mutual dragging of electrons and phonons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 3, 1961, 809-818

TEXT: The significant role played by the deviation of the phonon-distribution function from equilibrium (i.e., the effect of mutual dragging of electrons and phonons) in thermoelectric phenomena has already been pointed out by Gurevich (ZhETF, 16, 193, 1946) and C. Herring (Phys.Rev. 96, 1163, 1954). In doing so, the two afore-mentioned authors proceeded from Boltzmann's equations of motion for the phonon- and electron-distribution functions, taking into account the fact that the two systems were out of equilibrium. The problem is essentially different in the case of energy quantization where the distance between the discrete levels is larger than or comparable to $T = \hbar^{-1}$ (T - temperature in energy units). This problem is the subject of the present paper. First of all,

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B102/B205

Quantum-kinetic equation...

the system of kinetic equations for electrons and phonons in a quantized magnetic field is derived. A crystal is considered with the aid of an electron spectrum $\varepsilon(\vec{p})$ in a magnetic field $\vec{H} = (0,0,H)$. Thus, the energy operator can be written as $\hat{\varepsilon} = \varepsilon(P_x,(eH/c)(\hat{x}_0-\hat{x}),P_z)$, where $\hat{x}_0 = (c/eH)P_y$.

Then, the corresponding wave functions read $\psi = (L_y L_z)^{-1/2}\exp\{(i/\hbar)(P_y y + P_z z)\}\varphi_{nP_z}(x-x_0)$, where $L_{y,z}$ are the dimensions of the crystal in the y- and z-directions. φ obey the equation $\varepsilon(P_x,-(eH/c)x,P_z)\varphi_{nP_z}(x) = \varepsilon_n(P_z)\varphi_{nP_z}(x)$, where $\varepsilon_n(P_z)$ stands for the eigenvalue of the energy ε_n.

Thus, one has

$$\hat{\mathcal{H}} = \hat{\mathcal{H}}_0 + \hat{V};$$

$$\hat{\mathcal{H}}_0 = \sum_{\alpha} \hat{a}_\alpha^+ \hat{a}_\alpha \varepsilon_\alpha + \sum_{q} b_q^+ b_q \hbar\omega_q,$$

$$\hat{V} = \sum_{q}\sum_{\alpha\alpha'}\sum_{j} V_{qj}(q) J_{\alpha\alpha'}(q) \hat{a}_\alpha^+ \hat{a}_{\alpha'} \exp\{-iqr_j/\hbar\}$$

$$+ \sum_{q}\sum_{\alpha\alpha'} \{c_q b_q J_{\alpha\alpha'}(q) + c_q^+ b_q^+ J_{\alpha'\alpha}(q)\} \hat{a}_\alpha^+ \hat{a}_{\alpha'} + \hat{V}_{II} + \hat{V}_{Id}.$$

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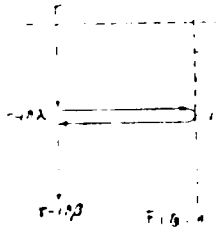
Quantum-kinetic equation...

for the total Hamiltonian of the system of electrons and phonons (without electron-electron interaction). λ symbolizes the totality of the quantum numbers of the electron; $\omega_{\vec{q}}$ the angular velocity of a phonon of momentum $\vec{q}$; $V_{ed}(\vec{q})$ the Fourier component of the electron-defect interaction potential; $\vec{r}_j$ the coordinate of the j-th defect; $J_{\lambda\lambda'}(\vec{q})$ the matrix element of the operator $\exp(i\vec{q}\vec{r}/\hbar)$; $c_{\vec{q}}$ characterizes the electron-phonon interaction and is proportional to $q^{1/2}$ for small q; V_{ff} and V_{ef} indicate the phonon-phonon and phonon-defect interaction operators, respectively. In the presence of a constant homogeneous field E, the density matrix ρ_1 of the system will differ from the equilibrium density matrix ρ_0:



$$\rho_0 \int_{-\infty}^{0} d\tau e^{s\tau} \int_0^{\infty} d\lambda \int d^3 r J(r, \tau - t(\lambda); E =$$

$$\rho_0 \int_{-\infty}^{0} d\tau e^{s\tau} \int_0^{\infty} d\lambda e v(\tau - t(\lambda) E, \quad s \to +0,$$

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where $\hat{v}$ denotes the velocity operator of the electron, and $\vec{j}$ the particle-flux density. The contour of integration in the single-particle matrices

$$f_{\alpha\alpha'} = \mathrm{Sp}\, b_\beta^+ a_\alpha^+ a_{\alpha'} =$$

$$= eE \sum_{\alpha\alpha'} (v)_{\alpha\alpha'} \int_{-\infty}^{0} d\tau e^{\eta\tau} \int_{0}^{\beta} d\lambda\, \mathrm{Sp}\{\rho_0 T_\tau [\exp(\tau H)]^{-1} \int_{\tilde{c}} \hat{V}(z)\, dz\, (a_\alpha^+ a_{\alpha'})_{\tau+\lambda}\, a_\beta^+ a_{\beta'}\}. \quad (1.2)$$

$$g_{qq'} = \mathrm{Sp}\, b_q^+ b_{q'} =$$

$$= eE \sum_{\alpha\alpha'} (v)_{\alpha\alpha'} \int_{-\infty}^{0} d\tau e^{\eta\tau} \int_{0}^{\beta} d\lambda\, \mathrm{Sp}\{\rho_0 T_\tau [\exp(\tau H)]^{-1} \int_{\tilde{c}} \hat{V}(z)\, dz\, (b_q^+ b_{q'})_{\tau+\lambda}\, a_\beta^+ a_{\beta'}\}.$$

according to O. V. Konstantinov and V. I. Perel' (Ref. 4: ZhETF, 39, 197, 1960) is illustrated in Fig. 1. A set of kinetic equations for the phonon-distribution functions g and the electron-density matrix f (non-diagonal, is now obtained by the graph technique introduced in Ref. 4. Graphs for f and g are shown in Fig. 2. The corresponding equations are

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Quantum-kinetic equation...

$$f_{\alpha\beta} = F_{\alpha\beta}(s + i\omega_{\alpha\beta})^{-1} + \sum W'_{\alpha\beta} \ldots f \ldots (s + i\omega_{\alpha\beta})^{-1} \cdot$$

$$+ \sum_{qq} W''_{\ldots qq\ldots} \ldots \ldots \ldots$$

$$g_{q'q} = G_{q'q}(s + i\omega_{q'q})^{-1} + \sum_{\alpha\beta} W'_{q'q\alpha\beta} \ldots (s + i\omega_{q'q})^{-1} \cdot$$

$$+ \sum_{rr} W'_{q'qrr} \ldots (s + i\omega_{q'q})^{-1}$$

The quantities W are kernels of [illegible] integrals" and have the meaning of transition probabilities. The equations for F, G, and g are likewise obtained from [illegible] They are then solved and written explicitly. For the case of [illegible] the system of equations for [illegible] is derived next.

$$i\omega \ldots = \ldots + \sum W' \ldots \ldots + \ldots$$

$$\left(\sum W' \ldots \right) \ldots = \ldots + \sum W'' \ldots \ldots + \sum W'' \ldots \ldots$$

$$\sum W'' \ldots \ldots + \ldots + \sum W'' \ldots \ldots +$$

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Quantum-kinetic equation...

$$\sum W'_{\dots} \dots \sum W'_{qq} \dots \qquad (2.9)$$

$$\sum W'_{qq} \dots = \dots + \sum W'_{qq} \dots$$

$$\sum \dots \sum \dots \qquad (2.11)$$

is obtained in place of [illegible] systems of integral equations [illegible] and the classical part of f, an expansion in a power series of [illegible] - Larmor frequency; τ electron-relaxation time) should be self-met, the electron and phonon spectra being arbitrarily assumed. There are 2 figures and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc. The two references to English language publications read as follows: [illegible], J.Phys.Soc. Japan, 12, 570, 1957; E. N. Adams, [illegible], 1, 2 4, 1959).

ASSOCIATION: Leningradskiy fiziko-[illegible] institut Akademii nauk SSSR (Leningrad [illegible] Physics and Technol., Academy of Sciences USSR)

Card 6/7

LL176

S/181/62/004/012/030/052
B125/B102

AUTHOR: Nedlin, G. M.

TITLE: Phase transitions of second kind from the ferromagnetic to the ferromagnetic-seignettoelectric state

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3568-3574

TEXT: Earlier studies (G. A. Smolenskiy, FTT, 4, 1095, 1962) on particularities of the transition from the ferromagnetic to the ferromagnetic-seignettoelectric phase are generalized for arbitrary values of the magnetic moments at a ferromagnetic Curie temperature Θ_m, differing only slightly from the ferroelectric Curie temperature Θ_0

$$\Phi = \Phi - \mathbf{m}\mathbf{H} - \mathbf{p}\mathbf{E}, \quad (1)$$

$$(d\Phi)_{T,p} = -\mathbf{m}\,d\mathbf{H} - \mathbf{p}\,d\mathbf{E}, \quad (2).$$

$\vec{m}$ is the magnetic moment, $\vec{p}$ is the electric moment, $\vec{H}$ is the external magnetic field and $\vec{E}$ is the external electric field. From (1) (2) and

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from the minimum conditions for the thermodynamic potential Φ the formulas

$$\left.\begin{aligned}\chi^{(pp)} &= \frac{\frac{\partial^2\Phi}{\partial p^2}}{\frac{\partial^2\Phi}{\partial p^2}\frac{\partial^2\Phi}{\partial m^2} - \left(\frac{\partial^2\Phi}{\partial m\partial p}\right)^2}\\ \chi^{(mm)} &= \frac{\frac{\partial^2\Phi}{\partial m^2}}{\frac{\partial^2\Phi}{\partial p^2}\frac{\partial^2\Phi}{\partial m^2} - \left(\frac{\partial^2\Phi}{\partial m\partial p}\right)^2}\\ \chi^{(pm)} = \chi^{(mp)} &= \frac{-\frac{\partial^2\Phi}{\partial m\partial p}}{\frac{\partial^2\Phi}{\partial m^2}\frac{\partial^2\Phi}{\partial p^2} - \left(\frac{\partial^2\Phi}{\partial m\partial p}\right)^2}\end{aligned}\right\}. \qquad (8'),$$

$$\left.\begin{aligned}\frac{\partial p}{\partial T} &= \frac{\frac{\partial^2\Phi}{\partial m\partial p}\frac{\partial^2\Phi}{\partial m\partial T} - \frac{\partial^2\Phi}{\partial m^2}\frac{\partial^2\Phi}{\partial p\partial T}}{\frac{\partial^2\Phi}{\partial m^2}\frac{\partial^2\Phi}{\partial p^2} - \left(\frac{\partial^2\Phi}{\partial m\partial p}\right)^2}\\ \frac{\partial m}{\partial T} &= \frac{\frac{\partial^2\Phi}{\partial m\partial p}\frac{\partial^2\Phi}{\partial p\partial T} - \frac{\partial^2\Phi}{\partial p^2}\frac{\partial^2\Phi}{\partial m\partial T}}{\frac{\partial^2\Phi}{\partial p^2}\frac{\partial^2\Phi}{\partial m^2} - \left(\frac{\partial^2\Phi}{\partial m\partial p}\right)^2}\end{aligned}\right\}. \qquad (11'),$$

$$\left.\begin{aligned}\frac{\partial\Phi}{\partial m}-H=0\\ \frac{\partial\Phi}{\partial p}-E=0.\end{aligned}\right\} \qquad (3')$$

are derived for the susceptibilities defined by

$$\left.\begin{aligned}\chi_{\alpha\beta}^{(e)}=\frac{\partial p_\alpha}{\partial E_\beta} \quad \chi_{\alpha\beta}^{(m)}=\frac{\partial m_\alpha}{\partial H_\beta}\\ \chi_{\alpha\beta}^{(em)}=\frac{\partial p_\alpha}{\partial H_\beta} \quad \chi_{\alpha\beta}^{(me)}=\frac{\partial m_\alpha}{\partial E_\beta}.\end{aligned}\right\} \qquad (4).$$

Above Θ_c, the system is ferromagnetic in the absence of an external field, and the electric moment is zero. Below Θ_c the electric moment is nonzero and at Θ_c it becomes zero. Following the general Landau theory of phase transitions of second type, Φ is expanded in a series

$$\Phi = \Phi_0(m,T) + \alpha(m,T)p^2/2 + \beta(m,T)p^4/4 \qquad (13).$$

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Phase transitions of second ...

The Curie temperature θ_c follows from the equation $a(m,T) = 0$, which holds for the Curie point itself, and from the minimum condition $\partial \Phi_0/\partial m = 0$, which determines the spontaneous magnetic moment at and above the Curie point. The spontaneous electric moment is equal to zero. At the Curie point $m(T)$ has no discontinuity but a salient point. Further calculations lead to

$$\left.\begin{aligned}(\chi^m)_+ &= \frac{1}{\frac{\partial^2 b_0}{\partial m^2}} \\ (\chi^m)_- &= \frac{1}{\frac{\partial^2 b_0}{\partial m^2} - \frac{1}{2\beta}\left(\frac{\partial a}{\partial m}\right)^2},\end{aligned}\right\} \qquad (20),$$

$$\left(\frac{1}{\chi^m}\right)_+ - \left(\frac{1}{\chi^m}\right)_- = \frac{1}{2\beta}\left(\frac{\partial a}{\partial m}\right)^2. \qquad (21)$$

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for the behavior of the magnetic susceptibility in zero fields (i.e. in the range of linear dependence of the moments on the field strength) and to

$$\left.\begin{aligned}(\chi')_+ &= \frac{1}{a}\\ (\chi')_- &= -\frac{1}{2a}\,\frac{\frac{\partial^2\Phi_0}{\partial m^2}}{\frac{\partial^2\Phi_0}{\partial m^2}-\frac{1}{2\beta}\left(\frac{\partial a}{\partial m}\right)^2}.\end{aligned}\right\} \qquad (25)$$ and

$$\chi'^{m}_{-} = \chi''^{m}_{-} = -\frac{\sqrt{\left|\frac{d(\rho^2)}{dT}\right|_-}\,(L^m_T - L^m_+)}{2\left[\left(\frac{\partial m}{\partial T}\right)_- - \left(\frac{\partial m}{\partial T}\right)_+\right]}\,\frac{1}{\sqrt{\theta_c - T}}. \qquad (28)$$

for the electric and for the mixed susceptibility, respectively. The equation

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Phase transitions of second ...

$$1=\frac{1}{2}\frac{(\chi_+^m-\chi_-^m)\left(\frac{d(p^e)}{dT}\right)_-\frac{d}{dT}\left(\frac{1}{\chi^e}\right)_+}{\left[\left(\frac{dm}{dT}\right)_--\left(\frac{dm}{dT}\right)_+\right]^2}. \qquad (23)$$

involves only such quantities as can be observed experimentally. In the absence of external fields, a hitherto unknown dependence of the electric (magnetic) moments on the magnetic (electric) field strength was established (in the range below the Curie point). The law $(1/\chi^e)_+ = \alpha$, $(1/\chi^e)_- = -2\alpha$ holds also in the ferroelectric-ferromagnetic case.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors AS USSR, Leningrad)

SUBMITTED: July 10, 1962

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L 17227-63 EDS/EWP(q)/EWT(m)--AFFTC/ASD--JD

ACCESSION NR: AP3007078 S/0056/63/045/003/0576/0586

55
54

AUTHOR: Gurevich, L. E.; Kadlin, G. M.

TITLE: Thermal emf of ferromagnetic metals due to scattering of electrons on magnons

19

SOURCE: Zhur. eksper. i teoret. fiziki, v. 45, no. 3, 1963, 576-586

TOPIC TAGS: electron scattering, spin wave, magnon, thermoelectricity, Thomson effect, ferromagnetics, thermal emf, thermal electromotive force

ABSTRACT: The thermal emf of ferromagnetic metals has been studied at temperatures considerably above 1K but much below the Curie point for cases in which 1) electron scattering is due solely to spin waves and 2) scattering on defects predominates. It is shown that if scattering is limited to the spin-wave effect, the thermal emf in the zero approximation of degeneracy, $\alpha^{(0)}$, is on the order of that in the first approximation, $\alpha^{(1)}$. When scattering is due

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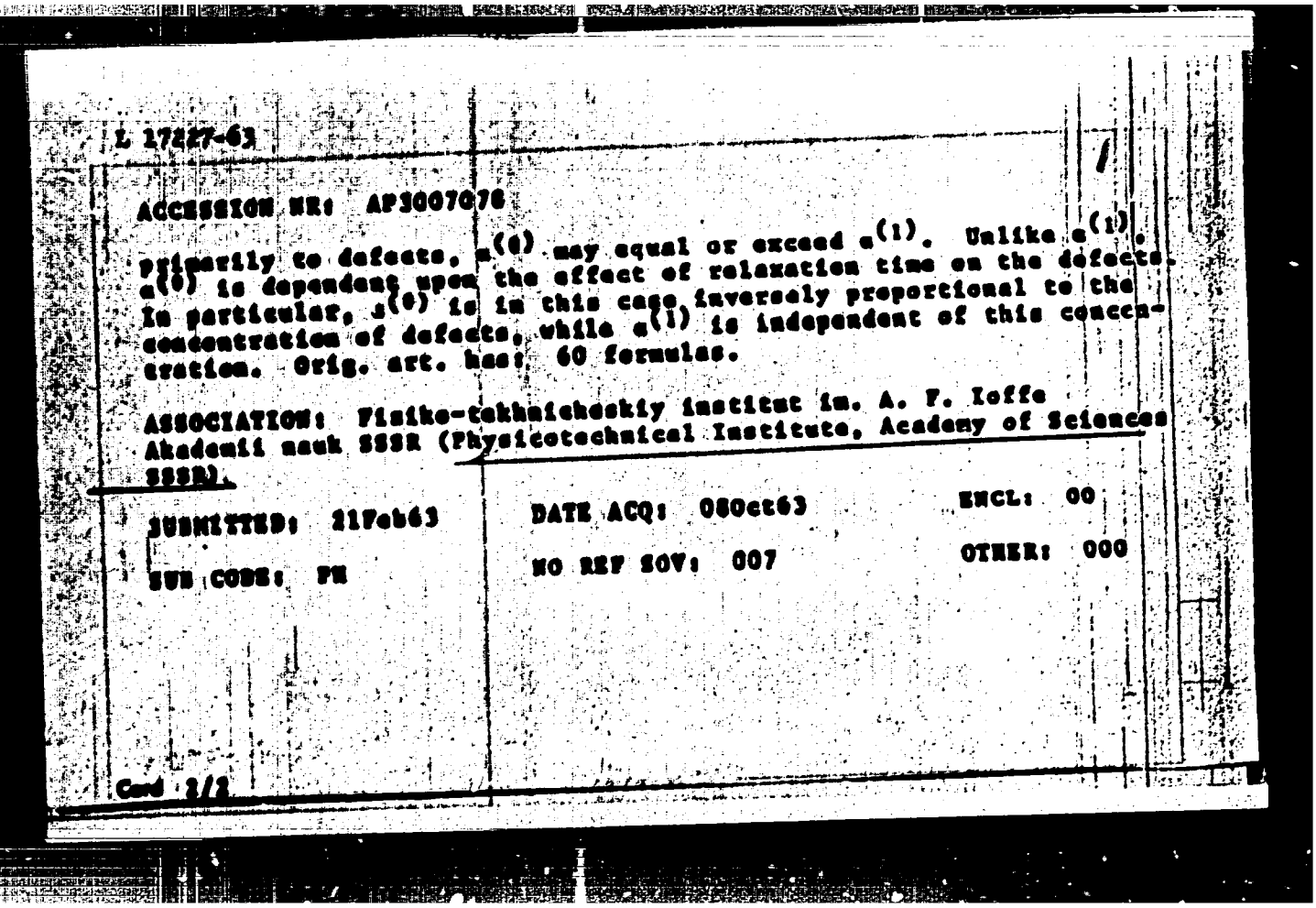

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ACCESSION NR: AP3007078

primarily to defects, $a^{(0)}$ may equal or exceed $a^{(1)}$. Unlike $a^{(1)}$, $a^{(0)}$ is dependent upon the effect of relaxation time on the defects. In particular, $a^{(0)}$ is in this case inversely proportional to the concentration of defects, while $a^{(1)}$ is independent of this concentration. Orig. art. has: 60 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute, Academy of Sciences SSSR).

SUBMITTED: 21Feb63 DATE ACQ: 080ct63 ENCL: 00

SUB CODE: PH NO REF SOV: 007 OTHER: 000

Card 1/1

ACCESSION NR: AP4025938 S/0056/64/046/003/1056/1065

AUTHOR: Gurevich, L. E.; Medlin, G. M.

TITLE: Singularities of thermomagnetic phenomena in ferromagnetic metals

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 46, no. 3, 1964, 1056-1065

TOPIC TAGS: ferromagnetic metal, thermomagnetic phenomena, electron magnon collision operator, operator symmetry, dependence on energy variables, thermal emf, Nerst coefficient, spin wave spectrum

ABSTRACT: This is a continuation of an earlier investigation (ZhETF v. 45, 576, 1963) of the special properties of the operator of collision between electrons and magnons in ferromagnetic metals, and particularly its symmetry as a function of the energy variables. A study of the influence of these operator characteristics on the

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ACCESSION NR: AP4025938

thermomagnetic phenomena in weak and strong magnetic fields, when the Larmor frequency of the conduction electrons is respectively smaller and larger than the collision frequency, shows that the singularities of the electron-magnon collision operator leads to violation of certain universal properties of thermomagnetic coefficients which are characteristic of nonferromagnetic metals. It is assumed that the spin-wave spectrum does not depend on the magnetic field, and consequently the quantity which assumes the role of relaxation time is also independent of the magnetic field. The analysis is restricted to the calculation of the normal part of the thermal emf and of the Nernst coefficient, so that the results can be compared with experiment only under conditions when the normal part can be separated or is dominant. Orig. art. has: 42 formulas.

ASSOCIATION: Institut poluprovodnikov AN SSSR (Institute of Semiconductors, AN SSSR)

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ACCESSION NR: AP4025938

SUBMITTED: 20Aug63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: PH NR REF SOV: 004 OTHER: 000

Card 3/3

L 10773-65 EWT(l)/EEC(b)-2/T IJP(c)/AS(mp)-2/ASD(a)-5
ACCESSION NR: AP4044943 S/0181/64/006/009/2708/2716

AUTHOR: Kadlin, G. M. B

TITLE: Possible magnetically ordered structure in crystals of the $YMnO_3$ type

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2708-2716

TOPIC TAGS: ordered structure, crystal structure, magnetic crystal, exchange interaction, spin spin interaction, spin orbit interaction, second order phase transition

ABSTRACT: The possible types of magnetic ordering are determined and it is shown that there are more of them than those listed by Bertaut, Pauthenet and Mercier (Phys. Lett. v. 7, 110, 1963). Since the strongest interaction producing magnetic ordering is the exchange interaction, it is considered first distinguishing possible configurations differing in the magnitudes or mutual positions of

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L 10773-65
ACCESSION NR: AP4044943

magnetic atomic spins. The relativistic (spin-spin and spin-orbit) interactions are also considered and the corresponding configurations are deduced and listed. The treatment is based on Landau's theory of second order phase transitions of the second kine. "The author thanks G. E. Smolenskiy for suggesting this work." Orig. art. has: 4 figures and 27 formulas.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AN SSSR)

SUBMITTED: 03Apr64 ENCL: 00

SUB CODE: SS NR REF SOV: 001 OTHER: 002

Card 2/2

L 4391-65 EWT(1)/EWA(m)-2 Pg-4 IJP(c) GG

ACCESSION NR: AP5006875 S/0181/65/007/003/0739/0745

21
20

AUTHOR: Medlin, G. M.

TITLE: Concerning possible magnetic structures in antiferromagnets of the $YMnO_3$ type

SOURCE: Fizika tverdogo tela, v. 7, no. 3, 1965, 739-745

TOPIC TAGS: antiferromagnetism, magnetic ordering, crystal configuration, paramagnetic state, magnetic structure

ABSTRACT: This is a continuation of an earlier paper (FTT v. 6, 2708, 1964) dealing with the possible configurations of magnetic ordering that can be obtained for a crystal with $YMnO_3$ structure in transitions from the paramagnetic state. The present article is devoted to feasible magnetic-ordering structures that are stable over a wide temperature interval. It is shown that these configurations are of the following types:

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