The Determination of the Angle at Which Bank-Protecting Cross Bars are to be Installed and the Distance Between Them

in the direction perpendicular to the bank's tangent at the spot where the cross bar is installed; b_o is the width of the river bottom; $P = \frac{d}{d+S}$ is the coefficient for the cross bar construction, whereby d is the diameter or width of the open bar element, S is the clearance width between the open bar elements, and $U\delta$ is the actual flow speed. In addition to this, the Hydrotechnical Laboratory of the ArmNIIGiM has developed new-type open cross bars with a hydraulic barrier, the SShGB. They can either be erected in the shape of oblique gabion-made piers, or as piles driven into the river bottom with fastened reinforced concrete plates. Having been in service on the Ayaks river for two years, the SShGB-type cross bars have proven more efficient and economical than blind or open cross bars of the conventional type. Thus, protecting 1 running m of a river bank

The Determination of the Angle at Which Bank-Protecting Cross Bars are to be Installed and the Distance Between Them

by SShG-type cross bars was 1.5 to 2 times cheaper than by blind or open cross bars. There are 8 diagrams, 2 graphs, and 7 Soviet references.

ASSOCIATION: ArmNIIGiM

Card 4/4

AKHARTSUMYAN, G.A.; MARTIKYAN, R.S.; KHACHATRYAN, R.M.

Some problems in designing vacuum spillways. Dokl. AN Arm.SSR 28 no.4:171-176 '59. (MIRA 12:11)

1. Armyanskiy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii ArmSSR. Predstavleno akademikom AN ArmSSR N.Kh. Arutyunyanom.

(Spillways)

AMBARTSUMYAN, G.A.

Some problems pertaining to the hydraulical calculations of spur dikes. Izv. AN Arm. SSR. Ser. nauk 13 no.4:43-54 '60.
(MIRA 13:11)

1. Gidrotekhnicheskaya laboratoriya Armyanskogo nauchno-issledovatel'skogo instituta gidrotekhniki i melioratsii Ministerstva vodnogo khozyaystva.
(Dikes (Engineering))

AMBARTSUMYAN, G.A.

Some new studies of through spurs with hydraulic barriers.
Izv. AN Arm. SSR. Ser. tekh. nauk 17 no.4:43-51 '64. (MIRA 17:11)

1. Institut vodnykh problem i gidrotekhniki Ministerstva vodnogo khozyaystva ArmSSR.

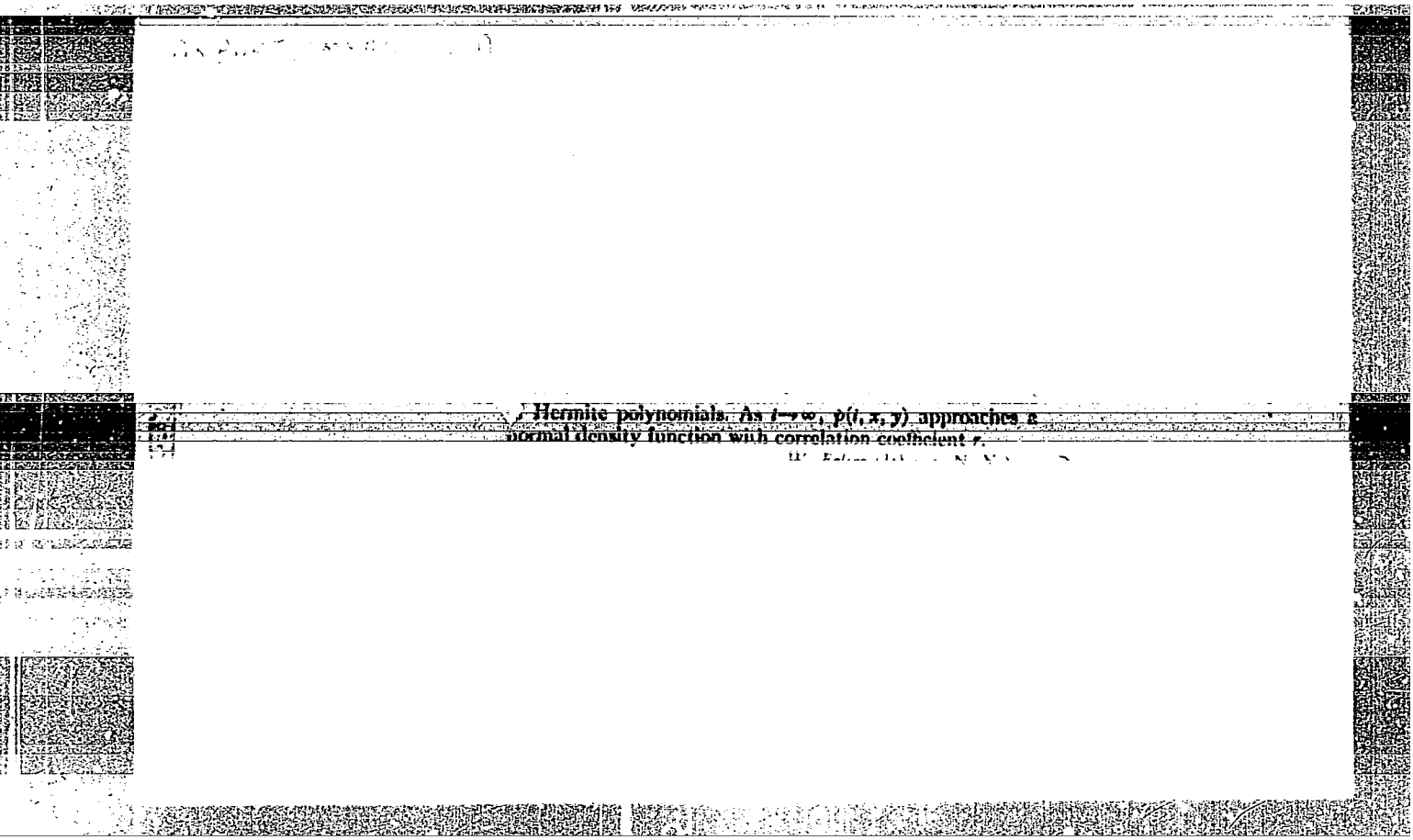
AMBARTSUMYAN, G.A.

Sediment-discharge sluice siphon. Izv. AN Arm. SSR. Ser. tekh. nauk 16 no.4:41-48 '63. (MIRA 16:10)

1. Armyanskiy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii.

Krivyye raspredeleniya veroyatnostey, privodyashchiye v predele k krivym raspredeleniya pirsona DAN, 16 (1937), 259-262.
Passmotreniye odnogo chastnogo vida nepreryvnogo stokhasticheskogo protsessa L., Uchen. ZAP. un-ta, ser. matem., 10 (1940), 120-138

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A. G.,
Markushevich, A. I.,
Rashevskiy, P. K.
Moscow-Leningrad, 1948



Hermite polynomials. As $t \to \infty$, $p(t, x, y)$ approaches a
normal density function with correlation coefficient r.

AMBARTSUMYAN, G.A.

Poisson's problem for two events and its application. Dokl.AN Arm. SSR 9 no.2:49-59 '48. (MLRA 9:10)

1. Yerevanskiy Politiekhnicheskiy Institut imeni K.Marksa, Yerevan. Predstavleno V.A. Ambartsumyanom.
(Probabilities)

AMBARTSUMYAN, G.A.

Moments of distribution in the Markov process. Izv. AN arm. SSR. Ser. FMET nauk. 9 no.5:25-41 '56. (MLRA 9:11)

1. Yerevanskiy politekhnicheskiy institut imeni K. Marksa.
(Distribution (Probability theory))

AMBARTSUMYAN, G.A.

Entropy of Markov chains. Iav. AN Arm. SSR. fiz.-mat. nauk 11 no.2:31-40 '58. (MIRA 11:6)

1. Yerevanskiy politekhnicheskiy institut im. K. Marksa.
(Chain (Mathematics))

AMBARTSUMYAN, G.; TUMANYAN, S.

All-Union conference on the theory of probabilities and mathematical statistics. Teor.veroiat. i ee prim. 4 no.1:116-120 '59.
(MIRA 12:3)

(Probabilities--Congresses)

16(1),16(2)

AUTHORS: Ambartsumyan,G.A., and Tumanyan,S.Kh. SOV/42-14-2-16/19

TITLE: All-Union Congress on Probability Theory and Statistics

PERIODICAL: Uspekhi matematicheskikh nauk,1959,Vol 14,Nr 2,pp 253-258 (USSR)

ABSTRACT: This is a report on the congress on probability theory and statistics which took place from September 19, 1958 to September 25, 1958 in Yerevan. It was organized by the Academy of Sciences Arm.SSR. Ca. 100 participators from Moscow, Leningrad, Kiyev, Tashkent, Vil'nyus, Yerevan, Riga, and Baku. Opening session by V.A.Ambartsumyan, president of the AS Arm.SSR. Final Address by B.V.Gnedenko, Academician AS Ukr SSR. Greeting telegrams to S.N. Bernshteyn, Academician, A.N.Kolmogorov, Academician, A.Ya. Khinchin, Corresponding member AS USSR. Deliveries were given by B.V.Gnedenko (Kiyev), Yu.V.Linnik (Leningrad), Yu.V.Prokhorov (Moscow), I.P.Tsaregradskiy, V.M.Zolotarev, B.M.Kloss, V.V.Petrov, V.A.Statulyavichus, F.I.Karpelevich, V.N.Tutuballin, M.G.Shur, N.N.Vorob'yev (Leningrad), V.N.Karableva, L.Komleva, T.A.Sarymsakov, D.K.Faddeyev, S.Nagayev, B.S.Fleyshman, I.M.Gel'fand, A.S. Frolov, N.N.Chentsov, R.L.Dobrushin, Ya.I.Khurgin, B.A.Sevast'yanov, L.V.Seregin, A.V.Skorokhod, N.P.Slobodenyuk, R.A.Zaydman, E.I.Vilkas, N.V.Smirnov (Moscow), O.V.Sarmanov (Moscow), A.A. Zinger, O.V.Shalayevskiy, G.A.Ambartsumyan (Yerevan), R.Kh.

Card 1/2

Diveyev, S.Kh.Tumanyan (Yerevan), V.A.Ambartsumyan, K.F.Gorodnikov, A.M.Yaglom (Moscow), V.S.Michalevich, S.M.Brodi, G.P. Basharin, I.N.Kovalenko, I.P.Kubilyus, R.V.Uzhdavinis, B.S. Tsybakov, M.S.Pinsker, I.A.Ovsiyevich, N.A.Borodachev, M.K. Kamalov, Kh.B.Kordonskiy, L.A.Khalfin, I.V.Romanovskiy, A.K. Kutay, M.I.Eydel'nant, Ye.B.Dynkin (Moscow), V.A.Volkonskiy, A.D. Ventsel', R.Z.Khas'minskiy, I.V.Girsanov, A.A.Yushkevich, V.G. Vinokurov, I.I.Gikhman (Kiyev), M.I.Yadrenko, I.A.Ibragimov, and Yu.A.Rozanov. The names of the scientists who were chairmen of the single sessions are underlined.

AMBARTSUMYAN, G.A. (Yerevan); red.; GNEDENKO, B.V. (Kiyev), red.; DYNKIN, Ye.B. (Moskva), red.; LINNIK, Yu.V. (Leningrad), red.; TUMANYAN, S.Kh. (Yerevan), red.; SLKUNI, A.G., red.izd-va; KAPLANYAN, M.A., tekhn.red.

[Transactions of the All-Union Conference on the Theory of Probability and Mathematical Statistics] Trudy. Erevan, Izd-vo Akad.nauk Armianskoi SSR, 1960. 291 p. (MIRA 13:11)

1. Vsesoyuznoye soveshchaniye po teorii veroyatnostey i matematicheskoy statistike. Yerevan, 1958.
(Mathematical statistics) (Probabilities)

BAGDOYEV, Aleksandr Georgiyevich; AMBARTSUMYAN, G.A., otv. red.; SLKUNI, A.G., red.izd-va; AZIZBEKYAN, L.A., tekhn. red.

[Three-dimensional nonstationary motions of a continuous medium with shock waves] Prostranstvennye nestatsionarnye dvizheniia sploshnoi sredy s udarnymi volnami. Erevan, Izd-vo Akad.nauk Armianskoi SSR, 1961. 274 p. (MIRA 15:2)
(Fluid dynamics) (Shock waves)

L 13226-63 BDS/EWT(d)/FCC(w) AFFTC S/044/63/000/003/045/047
IJP(C)
AUTHOR: Ambartsumyan, G. A. 52

TITLE: On the information content of the unknown probability in the Bernoulli scheme of experiments

PERIODICAL: Referativnyy Zhurnal, Matematika, no. 3, 1963, 50, Abstract 3V299 (Tr. Vses. Soveshchaniya po Teorii Veroyatnostey i Matem. Statistike 1958. Yerevan, AN ArmSSR, 1960, 112-120).

TEXT: The author considers n independent experiments; in each experiment the unknown probability of some event takes one of the values

$$p_0, p_1, p_2, \ldots, p_s$$

with the probabilities $\alpha_0, \alpha_1, \alpha_2, \ldots, \alpha_s$. $\sum_{k=0}^{s} \alpha_k = 1$. Exact

Card 1/2

L 13226-63
On the information content of .....

S/044/63/000/003/045/047

formulas are derived for the average information content of the unknown probability resulting from n experiments. Exact formulas are derived for this information in the special case in which $p_k = k/s$ and all hypotheses are equally probable $\alpha_0 = \alpha_1 = \ldots = \alpha_s = 1/(s+1)$, also the asymptotics when $n \to \infty$ for $s = 1, 2, 3$.

[Abstracter's note: Complete translation.]

Card 2/2

AMBARTSUMYAN, G.A.

Probable readings of an unreliable pulse counter. Trudy Vych.tsentra no.2:61-66 '64. (MIRA 18:8)

MARUTYAN, Ye.M., starshiy nauchnyy sotrudnik; AMBARTSUMYAN, G.G., mladshiy nauchnyy sotrudnik

Evaluating the methods of treating trichomoniasis in bulls. Veterinariia 40 no.8:32-33 Ag '63. (MIRA 17:10)

1. Armyanskiy nauchno-issledovatel'skiy institut zhivotnovodstva i veterinarii.

AMBARTSUMYAN, Kh.

Mechanization of the melting department of a foundry. Prom. Arm. 6 no.1:26-28 Ja '63. (MIRA 16:4)

1. Nachal'nik tekhnologicheskogo byuro po lit'yu Lusavanskogo instrumental'nogo zavoda.
(Armenia—Foundries—Technological innovations)

AMBARTSUMYAN, Kh.

Mechanization and automation of production processes and of the distribution of mold and core mixtures. Prom. Arm. 6 no.6:28-31 Je '63. (MIRA 16:8)

1. Lusavanskiy instrumental'nyy zavod.
(Molding machines) (Automation)

AMBARTSUMYAN, Kh.

Technological processes of chill casting of cast-iron parts. Prom. Arm. 6 no.7:29-33 Jl '63. (MIRA 16:9)

1. Nachal'nik tekhnicheskogo byuro Lusavanskogo instrumental'nogo zavoda.

AMBARTSUMYAN, Kh.

[redacted] ...making. Prom.Arm. 6 no.9:36-39 S '63.
(MIRA 16:12)

1. Nachal'nik tekhnologicheskogo byuro po lit'yu Lusavanskogo instrumental'nogo zavoda.

MASHKOVICH, S.A.; AMBARTSUMYAN, M.

Evaluating the accuracy of solving vorticity equations by the iteration method. Trudy TSIP no.93:49-58 '60. (MIRA 13:11)
(Weather forecasting)

AMBARTSUMYAN, L. A.

"The Biological and Epidemiological Significance of Anopheles Mosquitoes in the Shirak (Leninakan) Table Land." Cand Med Sci, Yerevan Medical Inst, Yerevan, 1953. (RZhBiol, No 1, Sep 54)

SO: Sum 432, 29 Mar 55

AMBARTSUMYAN, M.

CHUBKOVA, A.I.; AMBARTSUMYAN, M.

Phenology of Anopheles maculipennis on the Leninakan Plateau. Med.paraz.i paraz.bol. no.1:20-25 Ja-Mr '54. (MLRA 7:3)

1. Iz entomologicheskogo otdela Instituta malyarii i meditsinskoy parazitologii Armyanskoy SSR (direktor instituta A.T.TSaturyan, zaveduyushchiy otdelom A.I.Chubkova) i kafedry biologii Yerevanskogo meditsinskogo instituta (zaveduyushchiy kafedroy professor Sh.M. Matevosyan). (Leninakan Plateau--Mosquitoes)
(Mosquitoes--Leninakan Plateau)

USSR/Zooparasitology - Ticks and Insects - Carriers of Disease G.
Stimuli. Insects.

Abs Jour : Ref Zhur - Biol., No 11, 1958, 48238

Author : Anbartsumyan, M.
Inst : -
Title : Concerning the Bloodsucking Mosquitoes in the Basarcheharsk and Martuninsk Regions and Local Malaria.

Orig Pub : Arokhchapautyun, 1957, No 1, 23-24.

Abstract : No abstract.

Card 1/1

AMBARTSUMYAN, M.A.

Interrelationships among the members of intestinal parasitocoenoses.
Izv.AN Arm.SSR.Biol.nauki 12 no.5:59-64 My '59.
(MIRA 12:9)

(WORMS, INTESTINAL AND PARASITIC) (PROTOZOA)
(INTESTINES--MICRO-ORGANISMS)

CHAYLAKHYAN, M.Kh.; AMBARTSUMYAN, M.A.; SARKISOVA, M.M.

Effect of synthetic growth promoting preparations and vitamins on the formation of roots of cuttings and ringed branches of fruit plants. Izv.AN Arm.SSR. Biol.nauki 15 no.8:7-20 Ag '62. (MIRA 16:2)

1. Institut vinogradarstva, vonodeliya i plodovodstva Ministerstva sel'skogo khozyaystva Armyanskoy SSR.
(PLANT CUTTINGS) (GROWTH PROMOTING SUBSTANCES)
(PLANTS, EFFECT OF VITAMINS ON)

AMBARTSUMYAN, M.A.

Free-living infusorians in the waters of Erivan. Izv. AN Arm. SSR. Biol. nauki 15 no.3:87-91 '62. (MIRA 15:4)

1. Kafedra obshchey biologii Yerevanskogo meditsinskogo instituta.
(ERIVAN--INFUSORIA)

AMBARTSUMYAN, M.A.

Effect of mineral fertilizers on the setting intensity of flower buds and on frost resistance of apricots grown under irrigation in Oktemberyan District. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki 8 no.5: 17-26 My '55. (MLRA 9:8)

(Oktemberyan District--Apricot)
(Fertilizers and manures)

AMBARTSUMYAN, M., kand.biolog.nauk (Yerevan)

Plant antifreeze. Nauka i zhizn' 27 no.8:77 Ag '60. (MIRA 13:9)

(Plants--Frost resistance)

AMBARTSUMIAN, M.A.

Chemical method for controlling the negative effect of frost on the perennial life of a crop. Dokl.AN Arm.SSR 30 no.5:295-300 '60. (MIRA 13:8)

1. Armyanskiy nauchno-issledovatel'skiy institut vinogradarstva, vinodeliya i plodovodstva Ministerstva sel'skogo khozyaystva Armyanskoy SSR.
(Frost protection)

AMBARTSUMYAN, M.A.

Physiological characteristics of the pistachio and possibilities for its cultivation in Armenia. Izv.AN Arm.SSR.Biol.nauki 15 no.7:51-58 Jl '62. (MIRA 15:11)

(ARMENIA--PISTACHIO)

AMBARTSUMYAN, M.S. (g. Leninakan)

Variants of Novikov's solution. Fel'd. i akush. 23 no.12:43 D'58 (MIRA 11:12)

(SOLUTIONS (PHARMACY))

AMBARTSUMYAN, M.S., KHUDAVERDYAN, A.A. (Leninakan)

A case of complication following the use of penicillin. Klin.med. (MIRA 11:7)
36 no.6:144 Je '58

(PENICILLIN, inj. eff.
allergic reaction (Rus))
(ALLERGY
to penicillin (Rus))

NEMKOVA, M.A.; AMBARTSUMYAN, M.S.

Nurses' councils. Med. sestra 18 no.3:46 Mar '59. (MIRA 12:3)

1. Sovet meditsinskikh sester 1-go meditsinskogo ob'yedineniya Leninakan.
(NURSES AND NURSING)

AMBARTSUMYAN, M.S.; GALSTYAN, Ye.Z. (Leninakan)

Results of work of an intestinal infection clinic of a medical institution. Sov.zdrav. 18 no.6:15-19 '59. (MIRA 12:8)
(INTESTINES, dis.
infect., prev. & ther. in Russia (Rus))

AMBARTSUMYAN, M.S.; MARUYAN, A.K. (Leninakan)

Work of the sector nurse in the consolidated hospital. Med. sestra 18 no.7:34-35 Jl '59. (MIRA 12:10)
(LENINAKAN--NURSES AND NURSING)

ABRATSKIYAN, M.S.

Results of clinical observations of patients following acute dysentery. Sov.zdrav. 18 no.9:32-34 '59. (MIRA 12:11)

1. Iz 1-go meditsinskogo ob"yedineniya Leninakana (glavnyy vrach G.G. Nonoszyan).

(DYSENTERY, BACILLARY)

AMBARTSUMYAN, M.S. (Leninakan, Armyanskaya SSR)

Health measures in foci of bacillary dysentery. Fel'd i akush. 24 no.8:36-38 Ag '59. (MIRA 12:12)

(LENINAKAN--DYSENTERY)

AMBARTSUMYAN, M.S. (Leninakan, Armyanskaya SSR)

Observations on the foci of bacillary dysentery. Med.sestra 19 no.4:34-35 Ap '60. (MIRA 13:6)

(LENINAKAN--DYSENTERY)

AL'BARTSUMYAN, M.S.

Irreproachable worker. Med. sestra 19 no.6:46 Je '60.
(MIRA 14:1)

1. Zaveduyushchiy poliklinicheskim otdeleniyem 1-y Ob"yedinennoy bol'nitsy Leninakana.
(AKOPIAN, SHOGOKAT PANOEVNA)

AMBARTSUMYAN, M.S., vrach (Leninakan, Armyanskaya SSR); MINASYAN, V.M., starshaya meditsinskaya sestra (Leninakan, Armyanskaya SSR); GEVORGYAN, G.Ye., meditsinskaya sestra (Leninakan, Armyanskaya SSR)

Concerning D.M. Velichka's article "On intravenous injections." Feld.i akush. 25 no.2:62-63 F '60. (MIRA 13:5)
(INJECTIONS, INTRAVENOUS) (VELICHKA, D.M.)

AMBARTSUMYAN, M.S. (Leninakan)

Concerning S.B. Tlatov's article "Chill as an early symptom of perforative peritonitis." Klin.med. no.7:148-149 '61.

(MIRA 14:8)

(PERITONITIS)

AMBARTSUMYAN, M.S., vrach; SHEVCHENKO, O.L., vrach

Prevention of brucellosis in a meat packing plant. Gig. i san. 26 F '61. (MIRA 14:10)

1. Iz 1-go bol'nichno-poliklinicheskogo meditsinskogo ob"yedineniya Leninakana, Armyanskaya SSR.
(LENINAKAN--MEAT INDUSTRY--HYGIENIC ASPECTS)
(BRUCELLOSIS)

AMBARTSUMYAN, M.S.; GEVORGYAN, G.Ye. (Leninakan)

All-city conference of nurses. Med. sestra 20 no.6:57-59 Je '61.
(MIRA 14:7)

(LENINAKAN—NURSES AND NURSING)

AMBARTSUMYAN, M.S.; MKHITARYAN, T.Kh. (Leninakan)

Efforts to lower the general level of disease and injury incidence in a shoe factory. Fel'd. i akush. 26 no.8:56-58 Ag '61. (MIRA 14:10)

(SHOE INDUSTRY--HYGIENIC ASPECTS)

AMBARTSUMYAN, M.S.

Analysis of the disease incidence from acute bacterial dysentery.
Zhur.mikrobiol., epid.i immun. 32 no.12:119-120 D '61.
(MIRA 15:11)

1. Iz 1-y ob"yedinennoy bol'nitsy Leninakana.
(DYSENTERY)

AMBARTSUMYAN, M.S., vrach; GEVORGYAN, G.Ye., meditsinskaya sestra

Clinical aspect, treatment, and prevention of mastitis. Med. sestra 21 no.12:19-23 D '62. (MIRA 16:4)

1. Iz 1-y poliklinikl Leninakana.
(BREAST--DISEASES)

AMBARTSUMYAN, M.S.; ARUTYUNYAN, A.T. (Leninakan)

Organization of a home infirmary. Sov.zdrav. 21 no.7:25-27 '62.
(MIRA 15:8)

1. Iz 1-y ob"yedinennoy bol'nitsy (glavnyy vrach - zasluzhennyy vrach respubliki G.G.Nonezyan) Leninakana.
(MEDICAL CARE) (HOME NURSING)

AMBARTSUMYAN, M.S.; ARUTYUNYAN, A.T. (Leninakan)

Organization of work in the consolidated polyclinic. Sov.zdrav. 21 no.10:68-72 '62. (MIRA 15:10)

1. Iz 1-y ob"yedinennoy bol'nitsy (glavnyy vrach zasluzhennyy vrach respubliki G.G.Nonezyan) Leninakana, Armyanskaya SSR.
(HOSPITALS--ADMINISTRATION)

AMBARTSUMYAN, M.S.

Eradication of taeniarynchozis in one of the areas of Leninakan in the Armenian S.S.R. Med.paraz.i paraz.bol. no.3:284-285 '62. (MIRA 15:9)

1. Zaveduyushchiy poliklinicheskim otdeleniyem rayona Leninakana, Armyanskaya SSR.

(LENINAKAN--TAENIA)

BAKULEV, A.N., akademik; AMBARTSUMYAN, R.G. (Moskva, Okruzhnoy proyezd d.9-a)

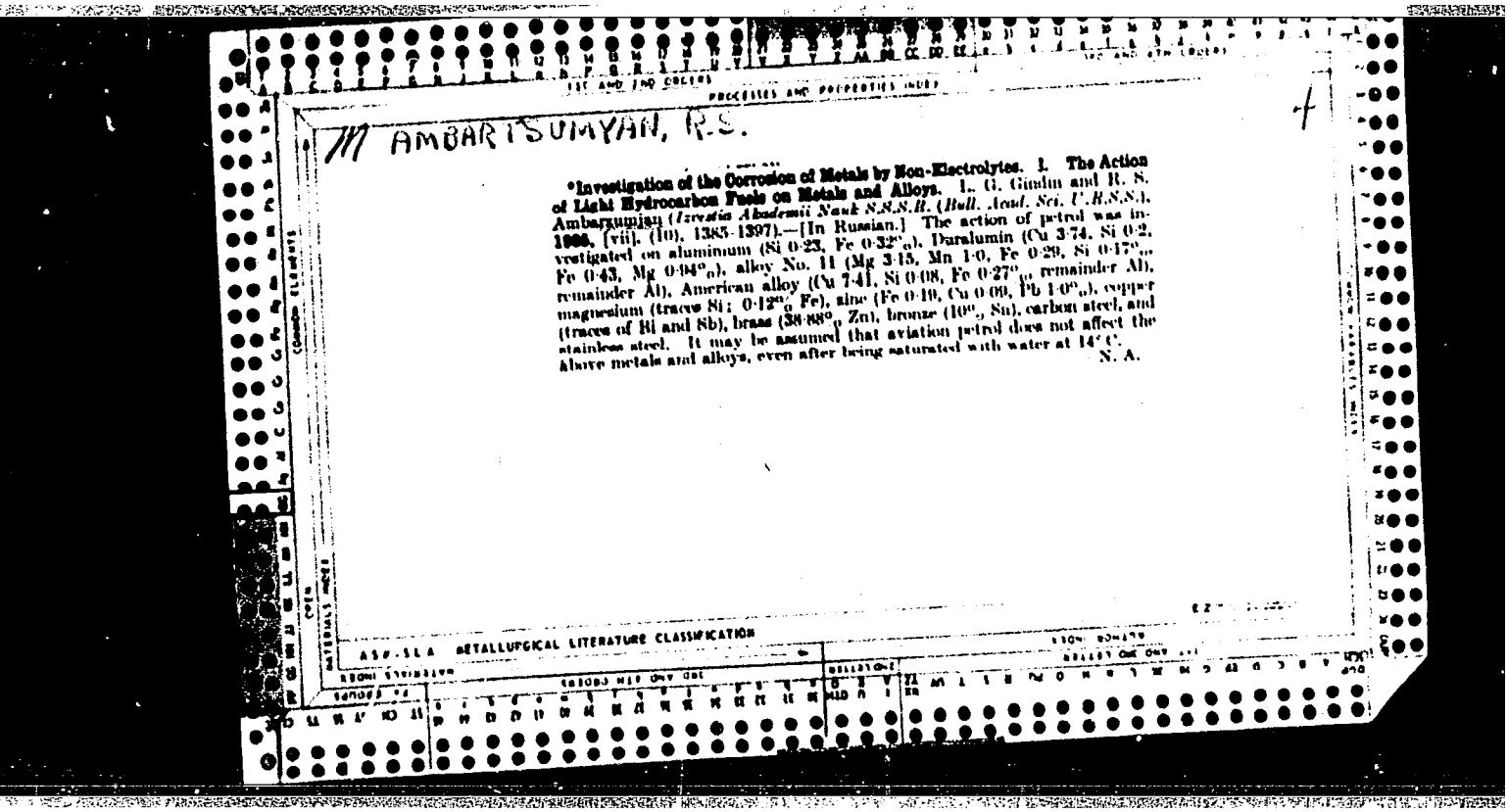
Dynamic study of sodium and potassium electrolytes in patients with various surgical diseases. Vest. khir. 91 no.7:3-7 Jl '63 (MIRA 16:12)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - akademik A.N.Bakulev) 2-go Moskovskogo meditsinskogo instituta imeni Pirogova i gruppy AMN SSSR.

AMBARTSUMYAN, R.G.

Blood protein fractions in diseases of the stomach and biliary tract. Khirurgiia 39 no.9:117-120 S'63 (MIRA 17:3)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (dir. - akad. A.N. Bakulev) II Moskovskogo gosudarstvennogo meditsinskogo instituta imeni Pirogova.



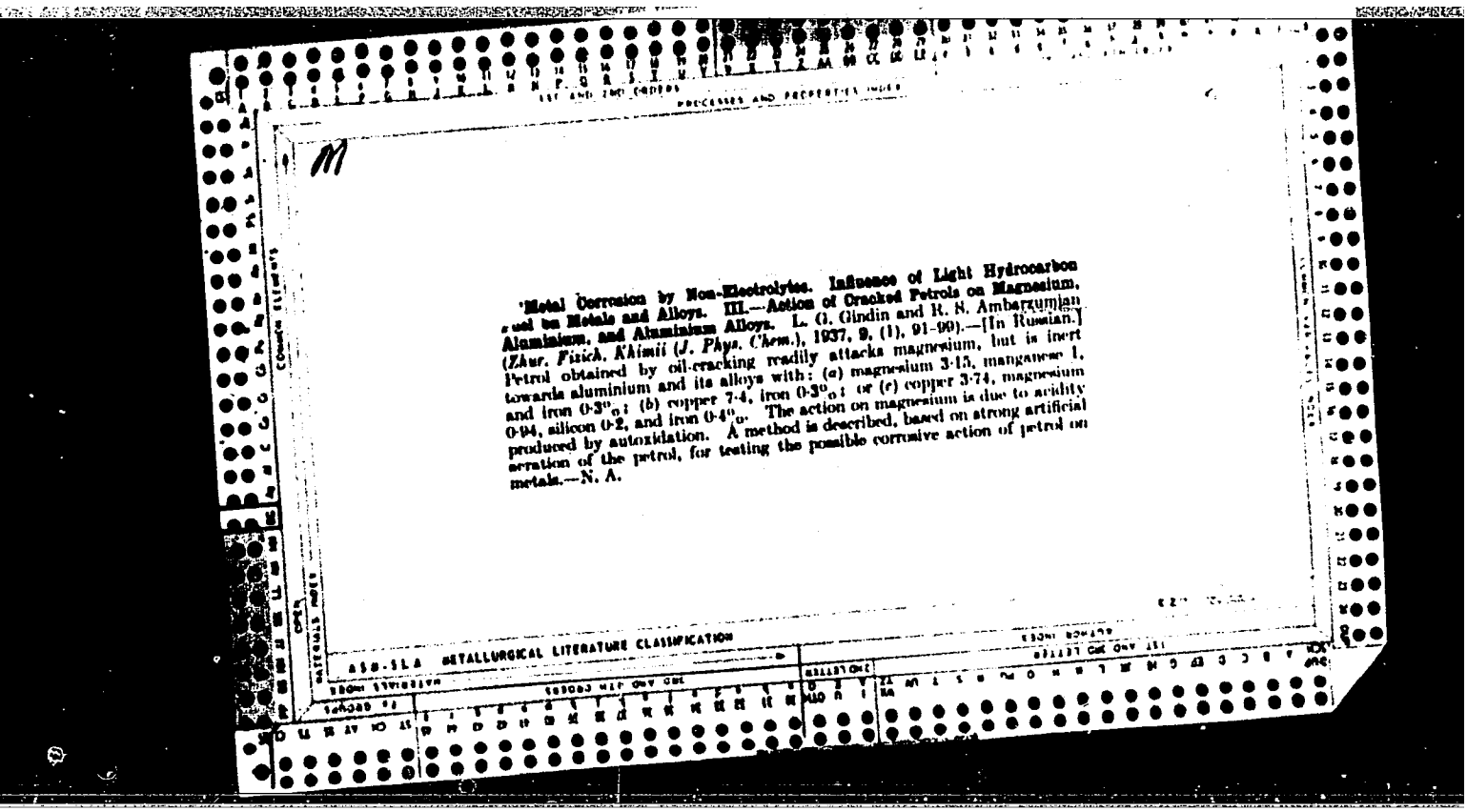
M AMBARTSUMYAN, R.S.

4

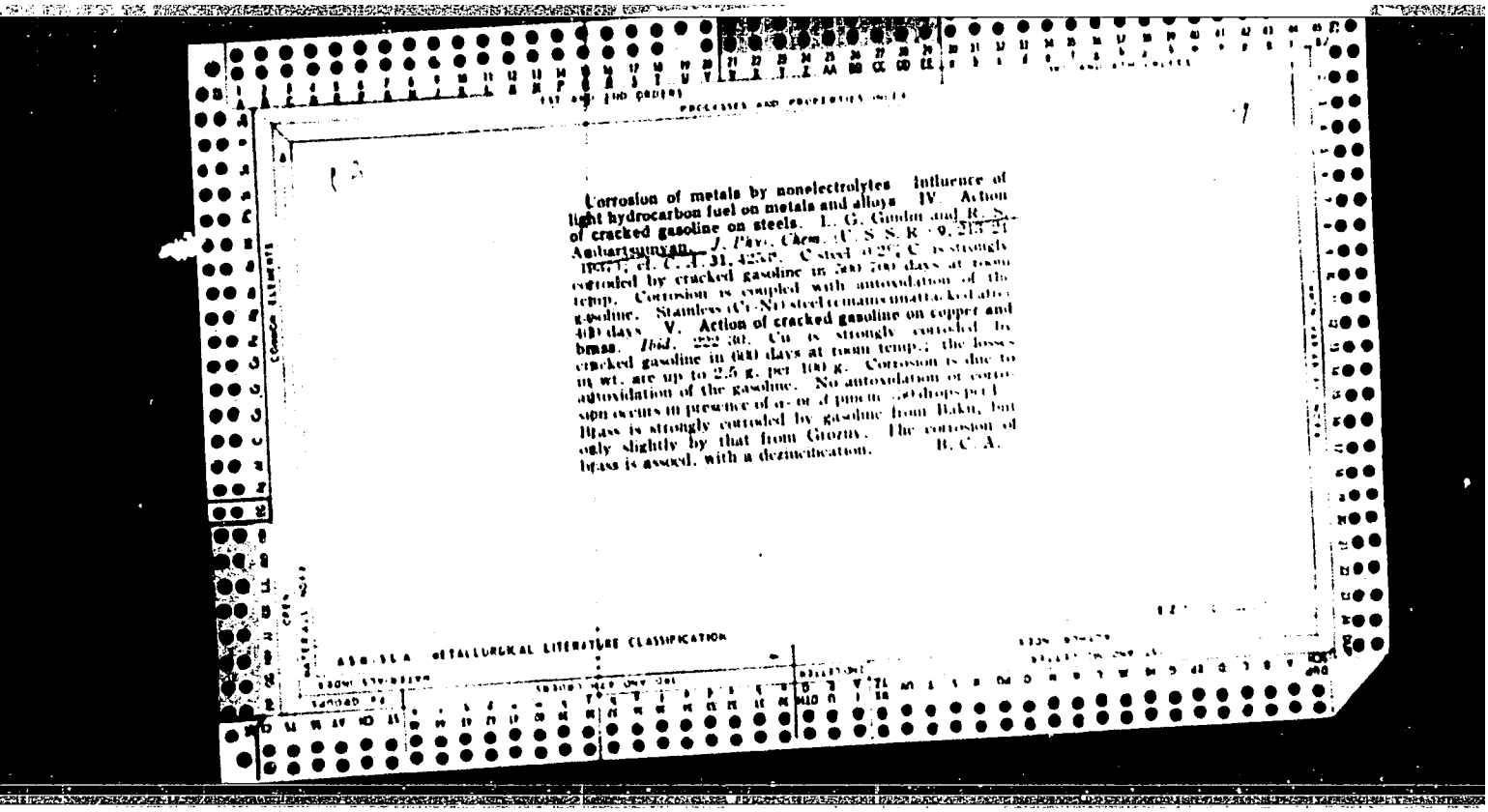
*Investigation of the Corrosion of Metals by Non-Electrolytes. I. The Action of Light Hydrocarbon Fuels on Metals and Alloys. L. G. Gindin and R. S. Ambarzumian (*Izvestia Akademii Nauk S.S.S.R.* (*Bull. Acad. Sci. U.R.S.S.*), 1938, (vii), (10), 1385-1397).—[In Russian.] The action of petrol was investigated on aluminium (Si 0·23, Fe 0·32%), Duralumin (Cu 3·74, Si 0·2, Fe 0·43, Mg 0·94%), alloy No. 11 (Mg 3·15, Mn 1·0, Fe 0·29, Si 0·17%, remainder Al), American alloy (Cu 7·41, Si 0·08, Fe 0·27%, remainder Al), magnesium (traces Si; 0·12% Fe), zinc (Fe 0·19, Cu 0·09, Pb 1·0%), copper (traces of Bi and Sb), brass (38·88% Zn), bronze (10%, Sn), carbon steel, and stainless steel. It may be assumed that aviation petrol does not affect the Alnico metals and alloys, even after being saturated with water at 14° C.

N. A.

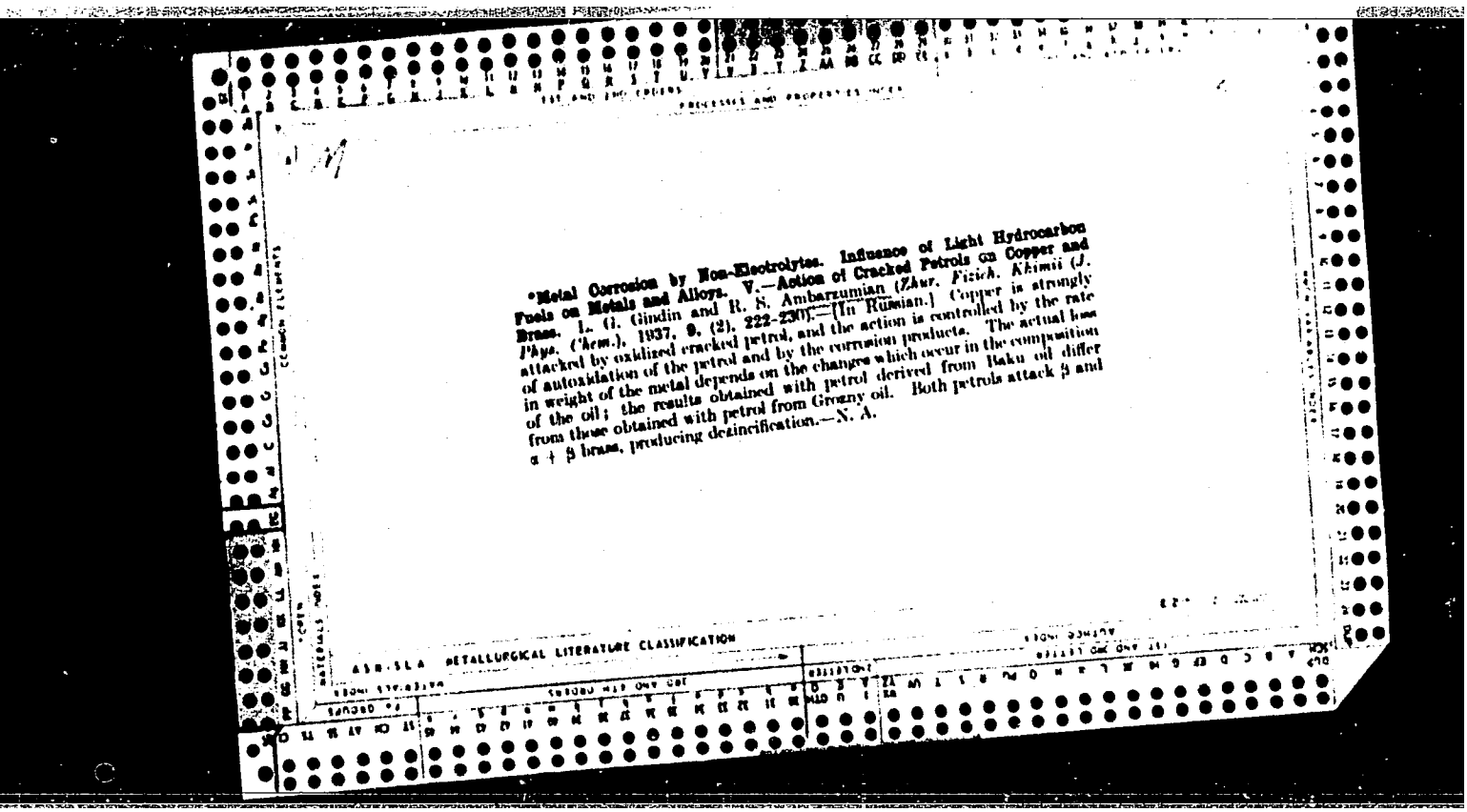
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



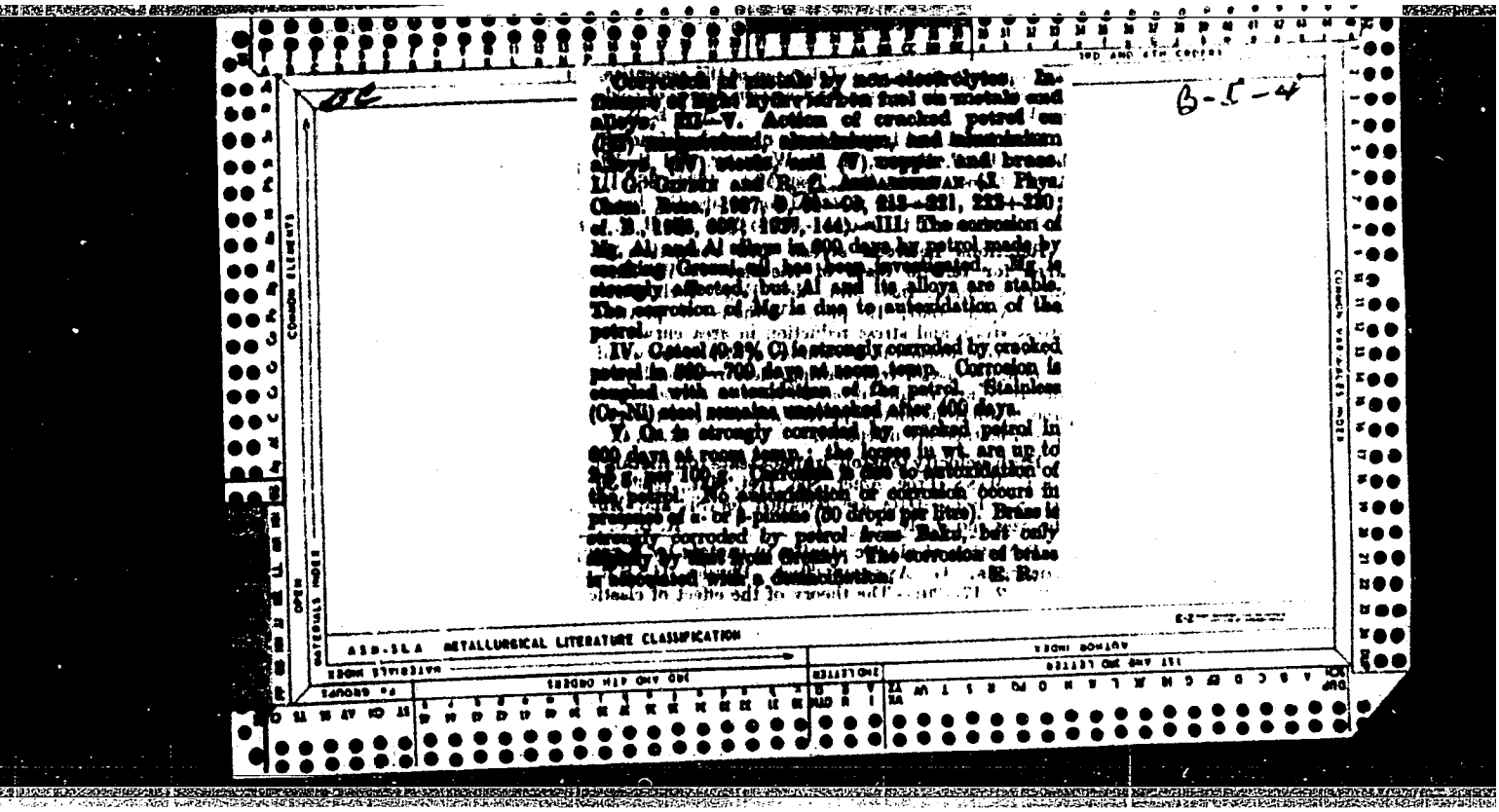
Metal Corrosion by Non-Electrolytes. Influence of Light Hydrocarbon Fuel on Metals and Alloys. III.—Action of Cracked Petrols on Magnesium, Aluminium, and Aluminium Alloys. L. G. Gindin and R. S. Ambarzumian (*Zhur. Fizich. Khimii* (*J. Phys. Chem.*), 1937, 9, (1), 91–99).—[In Russian.] Petrol obtained by oil-cracking readily attacks magnesium, but is inert towards aluminium and its alloys with: (*a*) magnesium 3·15, manganese 1, and iron 0·3%; (*b*) copper 7·4, iron 0·3%; or (*c*) copper 3·74, magnesium 0·94, silicon 0·2, and iron 0·4%. The action on magnesium is due to acidity produced by autoxidation. A method is described, based on strong artificial aeration of the petrol, for testing the possible corrosive action of petrol on metals.—N. A.

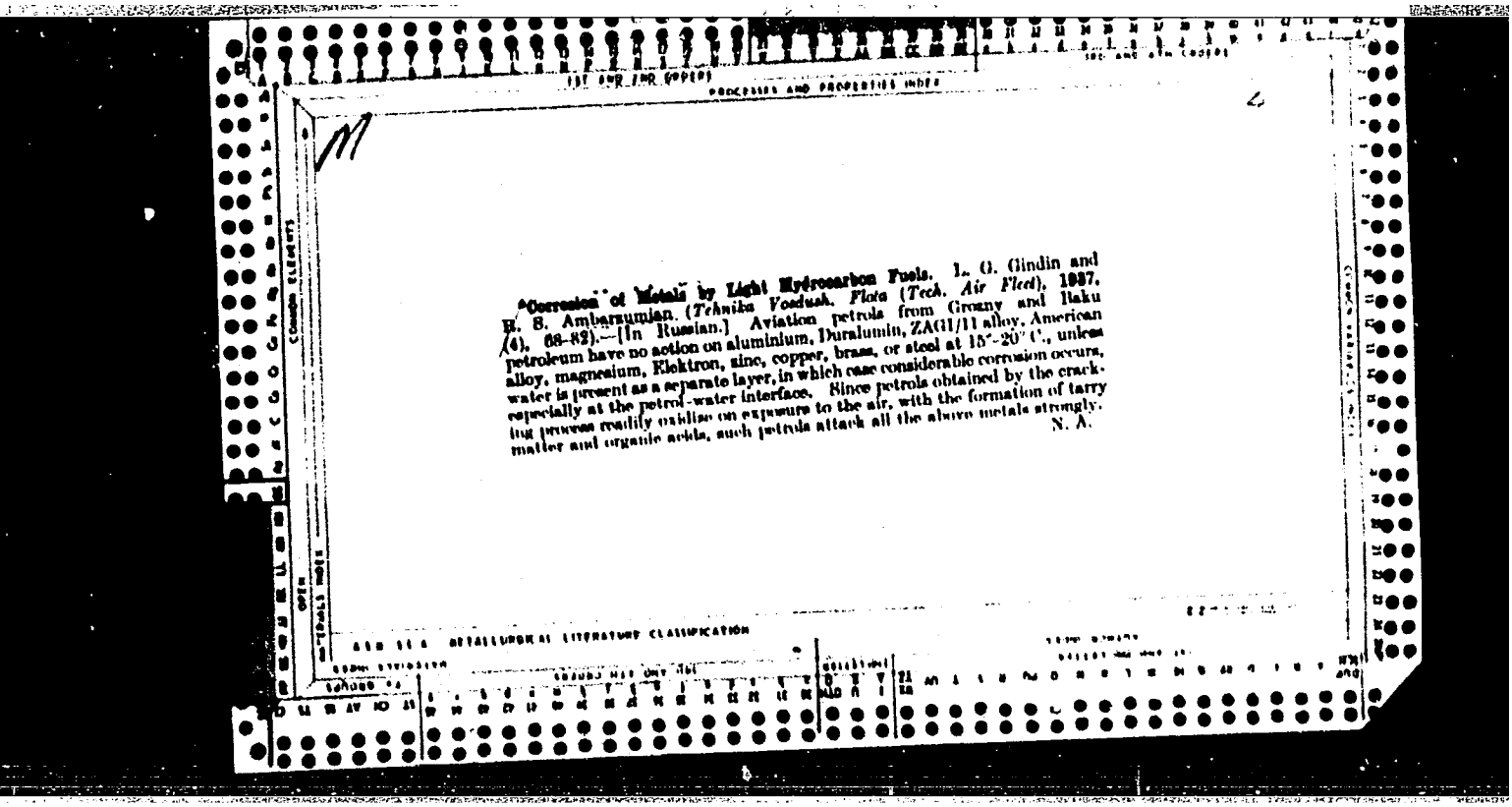


Corrosion of metals by nonelectrolytes influence of light hydrocarbon fuel on metals and alloys IV Action of cracked gasoline on steels. L. G. Gindin and R. S. Antartsumyan. *J. Phys. Chem. (U.S.S.R.)* 9, 213-21 (1937); cf. C. A. 31, 4258. C steel (0.2% C) is strongly corroded by cracked gasoline in 240–700 days at room temp. Corrosion is coupled with autoxidation of the gasoline. Stainless (Cr-Ni) steel remains unattacked after 400 days. V. Action of cracked gasoline on copper and brass. *Ibid.*, 222-30. Cu is strongly corroded by cracked gasoline in 600 days at room temp.; the losses in wt. are up to 2.5 g. per 100 g. Corrosion is due to autoxidation of the gasoline. No autoxidation or corrosion occurs in presence of a- or d-pinene. Orthopsel brass is strongly corroded by gasoline from Baku, but only slightly by that from Grozny. The corrosion of brass is assocd. with a dezincification. B. C. A.

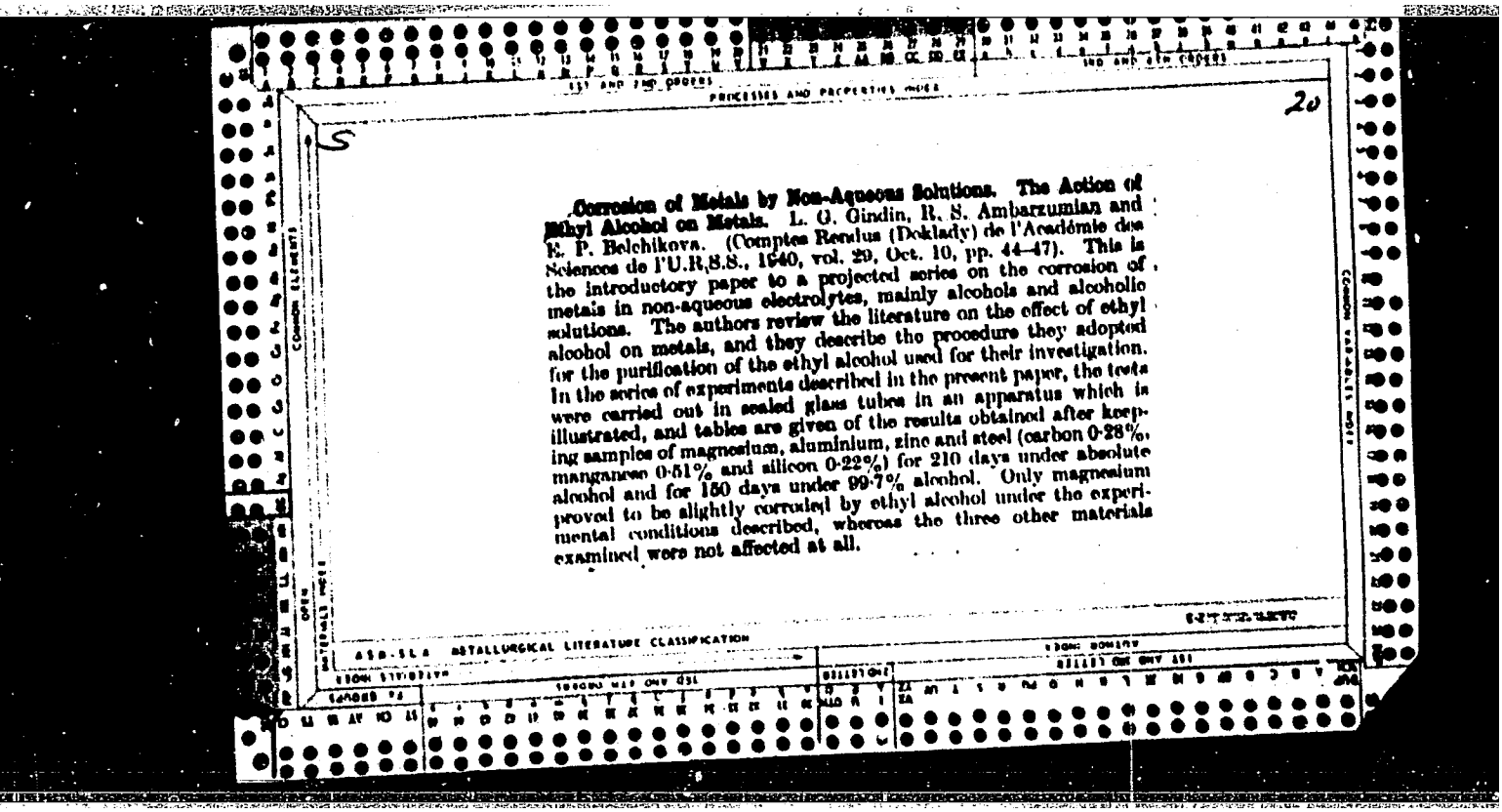


•Metal Corrosion by Non-Electrolytes. Influence of Light Hydrocarbon Fuels on Metals and Alloys. V.—Action of Cracked Petrols on Copper and Brass. L. G. Gindin and R. S. Ambarzumian (*Zhur. Fizich. Khimii* (*J. Phys. Chem.*), 1937, **9**, (2), 222-230).—[In Russian.] Copper is strongly attacked by oxidized cracked petrol, and the action is controlled by the rate of autoxidation of the petrol and by the corrosion products. The actual loss in weight of the metal depends on the changes which occur in the composition of the oil; the results obtained with petrol derived from Baku oil differ from those obtained with petrol from Grozny oil. Both petrols attack β and α + β brass, producing dezincification.—N. A.





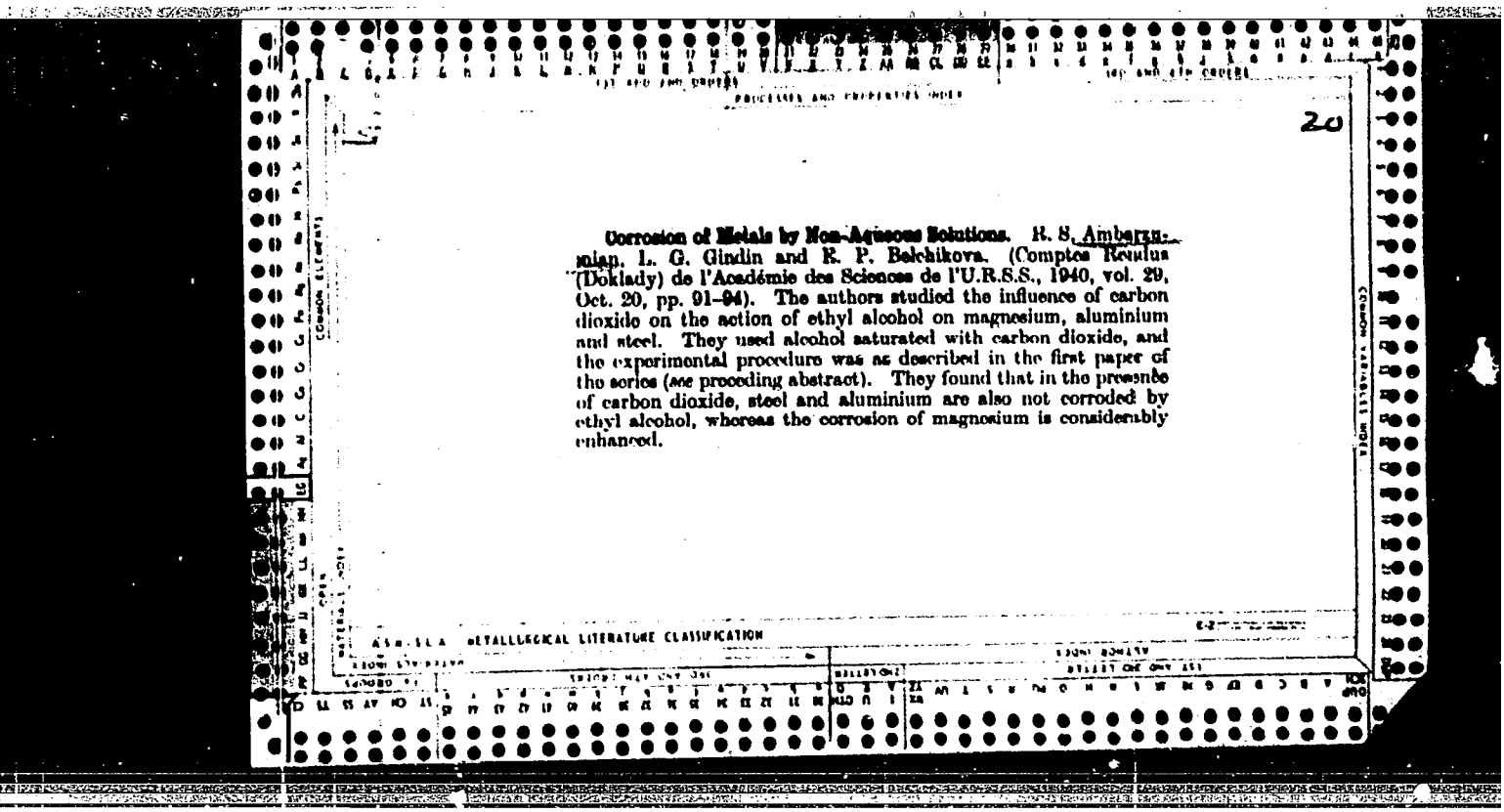
Corrosion of Metals by Light Hydrocarbon Fuels. L. G. Gindin and E. S. Ambarsumian. (*Teknika Vozduh. Flota* (*Tech. Air Fleet*), 1937, (4), 68-82).—[In Russian.] Aviation petrols from Grozny and Baku petroleum have no action on aluminium, Duralumin, ZAG1/11 alloy, American alloy, magnesium, Elektron, zinc, copper, brass, or steel at 15°-20° C., unless water is present as a separate layer, in which case considerable corrosion occurs, especially at the petrol-water interface. Since petrols obtained by the cracking process readily oxidise on exposure to the air, with the formation of tarry matter and organic acids, such petrols attack all the above metals strongly.
N. A.



20

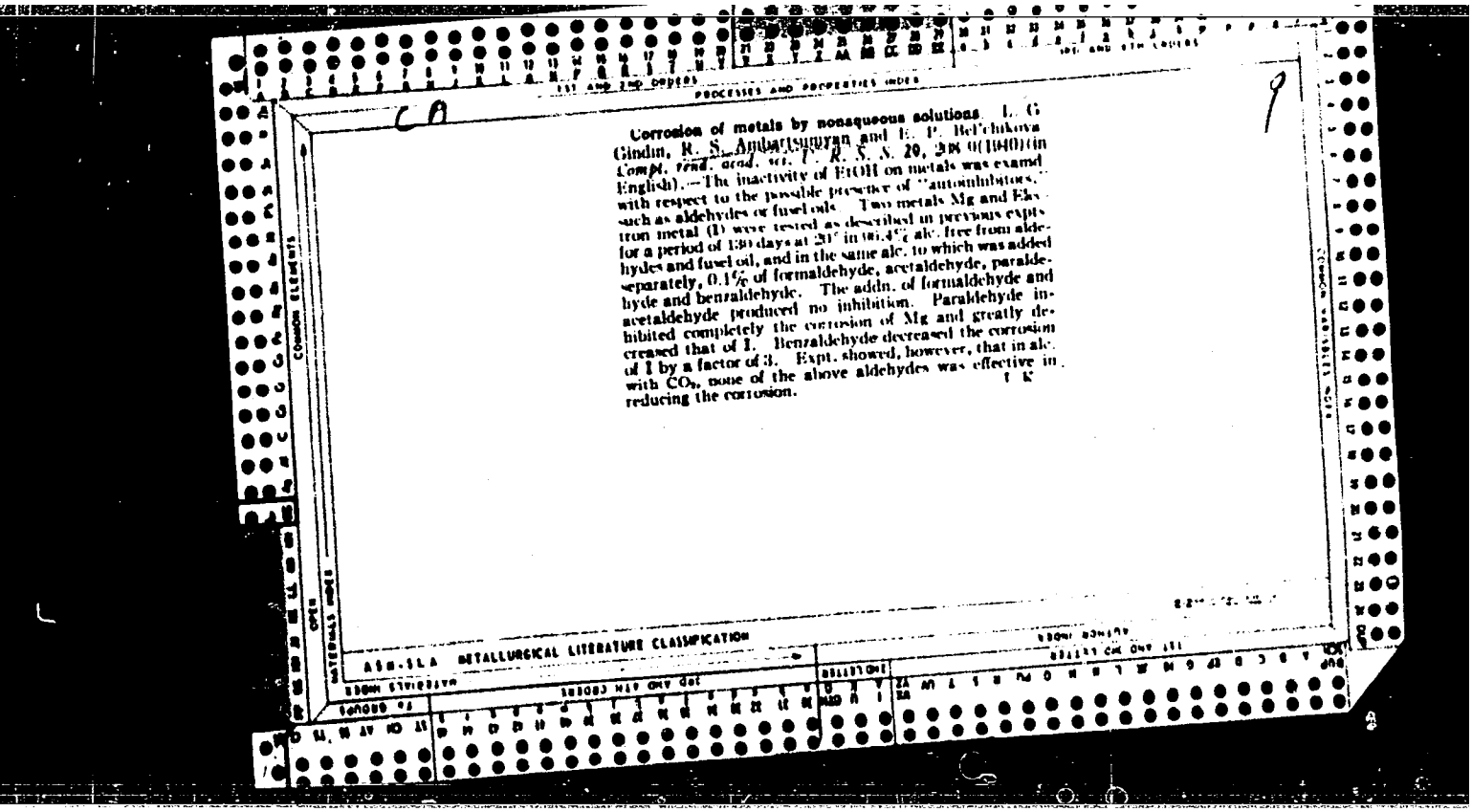
S

Corrosion of Metals by Non-Aqueous Solutions. The Action of Ethyl Alcohol on Metals. L. G. Gindin, R. S. Ambarzumian and E. P. Belchikova. (Comptes Rendus (Doklady) de l'Académie des Sciences de l'U.R.S.S., 1940, vol. 29, Oct. 10, pp. 44–47). This is the introductory paper to a projected series on the corrosion of metals in non-aqueous electrolytes, mainly alcohols and alcoholic solutions. The authors review the literature on the effect of ethyl alcohol on metals, and they describe the procedure they adopted for the purification of the ethyl alcohol used for their investigation. In the series of experiments described in the present paper, the tests were carried out in sealed glass tubes in an apparatus which is illustrated, and tables are given of the results obtained after keeping samples of magnesium, aluminium, zinc and steel (carbon 0·28%, manganese 0·51% and silicon 0·22%) for 210 days under absolute alcohol and for 150 days under 99·7% alcohol. Only magnesium proved to be slightly corroded by ethyl alcohol under the experimental conditions described, whereas the three other materials examined were not affected at all.

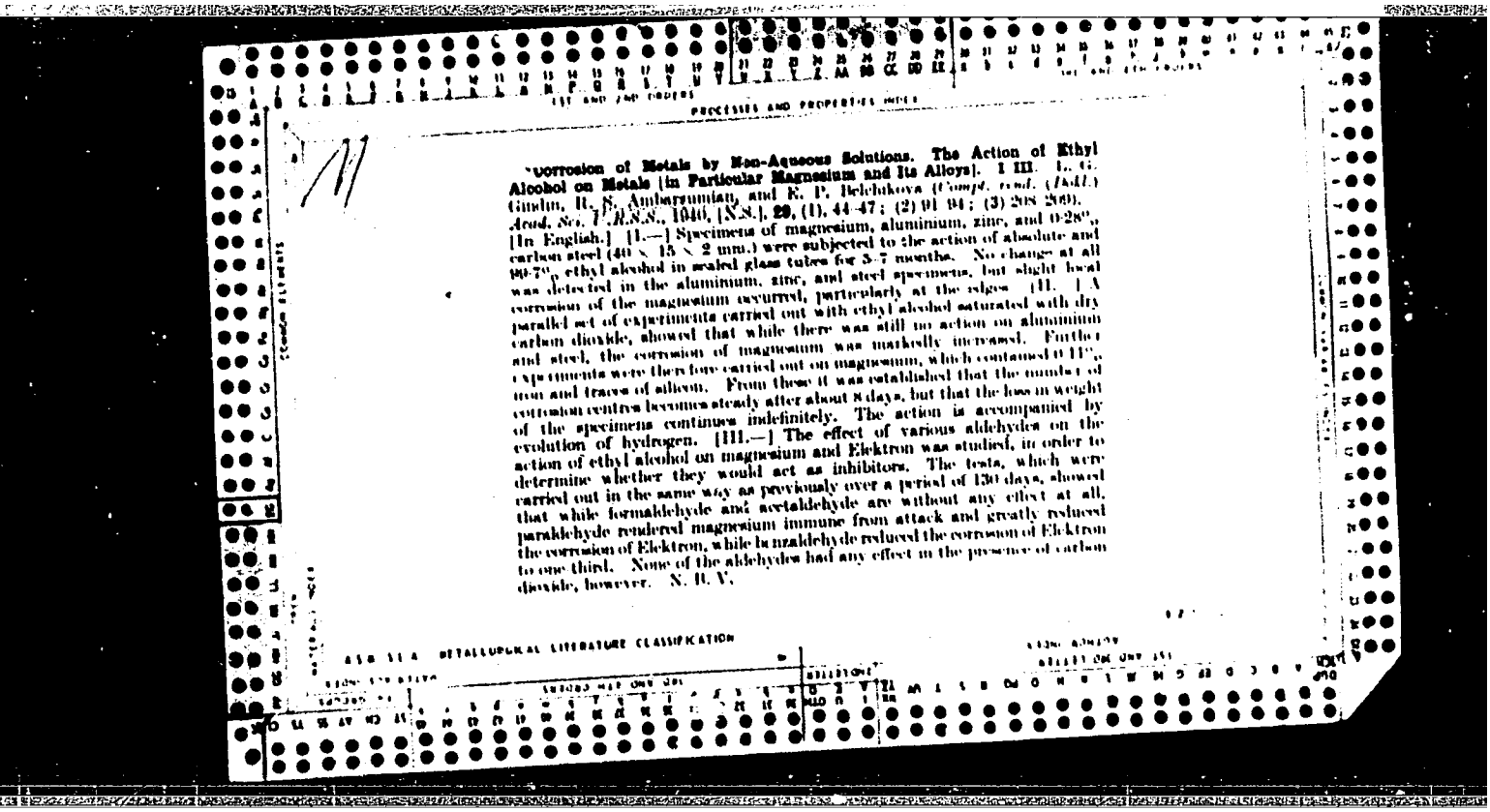


20

Corrosion of Metals by Non-Aqueous Solutions. R. S. Ambartsumian, L. G. Gindin and K. P. Belchikova. (Comptes Rendus (Doklady) de l'Académie des Sciences de l'U.R.S.S., 1940, vol. 29, Oct. 20, pp. 91–94). The authors studied the influence of carbon dioxide on the action of ethyl alcohol on magnesium, aluminium and steel. They used alcohol saturated with carbon dioxide, and the experimental procedure was as described in the first paper of the series (see preceding abstract). They found that in the presence of carbon dioxide, steel and aluminium are also not corroded by ethyl alcohol, whereas the corrosion of magnesium is considerably enhanced.



Corrosion of metals by nonaqueous solutions. L. G. Gindin, R. S. Ambartsumyan and E. P. Bel'chikova (*Compt. rend. acad. sci. U. R. S. S.* **20**, 208 0(1940)(in English).—The inactivity of EtOH on metals was examd. with respect to the possible presence of "autoinhibitors," such as aldehydes or fusel oils. Two metals Mg and Elektron metal (I) were tested as described in previous expts. for a period of 130 days at 20° in 99.4% alc. free from aldehydes and fusel oil, and in the same alc. to which was added separately, 0.1% of formaldehyde, acetaldehyde, paraldehyde and benzaldehyde. The addn. of formaldehyde and acetaldehyde produced no inhibition. Paraldehyde inhibited completely the corrosion of Mg and greatly decreased that of I. Benzaldehyde decreased the corrosion of I by a factor of 3. Expt. showed, however, that in alc. with CO_2, none of the above aldehydes was effective in reducing the corrosion. I. K.



Corrosion of Metals by Non-Aqueous Solutions. The Action of Ethyl Alcohol on Metals [in Particular Magnesium and Its Alloys]. I. III. L. G. Gindin, R. S. Ambarzumian, and E. P. Belelukova (*Compt. rend. (Doklady) Acad. Sci. U.R.S.S.*, 1940, [N.S.], **29**, (1), 44–47; (2) 91–94; (3) 208–209). [In English.] [I.—] Specimens of magnesium, aluminium, zinc, and 0·28% carbon steel (40 × 15 × 2 mm.) were subjected to the action of absolute and 99·7% ethyl alcohol in sealed glass tubes for 5–7 months. No change at all was detected in the aluminium, zinc, and steel specimens, but slight local corrosion of the magnesium occurred, particularly at the edges. [II.—] A parallel set of experiments carried out with ethyl alcohol saturated with dry carbon dioxide, showed that while there was still no action on aluminium and steel, the corrosion of magnesium was markedly increased. Further experiments were therefore carried out on magnesium, which contained 0·11% iron and traces of silicon. From these it was established that the number of corrosion centres becomes steady after about 8 days, but that the loss in weight of the specimens continues indefinitely. The action is accompanied by evolution of hydrogen. [III.—] The effect of various aldehydes on the action of ethyl alcohol on magnesium and Elektron was studied, in order to determine whether they would act as inhibitors. The tests, which were carried out in the same way as previously over a period of 130 days, showed that while formaldehyde and acetaldehyde are without any effect at all, paraldehyde rendered magnesium immune from attack and greatly reduced the corrosion of Elektron, while benzaldehyde reduced the corrosion of Elektron to one third. None of the aldehydes had any effect in the presence of carbon dioxide, however. N. H. V.

AMBARTSUMYAN, R.S.

AMBARTSUMYAN, R.S., doktor tekhn.nauk, prof., red.; LAGOVSKAYA, M.S., red.; ROZHIN, V.P., tekhn.red.

[The corrosion and protection of metals] Korroziia i zashchita metallov. Moskva, Gos.izd-vo obor. promyshl., 1957. 366 p. (Corrosion and anticorrosives) (MIRA 11:3)

AMBARTSUMYAN, R. S., GLUKHOV, A. M., GOCHAROV, D. V., KOVALEV, A. I. and SKVORTSOV, S. A.

"Fuel Elements for Light Water Cooled and Moderated Reactors of Atomic Power Stations."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 13 Sept 58.

SOV/122-58-6-33/37

AUTHOR: Ambartsumyan, R.S., Doctor of Technical Sciences, Professor

TITLE: The First British National Conference and Exhibition on Corrosion Prevention (Pervaya Angliyskaya natsional'naya konferentsiya i vystavka po bor'be s korroziyey)

PERIODICAL: Vestnik Mashinostroyeniya, 1958, Nr 6, pp 82-83 (USSR)

ABSTRACT: Summary of the 1957 conference in London, organised by the periodical "Corrosion Technology".

1. Materials--Corrosion prevention

Card 1/1

21(4) PHASE I BOOK EXPLOITATION SOV/2583

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958.

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.F. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

AmBARTsumYAN, R.S.

21(4) PHASE I BOOK EXPLOITATION SOV/2714

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958

Doklady sovetskikh uchenykh; yadernoye goryucheye i reaktornyye metally. (Reports of Soviet Scientists; Nuclear Fuel and Reactor Metals) Moscow, Atomizdat, 1959. 670 p. (Series: Its: Trudy, vol. 3. 8,000 copies printed.

Ed. (Title page): A.A. Bochvar, Academician, A.P. Vinogradov, Academician, V.S. Yemel'yanov, Corresponding Member, USSR Academy of Sciences, and A.P. Zefirov, Doctor of Technical Sciences; Ed. (Inside book): V.V. Pereversev and G.M. Pchelintseva; Tech. Ed.: E.I. Mazel'.

PURPOSE: This volume is intended for scientists, engineers, physicians, and biologists working in the production and peaceful application of atomic energy; for professors and students of schools of higher technical education where the subject is taught; and for people interested in atomic science and technology.

COVERAGE: This is volume 3 of a 6-volume set of reports on atomic energy, presented by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy, held in Geneva from September 1 to 13, 1958. Volume 3 consists of two parts. The first part, edited by A.I. Zubov, is devoted to geology, prospecting, concentration and processing of nuclear source material. The second part, edited by G.L. Zverev, includes 27 reports on metallurgy, metallography, processing technology of nuclear fuels and reactor metals, and neutron irradiation effects on metals. The titles of the individual papers in most cases correspond word for word with those in the official English language edition on the Conference proceedings. See SOV/2081 for the titles of the other volumes of the set.

Kiselev, A.A., I.D. Nikitin, I.I. Kornilov, V.A. Fedorchenko, D.D. Sokolov, and V.I. Kozhavskaya. Some Problems of Processing Zirconium and Its Alloys by Pressure (Report No. 2049) 425

Ivanov, O.S., and V.K. Grigorovich. Structure and Properties of Zirconium Alloys (Report No. 2046) 439

Yemel'yanov, V.S., Yu.G. Godin, and A.I. Yevstyukhin. Mechanical Properties of Zirconium Binary and Ternary Alloys With Tantalum and Niobium at Room and Elevated Temperatures (Report No. 2055) 462

Kornilov, I.I., A.V. Ignatov, A.I. Yevstyukhin, and V.S. Yemel'yanov. Electron Diffraction and Kinetic Investigations of the Oxidation Reactions of Zirconium and Some of Its Alloys (Report No. 2054) 474

Ambartsumyan, R.S., A.A. Kiselev, L.I. Tsupron, R.V. Grebennikov, V.I. Kryukin, and A.V. Nikulina. Mechanical Properties and Corrosion Resistance of Zirconium and Its Alloys in Water, Steam, and Gases at High Temperatures (Report No. 2044) 486

Card 8/11

L 24710-66 EWT(m)/ETC(f)/EPF(n)-2/EWG(m) WW

ACC NR: AT6008415 SOURCE CODE: UR/3136/65/000/993/0001/0017

AUTHOR: Ambartsumyan, R. S.; Goncharov, V. V.; Glukhov, A. M.; Yegorenkov, P. M.; Smirnova, R. F.; Shavrov, P. I.

ORG: none

TITLE: Increasing the power of VVR-S reactors

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-993, 1965. O povyshenii moshchnosti reaktorov VVR-S, 1-17

TOPIC TAGS: water cooled nuclear reactor, water moderated reactor, reactor fuel element, nuclear reactor power / VVR-S water cooled nuclear reactor

ABSTRACT: The authors consider the possibilities for using slightly modified MR fuel assemblies for increasing the power of VVR-S water-cooled water-moderated reactors. A figure is given showing the construction and dimensions of the MR fuel assembly. The assembly consists of five tubular fuel elements of circular cross section. The heat-transfer area of the MR fuel assembly is 2.35 times as great as assemblies using EK-10 elements. The elements are interchangeable, i.e. they may be

Card 1/2

L 24710-66

ACC NR: AT6008415 O

placed in any cell of the reactor core. The efficient design of the MR elements assures that 90% of the water passing through the core flows through the fuel assembly. The assembly contains 173 grams of U-235, i.e. 35% more than an assembly with EK-10 elements. The use of these elements makes it possible to irradiate specimens in experimental channels or ampules with an outside diameter of 14 mm. Larger specimens may be irradiated by using fuel assemblies with fewer tubular fuel elements. However, use of the MR fuel assembly cuts down the volumetric fraction of water in the reactor core to 0.65 as against 0.7 when assemblies with EK-10 elements are used. The volumetric water fraction is cut still further to 0.52 by the use of beryllium moderators to reduce nonuniformity in heat release due to localized increases in neutron density in the water spaces between adjacent MR fuel assemblies. The use of these fuel assemblies increases the power of the reactor to 8-11 Mw and the maximum neutron intensity (U-235) to $\sim 9 \cdot 10^{13}$ neutrons/cm^2 sec. The authors discuss the experimental possibilities of the VVR-S reactor with MR fuel assemblies. Orig. art. has: 6 figures, 1 table.

SUB CODE: 18/ SUBM DATE: 00/ ORIG REF: 001/ OTH REF: 003

Card 2/2 FV

ACCESSION NR: AP4033059 S/0252/64/038/002/0071/0076

AUTHOR: Ambartsumyan, R. V.

TITLE: Detection of signals in a flow of impulses (Presented by V. A. Ambartsumyan, Academician, 06 January 1964)

SOURCE: AN ArmSSR. Doklady*, v. 38, no. 2, 1964, 71-76

TOPIC TAGS: signal detection, impulse flow, blip, payoff, game theory, stationary flow

ABSTRACT: The author considers two simultaneous flows of impulses (blips). It is desired to classify each blip as either signal or noise, with payoffs a and b for the two types of error. He gives standard game-theoretic results for the problem. Orig. art. has: 5 formulas.

ASSOCIATION: Institut matematiki i mekhaniki Akademii nauk Armyanskoy SSR (Institute of Mathematics and Mechanics, Academy of Sciences, Armenian SSR)

Card 1/2

L 11962-65 EWG(j)/EWA(k)/FBD/EWT(l)/EWP(e)/EWT(m)/EEC(k)-2/EEC(t)/T/ IJP(c)/SSD/AFWL/

ACCESSION NR: AP4044733

AUTHOR: Basov, N. G.; Amnartsumyan, R. V.; Zuyev, V. S.; Kryukov, P. G.; Stoylov, Yu. Yu.

TITLE: Q-switched laser 25

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fizik., v. 47, no. 4, 1964, 1595-1597

TOPIC TAGS: laser, ruby laser, laser amplifier, Q switch, Q switching laser 15

ABSTRACT: The gross output characteristic of a Q-switched ruby laser was plotted by using a Kerr cell in combination with a polarizing prism as the shutter. The ruby rod was 11 cm long, 0.9 cm in diameter, and had a Cr^{3+} concentration of 0.06%. A helical flash lamp was energized by an 8-kv, 300-uf power supply and produced a 700-usec pulse. The Kerr cell was energized by a [illegible]-usec pulse, whose rise time was 5 nanoseconds, 500 usec after ignition of the flash lamp. The laser then emitted a single pulse with an energy of 1.8 joules. The addition of a second ruby laser as an amplifier produced an output pulse of 8 joules having a steeper front. Orig. art. has: 2 figures.

Card 1/2

EWP(e)/EWT(l)/EWP(k)-2/EIF(n)-2/EWG(m)/EPA(w)-2/T/EEC(b)-2/

ACCESSION NR: AP5016549

[illegible], B. V.; Boyko, V. A.; Zuyev, V. S.; Basov, N. G.; Krokhin, O.

TITLE: Heating of matter by focused laser radiation

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 6, 1965, 1583-1587

TOPIC TAGS: high temperature plasma, laser application, laser radiation, lithium, air

ABSTRACT: In discussing the main factors that limit the heating of matter to high [illegible] that in addition the limita- [illegible] and by the absorption [illegible] and that it passes the limiting [illegible] the motion of [illegible] the breakdown boundary in a gas [illegible] the surface of a condensed medium [illegible] the most convenient mode of obtaining a high temperature plasma. In this case

Card 1/2

L 59527-65
ACCESSION NR: AP5016549

...peration is one in which one-dimensional motion of plasma occurs, since three-...mensional motion leads to rapid reduction in density and a decrease in the re-...lative fraction of the laser radiation absorbed in the plasma. Under these condi-tions the maximum achievable temperature is ... energy ... the ... radiation and thermal conductivity. The authors then report the results of the ... analysis of the emission from a plasma produced by focusing the radiation ... a solid sample of lithium ... energy approx-... corresponding temperature ... and ... formulas.

... Fiziceskiy institut im P. N. Lebedeva Akademii ... SSSR (Physics ... Academy of Sciences, SSSR)

SUBMITTED: 16Jan65 ENCL: ... SUB CODE: AS

NO REF SOV: 009 OTHER: 003

AMBARTSUMYAN, R.V.

Poisson superpositions of clusters. Dokl. AN Arm. SSR 41 no.2: 73-80 '65. (MIRA 18:11)

1. Institut matematiki i mekhaniki AN ArmSSR. Submitted March 31, 1965.

L 4265-66 EWA(k)/FBD/EWT(l)/EWP(e)/EWT(m)/EEC(k)-2/EWP(i)/T/EWP(k)/EWA(h)/EWA(m)-2
ACC NR: AP5027834 SCTB/IJP(c) WG/WH SOURCE CODE: UR/0020/65/165/001/0058/0060

AUTHOR: Basov, N. G. (Corresponding member AN SSSR); Ambartsumyan, R. V.; Zuyev, V. S.; V. S.; Kryukov, P. G.; Letokhov, V. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut, Akademiya nauk SSSR)

TITLE: Velocity of propagation of a powerful light pulse in a medium with population inversion

SOURCE: AN SSSR. Doklady, v. 165, no. 1, 1965, 58-60

TOPIC TAGS: laser, ruby laser, laser pumping, optic pumping

ABSTRACT: The article is a brief advance report of a comprehensive work to be published separately. It was shown that the leading edge of such a pulse does not change materially while propagating within a medium with inverse population. In the case of a ruby medium with usual parameters, the velocity of the pulse maximum on reaching its stationary value was shown to be 17×10^{10} cm/sec, which greatly exceeds the velocity of light. This fact, however, does not contradict the causality principle, since such a propagation takes place as the result of the deformation of the initially weak leading edge, and can continue only to the point of zero intensity which always propagates with the velocity of light in the medium. An amplifier composed of two ruby rods 24 cm long was used for experimental study of the problem. The end faces

UDC: 621.375.9

Card 1/2

AMBARTSUMYAN, R.V. (Yerevan)

An application of the relation between a Brownian motion and the Dirichlet problem. Teor. veroiat. i ee prim. 10 no.3:539-543 '65. (MIRA 18:9)

1. Vychislitel'nyy tsentr AN Armyanskoy SSR.

AMBARTSUMYAN, R.V.; BASOV, N.G.; BOYKO, V.A.; ZUYEV, V.S.; KROKHIN, O.N.; KRYUKOV, P.G.; SENATSKIY, Yu.V.; STOYLOV, Yu.Yu.

Heating of a substance under focused radiation from a laser. Zhur. eksp. i teor. fiz. 48 no.6:1583-1586 Je '65. (MIRA 18:7)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.

L 1379-66 EWA(k)/FBD/EWT(l)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c)
ACCESSION NR: AP5022443 WG UR/0109/65/010/009/1729/1730
621.378.325.001.5:621.383.52

AUTHOR: Ambartsumyan, R. V. 44; Basov, N. G. 44; Yeliseyev, P. G. 44; Zuyev, V. S. 44; Kryukov, P. G. 44; Stoylov, Yu. Yu. 44 62 B

TITLE: The measurement of the time parameters of a giant pulse laser by means of a photodiode 25,44

SOURCE: Radiotekhnika i elektronika, v. 10, no. 9, 1965, 1729-1730

TOPIC TAGS: giant pulse laser, gallium arsenide, photodiode, resolving time, Kerr cell, photomultiplier

ABSTRACT: The time-dependent characteristics of a giant pulse laser switched by a Kerr cell were measured by means of a gallium arsenide photodiode. The photodiode was obtained by diffusion of cadmium into n-type GaAs with a 2×10^{18} cm^{-3} concentration of tellurium during a period of 60 hr. The depth, thickness, and area of the p-n junction were 80 μ, 0.9 μ, and 2.5×10^{-3} cm^2, respectively. The photodiode was pumped at right angles by a nonfocused laser beam and the pulse width from the photodiode (connected across a 75-ohm load) was 40 nanosec at room temperature, and 20 nanosec at 77K. The results indicate that the resolving time of the

Card 1/2

L 1379-66

ACCESSION NR: AP5022443

photodiode is not greater than 5 nanosec, a quality which makes it competitive with photomultipliers. Unlike photomultipliers, which introduce a signal time lag, photodiodes are capable of accurately determining the time lag of a laser pulse released by the Kerr cell. The experimental value of the lag was 80 nanosec. Orig. art. has: 2 figures. [YK]

ASSOCIATION: none

SUBMITTED: 09Dec64 ENCL: 00 SUB CODE: EC

NO REF SOV: 001 OTHER: 001 ATD PRESS: 4092

Card 2/2

L 21583-66 EWD/EWT(l)/EEC(k)-2/T/EWP(k)/EWA(h) IJP(c) WG

ACC NR: AP6008734 SOURCE CODE: UR/0386/66/003/006/0261/0264

AUTHOR: Ambartsumyan, R. V.; Basov, N. G.; Kryukov, P. G.; Letokhov, V. S. 42 13

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Laser with nonresonant feedback 25,41

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 6, 1966, 261-264

TOPIC TAGS: laser r and d, ruby laser, laser beam, light scattering, laser optics

ABSTRACT: The authors report achievement of laser action with nonresonant feedback, produced by back-scattering from a volume or a surface, which behaves like a "stochastic" resonator with a continuous natural-frequency spectrum. The lasing frequency does not depend on the length of the resonator, but is determined by the resonant frequency of the active medium. In this laser (Fig. 1) the active medium comprised two

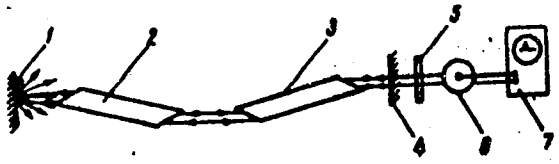


Fig. 1. Diagram of experiment. 1 - Scatterer, 2,3 - ruby crystal, 4 - mirror, 5 - filter, 6 - photocell, 7 - oscilloscope.

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ruby crystals in series, each 24 cm long and 1.8 cm in diameter. The feedback was produced with the aid of a mirror (reflection 99%) and a volume scatterer (suspension of chalk particles in water) or surface scatterer (plate with a layer of sputtered MgO). The light was recorded with a photocell and oscilloscope, and its spectrum was measured with a Fabry-Perot interferometer. The gain of a weak signal in one passage through the two crystals reached 900. The condition of self excitation of the laser is described. The lasing threshold is found to be practically independent of the angle of inclination of the scatterer, over a wide range, but increases with increasing distance between the scatterer and the crystal. The radiation line width was smaller than 0.015 cm^{-1} and was determined by the resolution of the interferometer (the spontaneous emission line width of ruby is 15 cm^{-1}). An investigation of the beat radiation spectrum has shown that there are no frequencies characteristic of lasers with resonant feedback. The angle spread of the beam was proportional to the ratio of the crystal diameter to the average distance between the mirror and the scatterer. The distribution of the radiation field in the far zone was quite homogeneous. A pulse with duration 200 nsec was obtained in the case of Q-switching of the stochastic resonator. The average frequency of the generated radiation in the laser with nonresonant feedback was determined by the position of the center of the atomic transtiion, and not by the resonance of the feedback. It is consequently possible to produce an optical frequency standard on the basis of a laser with nonresonant feedback, using high-gain atomic transitions in a gas discharge (Ne, Xe, etc.) operating in the continuous mode, and also scatterers with narrow back-scattering directivity pattern.

L 21583-66
ACC NR: AP6008754

It is noted that generation with feedback due to scattering by inhomogeneities of the crystal and by the matte side surface of the crystal can limit the maximum gain. Orig. art. has: 2 figures. [02]

SUB CODE: 20/ SUBM DATE: 09Feb66/ ORIG REF: 002/ OTH REF: 003/ ATD PRESS: 4219

Card 3/3 UCR

L 00674-67 EWT(l)/EWP(e)/EWT(m)/EWP(j) IJP(c) WG/WW/JG/RM/WB

ACC NR: AP6023635 SOURCE CODE: UR/0386/66/004/001/0019/0022

AUTHOR: Ambartsumyan, R. Vl; Basov, N. G.; Zuyev, V. S.; Kryukov, P. G.; Letokhov, V. S. 20 B

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Propagation of a light pulse in a nonlinearly amplifying and absorbing medium

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 1, 1966, 19-22

TOPIC TAGS: coherent light, light pulse, laser beam, laser r and d, pulse shape, ruby optic material

ABSTRACT: This is a continuation of earlier work by the authors (ZhETF v. 50, 23, 1966), where propagation of coherent light in a medium with nonlinear gain was investigated and the possible shortening of light pulses in such a medium predicted. The present letter reports on successful experiments in this direction, showing that to obtain compression of a propagating light pulse it is necessary to eliminate the transverse structure that is produced in the light pulse when the latter is produced, for example, by a Q-switched laser. In the test setup (Fig. 1) the amplifying component consisted of three ruby crystals and the absorbing component was two cuvettes filled with a solution of vanadium phthalocyanine in toluene. In the initial experiments the pulse compression could not be realized because of the transverse structure resulting

Card 1/2

L 00574-67

ACC NR: AP6023635

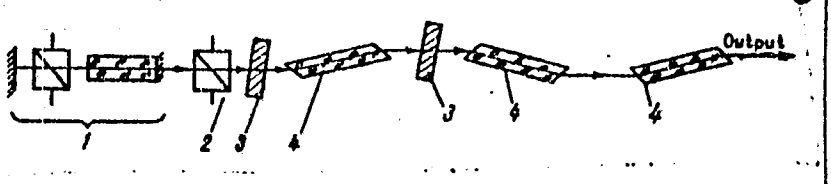

Fig. 1. Diagram of experiment. 1 - Laser, 2 - Kerr shutter, 3 - cuvette, 4 - ruby crystal

from the fact that the development of pulse generation in the peripheral parts of the crystal is delayed by a time of the order of the pulse duration. Success was attained when this structure was eliminated by means of a second Kerr shutter that cut off the leading front of the generator pulse. The pulse width was reduced from about 11 nsec (at 0.5 J energy) past the Kerr shutter and the first absorbing cuvette to 5.7 nsec (10 J) past the second amplifying crystal, and 2 nsec (15 J) past the third. A light output of 7 - 8 GW (3 GW/cm^2) was attained. The pulse power is much higher than the power causing damage in ruby crystals at 10^{-8} sec duration (1 GW/cm^2). Although damage to the crystal is hindered by the short duration of the pulse, it does not prevent generation of powerful light pulses shorter than 10^{-9} sec. It is concluded that extremely short light pulses are obtainable with two-component media in which the absorbing component has a saturation energy much lower and a homogeneous line width much larger than the amplifying medium. Orig. art. has: 2 figures. [02]

SUB CODE: 20/ SUBM DATE: 03May66/ ORIG REF: 003/ OTH REF: 001/ ATD PRESS: 5037

Card 2/2 vlr

L 21840-66 EEC(k)-2/EWA(h)/EWP(k)/EWT(l)/FBD/T IJP(c)

ACC NR: AP6004913 SOURCE CODE: UR/0056/66/050/001/0023/0034

AUTHOR: Basov, N. G., Ambartsumyan, R. V., Zuyev, V. S., Kryukov, P. G., Letokhov, V. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

51

8

TITLE: Nonlinear amplification of a light pulse 25

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 1, 1966, 23-34

TOPIC TAGS: laser, nonlinear optics, stimulated emission, quantum amplifier

ABSTRACT: A theoretical and experimental analysis is made of the passage of a powerful light pulse from a laser through a laser amplifier consisting of two ruby rods operating in a saturation regime. The preliminary experimental results have already been reported (Akademiya nauk SSSR. Doklady, v. 165, no. 1, 1965, p. 58-60 (see ATD Press, v. 4, no. 138, p. 7-8)). In the experiments performed, it was shown that as the result of nonlinear amplification the velocity of the pulse is 6—9 times greater than the velocity of light in vacuum. To decrease the pulse duration during nonlinear amplification, the slope of the incident pulse should be

Card 1/2

L 21840-66

ACC NR: AP6004913 O

increased by chopping off the exponential leading edge of the pulse. By using a second Kerr cell, the duration of the pulse was shortened from 8.7 ± 0.5 nsec to 4.7 ± 0.5 nsec and the time from 3.7 ± 0.5 nsec to 1.9 ± 0.5 nsec. The theoretical analysis of nonlinear amplification predicts both of the observed effects. Orig. art. has: 19 formulas and 8 figures. [CS]

SUB CODE: 20/ SUBM DATE: 31Jul65/ ORIG REF: 011/ OTH REF: 008

Card 2/2 nst

L 44795-66 EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k) IJP(c) WJ/WH

ACC NR: AP6031433 SOURCE CODE: UR/0056/66/051/002/0406/0411

AUTHOR: Ambartsumyan, R. V.; Basov, N. G.; Zuyev, V. S.; Kryukov, P. G.; Letokhov, V. S.; Shatberashvili, O. B. 55 B

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: The structure of a giant pulse of a Q-switched laser 75

SOURCE: Zh eksper i teor fiz, v. 51, no. 2, 1966, 406-411

TOPIC TAGS: solid state laser, ruby laser, giant pulse laser, Q switched laser, laser output

ABSTRACT: The spatial and temporal development of a giant pulse of a Q-switched ruby laser in a transverse direction and the effects of the cavity on it were investigated experimentally by means of the setup shown in Fig. 1. A ruby rod 9 mm in diameter and 120 mm long with dull lateral surfaces was placed in a reflector with a helical IFK-15000 flashlamp. For an 8-kj pump the gain per pass was approximately 12. A 1.5-j single laser pulse was generated with a duration of 10—15 nanosec. Q-switching was done by means of a Kerr cell or a vanadium phthalocyanin solution. The exponential results indicate that generation commences in the center of the crystal and spreads transversely over the entire crystal in 3—10 nanosec, i.e., in a time comparable to the duration of the integral pulse. The spatial development of generation

Card 1/2

L 44793-66

ACC NR: AP6031433

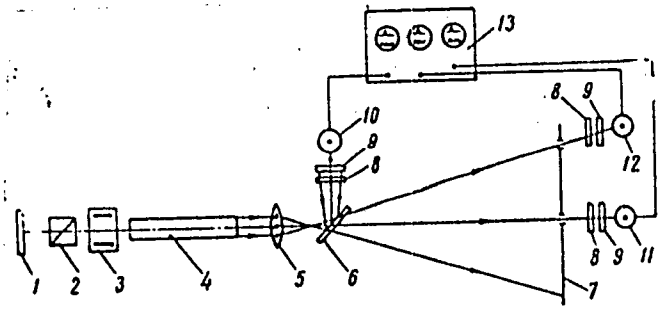

Fig. 1. The experimental setup

1 - Mirror 99% reflective; 2 - polarizer; 3 - Kerr cell; 4 - ruby crystal; 5 - lens; 6 - semitransparent plate; 7 - screen with diaphragms; 8 - interference filter; 9 - dull glass; 10-12 - coaxial photocells; 13 - multibeam oscillograph.

depends essentially on the density distribution of population inversion in the crystal and on its refractive index. The experimental data agree fully with theoretical data presented elsewhere (V. S. Letokhov and A. F. Suchkov, ZhETF, 50, 1966, 1148). The authors propose further experiments on the measurement of nonuniformity of the complex permittivity at the instant of Q-switching and generalization of the theory for the case of a nonuniform refractive index. Orig. art. has: 7 figures. [YK]

SUB CODE: 20/ SUBM DATE: 06Mar66/ ORIG REF: 007/ OTH REF: 006/ ATD PRESS: 5080

Card 2/2 blg

L 17579-66 EEC(k)-2/EWP(k)/EWP(l)/EWT(m)/T/EWP(e) [illegible]

ACC NR: AP6032467 SOURCE CODE: UR/0056/66/051/003/0724/0729

58
57
B

AUTHOR: Ambartsumyan, R. V.; Basov, N. G.; Kryukov, P. G.; Letokhov, V. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Laser with a nonresonant feedback

15

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 3, 1966, 724-729

TOPIC TAGS: solid state laser, ruby laser, nonresonant feedback, ~~laser~~ laser r and d

ABSTRACT: A description is given of a pulsed laser with a nonresonant feedback achieved by back scattering of radiation (See also FSB, v. 2, no. 5, 1966, 1—6). The arrangement used in the experiments is shown in Fig. 1. The active medium

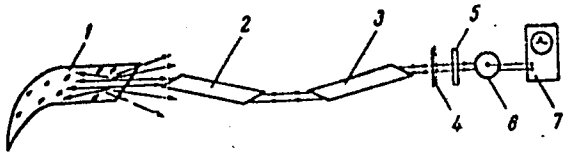

Fig. 1. Experimental arrangement

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ACC NR: AP7003209 SOURCE CODE: UR/0056/66/051/006/1669/1675

AUTHOR: Ambartsumyan, R.V.; Kryukov, P.G.; Letokhov, V.S.

ORG: Physics Institute im. P.N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Dynamics of spectral line narrowing in a nonresonant feedback laser

SOURCE: Zh eksper i teor fiz, v. 51, no. 6, 1966, 1669-1675

TOPIC TAGS: solid state laser, ruby laser, ~~nonresonant feedback laser~~, laser ~~output~~ emission

ABSTRACT: The authors proceed from rate equations for the spectral density of the photons and for the density of the active particles. The time-dependent line width $\Delta\nu$, is expressed in terms of exact solutions through numerical integration, and also in terms of a simplified formula which shows that $\Delta\nu$, after an initial transient-state period, grows roughly as $k/\sqrt{E}$ (k—threshold gain per pass), i.e., much more slowly than in lasers with resonant feedback. The experimental part of the paper deals with the

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ACC NR: AP7003209

spectral analysis of the emission of a nonresonant feedback ruby laser by the method of the Fabry-Perot interferometer and the rotating-mirror spectrograph. The parameters of this laser were described earlier (Ambartsumyan, R. V., N. G. Basov, P. G. Kryukov, V. S. Letokhov. ZhETF, PvR, 3, 1966, 262; ZhETF, v. 51, no. 2, 1966, 724). The observed values of the spectral width are shown to confirm the theory. White paper and magnesium oxide were used as surface scatterers, and smoke and sulfur hydrosols were used as volume scatterers. With smoke the threshold gain per pass k was naturally very high, and narrowing (to 0.03 cm^{-1}) occurred quite rapidly (in 100—300 μsec).

SUB CODE: 20/ SUBM DATE: 19Jul66/ ORIG REF: 005/ OTH REF: 005
ATD PRESS: 5113

Card 2/2

AMBARTSUMYAN, S.A.

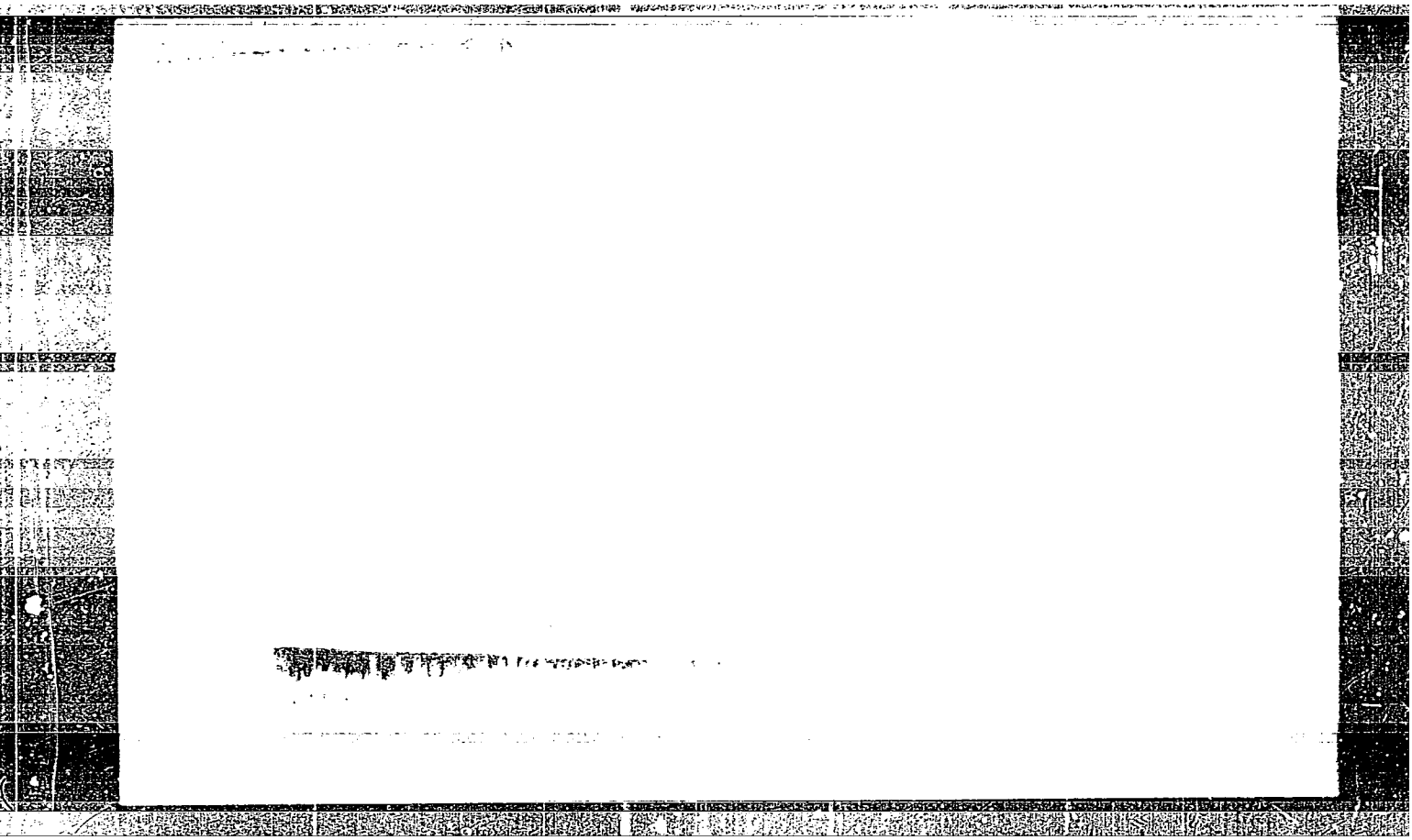
Approximate method for calculating sloping thin shells. Dokl.AN Arm.SSR 6 no.3:65-69 '47. (MLRA 9:8)

1. Institut stroitel'nykh materialov i sooruzheniy Akademii nauk. Armyanskoy SSR, Yerevan. Predstavleno A.G. Nazarovym.
(Elastic plates and shells)

AMBARTSUMYAN, S.A.

Some problems in the theory of anisotropic shells. Izv.AN Arm. SSR.Est.nauki no.9:55-77 '47. (MLRA 9:8)

1. Institut Stroymaterialov i sooruzheniy AN Arm. SSR.
(Roofs, Shell) (Structures, Theory of)



AMBARTSUMYAN, S.A.

Momentless theory of anisotropic shells. Izv.AN Arm.SSR.Ser. FMET nauk 1 no.6:461-471 '48. (MLRA 9:8)

1. Institut stroitel'nykh materialov i sooruzheniy Akademii nauk Armyanskoy SSR.
(Strains and stresses) (Elastic plates and shells)

AMBARTSUMYAN, S.A.

Symmetrically loaded anisotropic shells of revolution. Dokl.AN Arm. SSR 9 no.5:203-206 '48. (MLRA 9:10)

1. Institut stroitel'nykh materialov i sooruzheniy Akademii nauk Armyanskoy SSR, Yerevan. Predstavleno A.G. Nazarovym.
(Elastic plates and shells)