AROS, Miroslav, Prof., Dr.

Prevention of the diseases of the motor system. Acta chir. orthop. traum. cech. 23 no.2:95-96 Feb 56.

1. Z I. Kliniky proorthopedickou a detskou Chirurgii prof. Zahradnicka, Praha.
(MOVEMENT DISORDERS, prev. & control
(Cz))

AROSHIDZE, G. I.

Aroshidze, G. I.: "Treatment of surgical brucellosis," (Report) Trudy III Zakavkazsk. s"yezda khirurgov, Yerevan, 1948 (on cover: 1949), p. 299-302

SO: U-5240, 17 Dec. 53, (Letopis 'zhurnal (nykh Statey, No. 25, 1949).

ARCHIDZE, T. A.

"Relating to the Origin of the Georgian "Dika" Wheat, Triticum carthlicum Nevski." Cand Biol Sci, Inst of Botany, Acad Sci Georgian SSR, Tbilisi, 1953. (RZhBiol, No 1, Sep 54)

SO: Sum 432, 29 Mar 55

AROSHIDZE, N.A.

Origin of the Triticum carthlicum Nevski wheat. Trudy Tbil. bot. inst. 18:235-250 '56. (MLRA 10:4)
(Georgia--Wheat)

AROSHKOV, M.I.

AUTHOR: None Given. 24-12-24/24

TITLE: Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division. (Yubileynyye nauchnye zasedaniya Institutov Otdeleniya Tekhnicheskikh Nauk)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.12, p.100. (USSR)

ABSTRACT: In October-November, 1957 various scientific sessions were held commemorating the 40th anniversary of the Soviet Revolution.

Institute of Mining. Academician L. D. Shevyakov read a paper on the mining science in the U.S.S.R. during the last forty years;

A. P. Sudoplatov read a paper on "Development of the Technology of Underground Coal Mining in the U.S.S.R.";

N. V. Mel'nikov read the paper "Development of Open Cast Mining in the Soviet Union";

M. I. Aroshkov read the paper "Scientific and Technical Progress in the Soviet Union during the Last Forty Years in the Field of Working Ore Deposits";

I. N. Plaksin read the paper "Beneficiation of Useful Minerals in the Soviet Union".

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Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division.

Institute of Mined Fuels. N. G. Titov read the paper "Forty Years of Soviet Science Relating to Solid Fuel";
K. I. Syskov read the paper "Soviet investigations of coking coal";
N. V. Lavrov read the paper "Soviet Research on Combustible Gases";
T. A. Kukharenko read the paper on the "Successes of Soviet Scientists in Studying the Chemical Structure and the Origin of Solid Mined Fuels";
N. M. Karavayev read the paper "Successes of Soviet Science in Obtaining Chemical Products and Liquid Fuel from Solid Fuel".

Institute of Mechanical Engineering. After the opening address of A. A. Blagonravov, Academician V.I.Dikushin dealt with "Automation of Technological Processes in Engineering";
F. S. Dem'yanyuk dealt with "Fundamental Problems of Automation of Technological Processes";
A. Ye. Kobrinskiy dealt with "Work of the Institute of Mechanical Engineering, Ac.Sc. U.S.S.R. in the Field of Programmed Control of Metal Cutting Machine Tools";
N. I. Levitskiy dealt with "The Theory of Synthesis of Mechanisms".

Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division.

Institute of Metallurgy imeni A. A. Baykov.
I. P. Bardin dealt with the "Technical Progress of Ferrous Metallurgy";
D. M. Chizhikov dealt with "Forty years of Soviet Metallurgy".
Institute of Mechanics.
P. Ya. Kochin dealt with the "Development of the Theory of Filtration in the Soviet Union";
V. Z. Vlasov dealt with "Modern Investigations in the Field of the Theory of Shells and Their Importance in Engineering and Civil Engineering";
A. A. Movchan dealt with "Auto-oscillation of plates in a flow";
Kh. A. Rakhmatulin dealt with "Investigation of Sectionally Stationary Wave Processes in Continuous Media";
V. V. Sokolovskiy dealt with "The Present State of the Statics of Loose Media and its Application to Technical Problems".
Oil Institute. N. I. Titkov dealt with the "Scientific Results of the Activity of the Oil Institute"

Card 3/5

Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division.

Academician S. I. Mironov dealt with "Development of Oil Geology During the Last Forty Years";
M. F. Mirchink dealt with the "Increase of the Oil Resources of the Soviet Union During the Last Forty Years";
Academician A. V. Topchiyev dealt with "Certain Problems of the Oil-Chemical Synthesis";
A. P. Krylov dealt with the "Fundamental Principles of a Rational Working of Oil Deposits".

Institute of Radio Engineering and Electronics.

The Vice Minister for Telecommunications, Z. V. Topuria dealt with the "Development of Communications During the Forty Years of Soviet Rule", whilst Yu. I. Kaznacheyev dealt with "Wide-band long distance communications on wave guides of circular cross section".

Power Institute imeni G. M. Krzhizhanovskiy.

V. I. Veyts dealt with "Power Generation as a Factor of Developing the National Economy";
Academician M. A. Mikheyev dealt with the "Development of the Science of Heat Transfer During the Last Forty Years";

Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division.

E. A. Meyerovich dealt with "The Development of General Methods of Theoretical and Experimental Electrical Engineering in the Work of the Power Research Institute";
M. A. Styrikovich dealt with the "Fundamental trends of the Thermal Power Stations in Conjunction with the Development of the Fuel Bases of the Soviet Union";
Z. F. Chukhanov dealt with the "Power Utilisation of Fuel";
G. N. Kruzhilin dealt with "Power Stations with Water Pool Atomic Reactors";
I. M. Markovich dealt with "Long Distance Power Transmission and Power Systems".

Institute of Automation and Telemechanics.

V. A. Trapeznikov dealt with the "Successes of Automation and Telemechanics During the Last Forty Years".

AVAILABLE: Library of Congress.

Card 5/5

L 4357-66

ACC NR: AP5028786 SOURCE CODE: BU/0013/65/018/002/0191/0194

AUTHOR: Atzev, E.; Arnautyunov, V.

ORG: Group of Neurology and Psychiatry, Bulgarian Academy of Science; Institute of Physiology at the Georgian Academy of Science, Tbilisi

TITLE: Simultaneous macro- and micro-electrode investigations of certain epileptic manifestations in cats' somatosensory cortex

SOURCE: Bulgarska akademiya na naukite, v. 18, no. 2, 1965, 191-194

TOPIC TAGS: cerebral cortex, experiment animal, electroencephalography, neuron, neurology

ABSTRACT: [English article] The purpose of this investigation, which was part of a more detailed experimental work on relations between the somatosensory cortex global and neuronal activity, carried out at the Institute of Physiology at the Georgian Academy of Sciences under the guidance of its Director, Prof. S. P. Narikashvili, was to study certain relations between the slow electrocorticographical activity and neuronal discharges in the case of strychnine epileptogenic focus in cats' somatosensory cortex, on the basis of earlier simultaneous macro- and micro-electrode investigations by the authors and of data from literature (e.g., J. R. Atkinson, J. M Mace, A. A. Wardt, Electroenceph. clin. Neurophysiol., 13, 1961, 824 M. Shwa, N. Murjama, S. Koji, Electroenceph. clin. Neurophysio., 15, 1963, 821). The

Card 1/2

L 4357-66

ACC NR: AP5026786

experiments were made on 15 cats under nembutal narcosis and systematic anesthesia of the painful surfaces with novocain. After describing the experimental method and presenting the results in the form of electrocorticograms (ECoG), the authors conclude that the relations between neuronal discharges and the electrocorticographic activity of the somatosensory cortex with local strychnine application can be explained only if one assumes that, on the one hand, in agreement with other authors (D. P. Purpura, Internat. Review of Neurobiology, 1, 1959, 47) ECoG is primarily a result of the integration of the postsynaptic potentials and, on the other, the neuronal discharges appear at a certain level of depolarization of the cellular membrane which also depends on the synaptic activity. The work was presented by G. Usunoff, Academician, 10 Nov. 64. Orig. art. has: 4 figures. [JPRS]

SUB CODE: LS / SUBM DATE: 10Nov64 / OTH REF: 011

KC

Card 2/2

ATZEV,E.; ARCU1YUNOV,V.

Relations between neuronal discharges in #oma[illegible]ensory cortex and secondary Forbes response in cats. Dokl. Bolg. akad. nauk. 18 no.3:271-274 '65

1. Submitted on November 10, 1964.

L 02155-67
ACC NR: AP6035989 SOURCE CODE: BU/0011/65/018/003/0271/0274

ATZEV, E., AROUTYUNOV, V., Institute of Physiology of the Georgian Academy of Sciences, Tbilisi, USSR; Group of Neurology and Psychiatry, Bulgarian Academy of Sciences

B

"Relations between Neuronal Discharges in Somatosensory Cortex and Secondary Forbes Response in Cats"

Sofia, Doklady Bolgarskoy Akademii Nauk, Vol 18, No 3, 1965, pp 271-274

Abstract: /English article/ The study investigated the relations between neuronal discharges in the somatosensory cortex and the so-called secondary response of Forbes, the nature of which is not sufficiently clear yet (see, e.g., E. Crighel, V. Nestianu, A. Kreindler, Stud. cercet., 4, 1959, 125; K. M. Kulanda, in: Fundamental Questions of Electrophysiology of the CNS, Kiev, 1962). The study was a part of a systematic investigation of the cortical-subcortical mechanisms of sensory regulation by means of macro- and micro-electrode investigations at the Institute of Physiology of the Georgian Academy of Sciences under the guidance of its Director S. P. Narikashvili. Tests were carried out on fifteen adult cats under nembutal narcosis of varying intensity. In almost one third of the neurons investigated, the relation between the secondary evoked potential in the EOpG and its corresponding secondary discharge response is similar, in principle, to the

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L 02155-67

ACC NR: AP6035989

relations between the primary evoked potential and its associated primary discharge response. The article concludes with a discussion of the possible explanation of the observed phenomena. This paper was presented by Academician G. Usunoff on 10 November 1964. Orig. art. has: 3 figures. [JPRS]

TOPIC TAGS: cat, electrophysiology, EEG, neuron, neurophysiology

SUB CODE: 06 / SUBM DATE: 10Nov64 / SOV REF: 003 / OTH REF: 012

Card 2/2

S/032/60/005/004/002/007
B 111/ C 333

16,6100 16.6200

AUTHORS: Arov, D. Z., Bobrov, A. A.

TITLE: The Extreme Members of Sample and Their Role in the Sum of the Independent Variables[16]

PERIODICAL: Teoriya veroyatnostey i yeye primeneniye, 1960, Vol. 5, No. 4, pp. 415-435

TEXT: Let $x_1, x_2, \ldots, x_n$ be independent equally distributed random variables; $F(x)$ their distribution function; $\chi(x) = 1 - F(x)$ for $x > 0$ and $= F(x)$ for $x < 0$. Let

(1) $$\lim_{x \to +\infty} \frac{\chi(kx)}{\chi(x)} = \frac{1}{k^{\alpha}}, \quad 0 \leq \alpha \leq \infty, \quad k > 0 \text{ arbitrary}$$

(2) $$\lim_{x \to +\infty} \frac{\chi(-x)}{\chi(x)} = c, \quad 0 \leq c \leq +\infty$$

If

(3) $\xi_1^{(n)}, \xi_2^{(n)}, \ldots, \xi_n^{(n)}$

are the same variables $x_1, x_2, \ldots, x_n$, written in the sequence of

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The Extreme Members of Sample and Their Role in the Sum of the Independent Variables

decreasing moduli: $|\xi_1^{(n)}| \geq |\xi_2^{(n)}| \geq \ldots \geq |\xi_n^{(n)}|$, then $\xi_k^{(n)}$ is called for fixed $k < n$ the extreme member of (3) and k its order number.

Theorem 1: If $\chi(x)$ satisfies the condition (1) with the exponent α, $0 \leq \alpha \leq \infty$, then the inverse function satisfies for every $k > 0$ the condition

$$(6) \quad \lim_{x \to +0} \frac{\chi^{-1}(kx)}{\chi^{-1}(x)} = \frac{1}{k^{1/\alpha}} .$$

Theorem 2: Under the assumptions of theorem 1 it holds

$$(7) \quad \lim_{x \to +\infty} \int_0^1 \left| \frac{\chi(ux)}{\chi(x)} - \frac{1}{u^{\alpha}} \right| du = 0 \text{ for } 0 \leq \alpha < 1$$

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S/032/60/005/0[illegible]/002/007
B 111/ 0 353

The Extreme Members of Sample and Their Role in the Sum of the Independent Variables

(8) $$\lim_{x \to +\infty} \int_1^{\infty} \left| \frac{\chi(ux)}{\chi(x)} - \frac{1}{u^{\alpha}} \right| du = 0 \text{ for } 0 < \alpha < \infty .$$

Theorem 3: For arbitrary fixed natural k and m, $k < m$ and arbitrary parameters α and c, $0 < \alpha < +\infty$, $0 \leq c \leq +\infty$ for $n \to \infty$ the density of the joint limit distribution of the normed extreme members $\frac{\xi_k^{(n)}}{a_n}$ and $\frac{\xi_m^{(n)}}{a_n}$, where $a_n = (1+c)^{1/\alpha} \chi^{-1}(\frac{1}{n})$, is given by

(17) $$\varphi_{k,m}(y,x) = p^2 \varphi^+_{k,m}(y,x) + pq\varphi^+_{k,m}(y,-x) + pq\varphi^+_{k,m}(-y,x) + q^2\varphi^+_{k,m}(-y,-x)$$

where the density of the limit distribution of $\frac{|\xi_k^{(n)}|}{a_n}$ and $\frac{|\xi_m^{(n)}|}{a_n}$ is determined by

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The Extreme Members of Sample and Their Role in the Sum of the Independent Variables

$$(16)\quad \varphi^{+}_{k,m}(y,x) = \begin{cases} \dfrac{\alpha^2}{(k-1)!\,(m-k-1)!} \cdot \dfrac{(y^{\alpha}-x^{\alpha})^{m-k-1}\, e^{-x^{\alpha}}}{y^{\alpha(m-1)+1}\, x^{\alpha(m-k)+1}} & \text{for } 0<x<y \\ 0 & \text{elsewhere} \end{cases}$$

Here it is $p = \frac{1}{1+C}$, $q = \frac{C}{1+C}$.

Theorem 4: Adopt the notations of theorem 3 and assume only (2). Then the density $\varphi^{*}_{k,m}(y,x)$ of the joint limit distribution of the variables $n\chi(\xi_k^{(n)})$ and $n\chi(\xi_m^{(n)})$ for arbitrary fixed k and m, $k<m$, and for $n \to \infty$ is given by

$$(23)\ \varphi^{*}_{k,m}(y,x) = \varphi^{*+}_{k,m}\left(\frac{y}{p}, \frac{x}{p}\right) + \varphi^{*+}_{k,m}\left(\frac{y}{p}, \frac{x}{q}\right) + \varphi^{*+}_{k,m}\left(\frac{y}{q}, \frac{x}{p}\right) + \varphi^{*+}_{k,m}\left(\frac{y}{q}, \frac{x}{q}\right),$$

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3/052/60/005/004/002/007
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The Extreme Members of Sample and Their Role in the Sum of the Independent Variables

where

$$\varphi^{*+}_{k,m}(y,x) = \begin{cases} \dfrac{y^{k-1}(x-y)^{m-k-1}e^{-x}}{(k-1)!(m-k-1)!} & \text{for } 0 < y < x \\ 0 & \text{elsewhere} \end{cases} .$$

Let $\rho_n = x_1 + x_2 + \ldots + x_n = \xi_1^{(n)} + \xi_2^{(n)} + \ldots + \xi_n^{(n)}$.

Theorem 5: Let

$$\rho_n^{(k)} = \begin{cases} s_n - \sigma_k^{(n)} & \text{for } 0 < \alpha < 1 \\ s_n - na & \text{for } 1 < \alpha < 2 \end{cases} , \quad \sigma_k^{(n)} = \xi_1^{(n)} + \ldots + \xi_k^{(n)} ,$$

$$a = \int_{-\infty}^{\infty} x dF(x) , \quad a_n = \begin{cases} (1+c)^{1/\alpha} \chi^{-1}\left(\frac{1}{n}\right) & \text{for } 0 < \alpha < 1 \\ \chi^{-1}\left(\frac{1}{n}\right) & \text{for } 1 < \alpha < 2 \end{cases} .$$

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The Extreme Members of Sample and Their Role in the Sum of the Independent Variables

Under the assumptions of theorem 3 the joint limit distribution of $\frac{\zeta_n^{(k)}}{a_n}$ and $\frac{\xi_k^{(n)}}{a_n}$ possesses the characteristic function $f_k(t_1, t_2)$ which is defined by: for $0 < \alpha < 1$:

$$(25)\quad f_k(t_1,t_2) = \frac{1}{(k-1)!}\int_0^\infty u^{k-1}e^{-\mu(t_1,u)}d_u\mu(t_2,u), \text{ where}$$

$$\mu(t,u) = u(pe^{itu^{-\frac{1}{\alpha}}} + qe^{-itu^{-\frac{1}{\alpha}}}) - it\int_0^{u^{-\frac{1}{\alpha}}}(pe^{itz}-qe^{-itz})\frac{dz}{z^\alpha}$$

and similarly for $1 < \alpha < 2$.

Theorem 6: Under the assumptions of theorem 3 it holds for $\alpha = 0$ and arbitrary fixed natural k and p:

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S/052/60/005/004/002/007
C 111/ C 333

The Extreme Members of Sample and Their Role in the Sum of the Independent Variables

$$(38)\quad \lim_{n\to\infty} \underline{M}\left(\frac{s_n - \sigma_k^{(n)}}{\zeta_k^{(n)}}\right)^p = 0 .$$

Theorem 7: Under the assumptions of theorem 3 and $0 < \alpha < 1$, $k_n \to \infty$ and $\frac{k_n \ln n}{n} \to 0$ for $n \to \infty$, all x_i of the sequence $\{x_i\}$ are nonnegative, it holds

$$(42)\quad \lim_{n\to\infty} \underline{M}\left[\frac{s_n - \sigma_{k_n}^{(n)}}{k_n \zeta_{k_n}^{(n)}} - \frac{\alpha}{1-\alpha}\right]^2 = 0 .$$

Theorem 8: Under the assumptions of theorem 7 it holds for $1 < \alpha < 2$:

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C 111/ C 333

The Extreme Members of Sample and Their Role in the Sum of the Independent Variables

$$(46)\quad \lim_{n\to\infty} \underline{M}\left[\frac{\sigma k_n}{k_n \zeta(n)_{k_n}} - \frac{\alpha}{\alpha - 1}\right]^2 = 0$$

$$(47)\quad \lim_{n\to\infty} \underline{M}\left[\frac{S_n - n\alpha}{k_n \zeta(n)_{k_n}}\right]^2 = 0 .$$

Numerous corollaries are given.

There are 4 references: 3 Soviet and 1 American.

SUBMITTED: November 10, 1958

Card 8/8

Arov, D. Z.

PHASE I BOOK EXPLOITATION SOV/6371

Vsesoyuznoye soveshchaniye po teorii veroyatnostey i matematicheskoy statistike. (6th, Vilnius, 1960.

Trudy VI Vsesoyuznogo soveshchaniya po teorii veroyatnostey i matematicheskoy statistike i kollokviuma po raspredeleniyam v beskonechnomernykh prostranstvakh (Transactions of the Sixth Conference on Probability Theory and Mathematical Statistics and of the Symposium on Distributions in Infinite-Dimensional Spaces held in Vilnius 5-10 September 1960) Vilnius, Gospolitizdat LitSSR, 1962. 493 p. 2500 copies printed.

Sponsoring Agency: Akademiya nauk Litovskoy SSR. Vil'nyusskiy gosudarstvennyy universitet imeni V. Kapsukasa. Matematicheskiy institut imeni V. A. Steklova, Akademiya nauk SSSR.

Editorial Board: N. N. Vorob'yev, B. V. Gnedenko, R. L. Dobrushin, Ye. B. Dynkin, A. N. Kolmogorov, I. P. Kubilyus, Yu. V. Linnik, Yu. V. Prokhorov, N. V. Smirnov, V. A. Statulyavichyus, and A. M. Yaglom. Ed.: D. Melinene; Tech. Ed.: O. Pakerite.

Card 1/[illegible]

PURPOSE: Dissemination of scientific information.

COVERAGE: Because of various editorial difficulties, not all papers presented at the Conference could be included. The 36 papers presented here are divided by subject matter into 6 sections (see Table of Contents). The editors thank the members of the Mathematical Section of the Institute of Physics and Mathematics of the Lithuanian Academy of Sciences and the Department of Probability Theory and Number Theory at Vil'nyus University, particularly A. K. Aleshkyavichene, A. A. Mitalauskas, B. A. Ryauba, and R. V. Uzhdavinis. References, cited in the text at the end of the individual reports, comprise 489 entries: 316 Soviet (a number of which are translations), 2 Hungarian, 1 Polish, 139 English, 20 French, 10 German, and 1 Italian.

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LIMIT THEOREMS

AROV D Z.

PHASE I BOOK EXPLOITATION SOV/6374

Vsesoyuznoye soveshchaniye po teorii veroyatnostey i matematicheskoy statistike. 6th, Vilnius, 1960.

Trudy VI Vsesoyuznogo soveshchaniya po teorii veroyatnostey i matematicheskoy statistike i kollokviuma po raspredeleniyam v beskonechnomernykh prostranstvakh (Transactions of the Sixth Conference on Probability Theory and Mathematical Statistics and of the Symposium on Distributions in Infinite-Dimensional Spaces held in Vilnius 5-10 September 1960) Vilnius, Gospolitizdat Lit SSR, 1962. 493 p. 2500 copies printed.

Sponsoring Agency: Akademiya nauk Litovskoy SSR. Vil'nyusskiy gosudarstvennyy universitet imeni V. Kapsukasa. Matematicheskiy institut imeni V. A. Steklova, Akademiya nauk SSSR.

Editorial Board: N. N. Vorob'yev, B. V. Gnedenko, R. L. Dobrushin, Ye. B. Dynkin, A. N. Kolmogorov, I. P. Kubilyus, Yu. V. Linnik, Yu. V. Prokhorov, N. V. Smirnov, V. A. Statulyavichyus, and A. M. Yaglom. Ed.: D. Melishene; Tech. Ed.: O. Pakerite.

Card 1/17

1/3

Transactions of the Sixth Conference (Cont.) SOV/6371

PURPOSE: Dissemination of scientific information.

COVERAGE: Because of various editorial difficulties, not all papers presented at the Conference could be included. The 86 papers presented here are divided by subject matter into 3 sections (see Table of Contents). The editors thank the members of the Mathematical Section of the Institute of Physics and Mathematics of the Lithuanian Academy of Sciences and the Department of Probability Theory and Number Theory at Vil'nyus University, particularly A. K. Aleshkyavichene, A. A. Mitalauskas, B. A. Rysuba, and R. V. Uzhdavinis. References, cited in the text at the end of the individual reports, comprise 489 entries: 316 Soviet (a number of which are translations), 2 Hungarian, 1 Polish, 139 English, 20 French, 10 German, and 1 Italian.

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Transactions of the Sixth Conference (Cont.) SOV/5371

LIMIT THEOREMS

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AROV, D.Z.

Topological similarity of automorphisms and translations of compact commutative groups. Usp. mat. nauk 18 no.5:133-138 S-O '63. (MIRA 16:12)

ADAMYAN, V.M.; AROV, D.Z.

A class of scattering operators and characteristic operator-funtions of compression. Dokl. AN SSSR 160 no.1:9-12 Ja '65. (MIRA 18:2)

1. Submitted June 20, 1964.

ADAMYAN, V.M.; AROV, D.Z.

Scattering operators and contraction subgroups in Hilbert space.
Dokl. AN SSSR 165 no.1:9-12 N '65. (MIRA 18:10)

1. Submitted March 31, 1965.

AROV, F.I., redaktor; SOKOLOVA, T.F., tekhnicheskiy redaktor

[Catalog of wholesale prices for steam turbines, hydraulic turbines, turbo-compressors and turbine pumps; decree of the Soviet of Ministers of the U.S.S.R., no.5883 of December 27, 1949; effective January 1, 1950] Preiskurant optovykh tsen na turbiny parovye, gidroturbiny, turbokompressornye mashiny i turbonasosy; utverzhden Postanovleniem Soveta Ministrov SSSR No.5833 ot 27 dekabria 1949 g. Vvoditsia v deistvie s 1 ianvaria 1950 g. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1949. 93 p. [Microfilm] (MLRA 9:11)

1. Russia (1923- U.S.S.R.) Ministerstvo tyazhelogo mashinostroyeniya.
(Turbomachines--Prices)

AROV, O.

KOZLOV, Genrikh Abramovich, AROV, O., red.

[First steps in the development of commodity production; an introduction to the theory of commodity production] Pervye stupeni v razvitii tovarnogo proizvodstva; vvedenie v teoriiu tovarnogo proizvodstva. Moskva, Gos.izd-vo polit.lit-ry, 1957. 134 p. (MIRA 11:2)

(Economics)

28(1);25(1) PHASE I BOOK EXPLOITATION SOV/2831

Mekhanizatsiya i avtomatizatsiya trudoyemkikh protsessov v liteynom proizvodstve (Mechanization and Automation of Labor-consuming Processes in Foundry Practice) Moscow, Mashgiz, 1959. 226 p. Errata slip inserted. 4,000 copies printed.

Reviewer: K. M. Skobnikov, Candidate of Technical Sciences; Ed. (Title page): G. I. Kobylyanskiy (Deceased); Ed. (Inside book): A. N. Sokolov, Candidate of Technical Sciences; Tech. Ed.: O. V. Speranskaya; Managing Ed. for Literature on the Technology of Machinery Manufacture (Leningrad Division, Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: The book is intended for technical personnel in foundries and engineers engaged in the mechanization and automation of industrial processes. It may also be used by students of institutions of higher technical education.

COVERAGE: The book deals with recent achievements in the mechanization and automation of time-and labor-consuming operations in foundries. Specific instances of mechanization and automation of foundry processes are described. The material presented

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in this book is divided into six parts, dealing with the following subjects: molding materials, mold and coremaking, casting, shakeout of molds, finishing of castings, and special casting methods. Each part consists of a number of technical papers presented by several authors. The application of automation ranges from the preparation of molds and cores to the mechanization and streamlining of specialized casting methods, such as investment casting and the use of shell molds. There are numerous diagrams showing automatized and mechanized installations in foundries. Most of the material is based on experiments and work done at the "Krasnyy Aksay" Plant. Some of the methods described appear to be in the experimental stage at that plant. The technical papers published in this book were originally presented at a technical conference of the Soviet machine industry in October 1957. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

PART II. MOLD AND COREMAKING

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Card 8/9

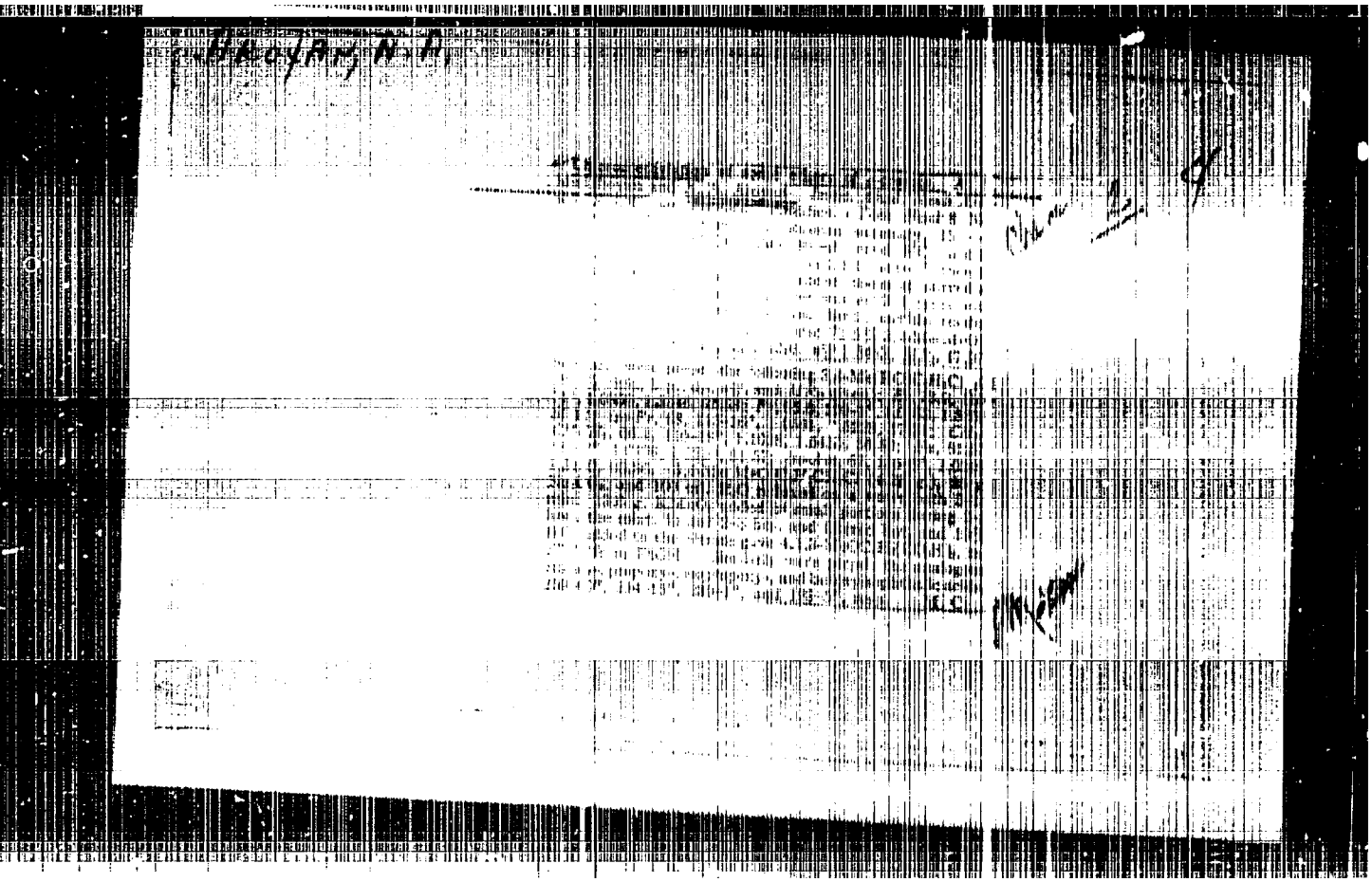
1. AROVADZE, V.L.

2. USSR (600)

4. Leucitite - Makharadze District

7. Leucitites and tephrites of Guriya in the Makharadze District of the Georgia S.S.R. (Abstract) Izv.Glav.upr.geol.fon. no.3 1947

91 Monthly List of Russian Accessions. Library of Congress. March 1953. Unclassified.



AUTHOR: None given

Call Nr: AP 1135663

TITLE: Syntheses of Heterocyclic Compounds (Sintezy geterotsiklicheskikh soyedineniy)

PUB. DATA: Izdatel'stvo AN Armyanskoy SSR, Yerevan, 1956, 84 pp., 2000 copies

ORIG. AGENCY: Akademiya nauk Armyanskoy SSR. Institut tonkoy organicheskoy khimii

EDITOR: A. L. Mndzhoyan, Editor-in-Chief
Editorial Staff: Aroyan, A. A., Afrikyan, V. G., Babiyan, N. A., Mndzhoyan, O. L., Tatevosyan, G. T.

PURPOSE: The purpose of this book is to facilitate the work of scientists engaged in the preparation of compounds frequently used as initial substances.

COVERAGE: The Institute of Fine Organic Chemistry of the Academy of Sciences of the Armenian SSR is publishing new series of methods for the synthesis of heterocyclic compounds. Not only methods developed by the Institute, but also methods developed by other institutions will be included. All the published methods will be tested at the Institute

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of Fine Organic Chemistry of the Academy of Sciences of the Armenian SSR. Because of the great interest in furan derivatives as raw material for many intermediates and for products used in medicine and agriculture, this issue is devoted to the synthesis of furan derivatives exclusively. The description of "Methods" covers the literature up to 1956. The description of "Other Methods of Preparation" covers the literature up to 1954. Names of scientists concerned with the development and testing of the methods are in the abstracts of the individual methods.

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Synthesis of 5-benzyl-furan-2-carboxylic acid: Proposed by A. L. Mndzhoyan and V. G. Afrikyan; verified by G. T. Tatevosyan and N. M. Divanyan. The product was prepared from methyl ester of 5-benzylfuran-2-carboxylic acid and a 10% NaOH solution by heating the mixture on a water bath for 3-4 hrs. M.p. 104-105°C; yield, 84.1-89.1%. The authors state that H. J. H. Fenton and F. Robinson (1909) prepared a substance which they assumed to be 5-benzylfuran-2-carboxylic acid by condensation of 5-chloromethyl-furfural 11

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removed by distillation, water is added, and the mixture is heated for 3-4 hrs. After cooling and adding a 20% ammonia solution to strong alkaline reaction, $BaCl_2$ and bone black are added, and the mixture is heated to boiling for 30-40 min. M.p., 182-83°C; yield, 63.1-63.5%. Other methods of preparation: 5-Bromofuran-2-carboxylic acid may be obtained by bromination of ethyl ester of pyromucic acid dissolved in acetic acid, followed by hydrolysis of the obtained product by alcoholic alkali solution or by oxidation of 5-bromofurfural. The product can also be obtained by bromination of pyromucic acid with or without solvents (such as acetic acid, diethyl ether, cholorform, and carbon tetrachloride). Higher yields were obtained when the reaction was conducted in the presence of red phosphorus. Seven references, one Slavic (1946).

Synthesis of furfural diacetate: Proposed by V. G. Afrikyan and A. A. Dokhikyan. Freshly distilled furfural is slowly added to a mixture of acetic anhydride 18

and conc. H_2SO_4 at 10°C. In 20-30 min., the temperature of the mixture reaches room temperature; sodium acetate is added, and the mixture is distilled in vacuo. The 140-142°/20 mm fraction is collected; yield 65-70%. Other methods of preparation: furfural diacetate can be obtained from furfural and acetic anhydride in the presence of sulfuric acid, zinc chloride, tin chloride, acetic acid, and other catalysts. Six references, none Slavic.

Synthesis of 5-diethylaminomethylfuryl-...-carbinol: Proposed by A. L. Mndzhoyan and M. T. Grigoryan; verified by N. A. Babiyan and N. M. Ogandzhanyan. Methyl ester of 5-diethylaminomethylfuran-2-carboxylic acid is added to lithium aluminum hydride. The mixture is allowed to stand overnight and the excess of lithium aluminum hydride is decomposed by addition of water. After filtration, drying, and vacuum-distillation, the 120-122°/1 mm fraction is collected. Yield, 80.2-83.5%. Three references, one Slavic (1953). 20

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Synthesis of methyl ester of 5-benzylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan, V. G. Afrikyan, and A. A. Dokhikyan; verified by G. T. Tatevosyar and N. M. Divanyan. Anhydrous aluminum chloride is slowly added to a benzene solution of methyl ester of 5-chloromethylfuran-2-carboxylic acid. The mixture is heated for 4-5 hrs., at 80-85°C, cooled, and dilute HCl is added in order to dissolve the formed $Al(OH)_3$. After removal of the solvent by distillation, the product is distilled in vacuo, and the 150-155°/1 mm fraction is collected. Yield, 62.3-63.8%. On cooling, the product crystallizes; m.p. 43-44°C. One Slavic reference (1953).

Synthesis of methyl ester of 5-bromomethylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan and V. G. Afrikyan; verified by G. T. Tatevosyan and S. G. Agbalyan. A rapid stream of hydrogen bromide is passed through a mixture consisting of methyl ester of furan-2-carboxylic acid, dry dichloroethane, paraformaldehyde, and zinc chloride. The reaction time is 2.0-2.5 hrs.; reaction temperature, 24-26°/2.5 mm; yield, 78.9-79.9%.

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The crystallized product melts at 32-36°C. One Slavic reference (1953).

Synthesis of methyl ester of 5-butylmercaptomethylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan and N. M. Divanyan; verified by O. L. Mndzhoyan and E. R. Bagdasar'yan. Toluene is added to metallic sodium and the mixture is heated with stirring until sodium is dissolved. Freshly distilled n-butylmercaptan is added dropwise, with continuous stirring, at 40-50°C., and the mixture is allowed to stand for several hours. Methyl ester of 5-chloromethylfuran-2-carboxylic acid is added dropwise to the mixture (2.0-2.5 hrs.), and the mixture is heated for 2 hrs. at 90-95°C. After removal of the solvent, the product is distilled in vacuo, and the 153-155°/4 mm fraction is collected. Yield, 89.1-92.9%. One Slavic reference (1953). 26

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Synthesis of methyl ester of 5-diethylaminomethylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan, V. G. Afrikyan, and M. T. Grigoryan; verified by U. L. Mndzhoyan and O. Ye. Gasparyan. A benzene solution of diethylamine is added to a benzene solution of methyl ester of 5-chloromethylfuran-2-carboxylic acid. The mixture is heated to boiling for 4-5 hrs, cooled, and treated with a 10% HCl solution. Methyl ester of 5-diethylaminomethylfuran-2-carboxylic acid is obtained with a yield of 85.3-94.7%; b.p. 102-103°/1.5 mm. The same method may be applied to synthesize ethyl, propyl, isopropyl, butyl, and isobutyl esters of 5-dimethyl-, diethyl-, dipropyl-, and dibutylaminomethylfuran-2-carboxylic acids with similar yields. One Slavic reference (1953). 28

Synthesis of methyl ester of 5-methylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan, V. G. Afrikyan, and M. T. Grigoryan; verified by G. T. Tatevosyan and S. G. Agbalyan. Zinc dust is added to a mixture of methyl ester of 5-chloromethylfuran-2-carboxylic acid and acetic 30

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acid (90%) over a period of 2.0-2.5 hrs. The mixture is then heated with stirring for 20 hrs. The b.p. of the obtained product is 97-99°/12 mm; yield, 81-83%. Other methods of preparation are mentioned: 5-Methylfuran-2-carboxylic acid was also obtained by esterification of the acid prepared by oxidation of 5-methylfurfural with silver oxide. Three references, 1 Slavic (1953).

Synthesis of methyl ester of 5-propoxymethylfuran-2-carboxylic acid: Proposed by V. G. Afrikyan and G. L. Papayan; verified by O. L. Mndzhoyan and O. Ye. Gasparyan. Metallic sodium is dissolved in propyl alcohol and freshly distilled methyl ester of 5-chloromethylfuran-2-carboxylic acid is added dropwise to the solution. The mixture is heated to boiling for 8 hrs; the separated 5-propoxymethylfuran-2-carboxylic acid has a b.p. of 146-148°/5 mm; yield 76.7-78.4%. Two references, 1 Slavic (1953). 32

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Synthesis of methyl ester of furan-2-carboxylic acid: 34
Proposed by V. G. Afrikyan and M. T. Grigoryan; verified by G. T. Tatevosyan and S. G. Agbalyan. Method I. A rapid stream of hydrogen chloride is passed through a boiling solution of furan-2-carboxylic acid in methyl alcohol over a period of 2.5-3.0 hrs. The obtained methyl ester of furan-2-carboxylic acid has a b.p. of 176-177°/680 mm; yield, 79.3-81.6%. Method II. Conc. sulfuric acid is added to a mixture of furan-2-carboxylic acid in methyl alcohol. The mixture is heated to boiling for 4 hrs. The yield of methyl of methyl ester of furan-2-carboxylic acid obtained by Method II is lower than that obtained by method I (79.3-81.6% and 75.4-76.2% resp.). Other methods of preparation: Methyl ester of furan-2-carboxylic acid may also be obtained by esterification of the acid; methylation of the acid with dimethyl sulfate in alkaline medium; reaction of furoyl chloride with magnesium methylate in methyl alcohol. Four references, none Slavic.

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Synthesis of methyl ester of 5-chloromethylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan and M. T. Grigoryan; verified by G. T. Tatevosyan and S. G. Agbalyan. A rapid stream of hydrogen chloride is passed through a mixture of methyl ester of furan-2-carboxylic acid, dichloroethane, paraformaldehyde, and zinc chloride. Reaction time, 2 hrs.; reaction temperature, 24-26°C. The obtained methyl ester of 5-chloromethylfuran-2-carboxylic acid has a m.p. of 34-36°C; yield; 80.7-81.9%. Other methods of preparation: chloromethylation of methyl ester of pyromucic acid in dichloromethane with paraformaldehyde and hydrogen chloride in the presence of zinc chloride; chloroform may be used instead of dichloromethane; phosphoric acid, aluminum chloride or a mixture of tin chloride hexahydrate with sodium sulfate may be used instead of zinc chloride. Ethyl, propyl, isopropyl, 36

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butyl, and isobutyl esters of 5-chloromethylfuran-2-carboxylic acid were obtained by the same method with yields of 80-90%. Four references, 1 Slavic (1953).

Synthesis of 2-methylfuran (sylvan): Proposed by A. L. Mndzhoyan and G. T. Tatevosyan; verified by V. G. Afrikyan and G. L. Papayan. 5-Methylfuran-2-carboxylic acid is decomposed by heating at 170-175°C. The sylvan formed has a b.p. of 61°/680 mm; yield, 80.1-84.8%. Other methods of preparation: Dry distillation of wood; catalytic hydrogenation of furfural over catalysts (Cu or Cu-Cr) at temperatures >200°C, a mixture of furfural, furan, and sylvan is obtained by passing furfuryl alcohol over aluminum oxide at 390°C or heating it with a nickel catalyst at 150°C. Six references, 1 Slavic (1939).

Synthesis of 5-methylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan and M. T. Grigoryan; verified by G. T. Tatevosyan and S. G. Agbalyan. A mixture of methyl ester of 5-methylfuran-2-carboxylic acid and a 20% solution of sodium hydroxide is heated for 2 hrs. The obtained 5-methylfuran-2-carboxylic acid has a m.p. of 108-109°C; yield, 83.3-87.3%. Other methods of preparation: Oxidation of 5-methylfurfural with silver oxide or alkali metal hypobromites; oxidation of 5-methyl-2-acetylfuran with potassium hypochlorite (low yield); hydrolysis of 5-methylfuran-2-cyanide. Five references, 1 Slavic (1953) 42

Synthesis of propylfurylcarbinol: Proposed by G. L. Mndzhoyan and N. A. Babiyan; verified by G. T. Tatevosyan and N. M. Divanyan. Magnesium shavings, abs. ether and an iodine crystal are placed in a flask; an ether solution of propyl bromide is added dropwise, and the mixture is heated to boiling until the magnesium is dissolved. The mixture is cooled, and an ether solution of furfural is added. The mixture is heated for 1-1.5 hrs., and after cooling an aqueous solution of ammonium chloride is added. The obtained propylfurylcarbinol has a b.p. of 66-68°C/1.5 mm; yield, 64.1-67.9%. Two references, 1 Slavic (1956) 44

is then heated to boiling for 2.5-3.0 hrs., cooled and the reaction product decomposed with an aqueous solution of ammonium chloride. Phenylfurylcarbinol is obtained with a yield of 59.4-62.1%; b.p., 125-126°/0.5 mm. Three references, 1 Slavic (1956)

Synthesis of furan: Verified by G. T. Tatevosyan and S. P. Ekmekdzhyan. An illustration and description of an apparatus used for the synthesis are given. Furan-2-carboxylic acid is decarboxylized by heating to 200-205°C. Yield of furan, 74.7-80.2%; b.p., 31-32°/760 mm. Other methods of preparation: Furan can be obtained by removing the carbonyl group from furfural either by adding furfural to a molten mixture of KOH and NaOH or by passing its vapors over hot soda lime in the presence of catalysts (such as zinc and copper chromites and molybdates) at 300-400°C; nickel, iron, platinum, and palladium catalysts are also mentioned. A laboratory method for preparation of furan is based on decarboxylation of furan-2-carboxylic acid by

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dry distillation of the barium salt or by heating barium salt with soda lime. Furan-2-carboxylic acid can be decarboxylated by heating it in quinoline in the presence of cupric oxide. Ten references, two Slavic (1949-53)

Synthesis of furan-2-carboxylic acid and of furfuryl alcohol: Verified by V. G. Afrikyan and M. T. Grigoryan. A 30% solution of sodium hydroxide is slowly added to furfural (at 15°C). Water is then added to the mixture to dissolve the precipitated sodium salt of furan-2-carboxylic acid. Furfuryl alcohol is extracted from the solution with ether; yield 63.5-64.5%; b.p. 75-77°/15 mm. The aqueous solution containing the sodium salt of furan-2-carboxylic acid is acidified with dilute H_2SO_4 or conc. HCl, and furan-2-carboxylic acid is precipitated. Yield, 54

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78.4-80.1%; m.p. 132-133°C. Other methods of preparation: Furan-2-carboxylic acid is obtained by oxidation of furfural with $KMnO_4$ and alkali metal dichromates or with atmospheric oxygen in the presence of catalysts containing silver oxide. Sodium hypochlorite was also used to oxidize furfural and 2-propionylfuran. Furan-2-carboxylic acid is obtained from furfural along with furfuryl alcohol by the reaction with sodium amide and conc. solutions of alkalies. Furfuryl alcohol may be obtained by reduction of furfural with sodium amalgam. Catalytic reduction of furfural in liquid phase under pressure at 130-160°C in the presence of copper and copper-chrome catalysts containing alkaline earth oxides is widely used. Furfuryl alcohol was obtained by reduction of furan-2-carboxylic acid with lithium aluminum hydride; yield, 85%. Furfuryl alcohol and furan-2-carboxylic acid are obtained by dismutation of furfural with sodium amide and alkalies. Thirteen references, two Slavic (1939-49)

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product is purified by recrystallization from glacial acetic acid. Yield, 50-55.4%; m.p. 203°C. One Slavic reference (1953).

Synthesis of furfural: Verified by G. T. Tatevosyan and N. M. Divanyan. An illustration and a description of the apparatus used for the experiments are given. A mixture of ground corncob, sodium chloride, and a 10% solution of H_2SO_4 is heated in the apparatus. The distilled furfural is collected in a receiver containing chloroform. Furfural is separated from the chloroform and distilled in vacuo; b.p., 70-72°/25 mm. Other methods of preparation: Treatment of xylose and other pentoses with HCl and HBr. Corncobs, some wood varieties, husk and chaff of oats, rice, etc. are used as raw material. Hydrolysis of the pentosans is effected by heating of the plant material with HCl or H_2SO_4. Three references, none Slavic. 62

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5-methyl-furan-2-carboxylic acid with PCl_3 or PCl_5. Two references, none Slavic.

Synthesis of 2-furoyl chloride: Proposed by A. L. Mndzhoyan; verified by V. G. Afrikyan and M. T. Grigoryan. A benzene solution of thionyl chloride is added to furan-2-carboxylic acid, and the mixture is heated to boiling for 10-12 hrs. The yield of 2-furoyl chloride is 91.1-92.0%; b.p. 89-90°/32 mm in vacuo. Other methods of preparation: 2-furoyl chloride was also obtained by heating furan-2-carboxylic acid with PCl_5 to 160°C without a solvent, but a lower yield was obtained. Chloroform was used as solvent. A patent was issued on preparation of 2-furoyl chloride by the reaction of pyromucic acid with excess of phosgene under pressure at temperatures up to 100°C. The reaction of a benzene solution of furan-2-carboxylic acid with excess of thionyl chloride is also mentioned. Five references, 1 Slavic (1946). 68

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Synthesis of furfuryl chloride: Proposed by G. T. Tatevosyan and S. P. Ekmekdzhyan. Pyridine and ether are added to furfuryl alcohol. After cooling the mixture to -8°, -10°C, an ether solution of thionyl chloride is added. The temperature of the reaction mixture should not exceed 2-3°C. The product is extracted with ether. Furfuryl chloride is obtained with a yield of 39.4-41%; b.p. 49.1-49.4°/26 mm. The product cannot be stored even in sealed flasks; it must be used immediately. Other methods of preparation: The ether solution of furfuryl chloride can be prepared by the reaction of thionyl chloride with a cooled ether solution of furfuryl alcohol. The obtained solution contains about 10% furfuryl chloride. Hydrogen chloride in the presence of calcium carbide (dehydrating agent) was used instead of thionyl chloride. The amount of furfuryl in the obtained solution did not exceed 5%. The

use of chloroform as a solvent instead of ether was proposed. However, furfuryl chloride in pure state cannot be separated from solutions obtained by these methods. Three references, none Slavic.

Synthesis of β-chloroethyl ester of furan-2-carboxylic acid: Proposed by A. L. Mndzhoyan and M. T. Grigoryan; verified by O. L. Mndzhoyan and E. R. Bagdasaryan. A mixture of furan-2-carboxylic acid and ethylene chlorohydrin is heated to boiling, and a rapid stream of hydrogen chloride is passed into the boiling solution for 5-6 hrs. The mixture is then cooled to room temperature and transferred to a flask containing water. The β-chloroethyl ester of furan-2-carboxylic acid is distilled in vacuo at 126-128°/10 mm; yield, 71.9-72.7%. One Slavic reference (1953). 74

β-Chloroethyl ester of 5-chloromethylfuran-2-carboxylic acid: Proposed by A. L. Mndzhoyan, V. G. Afrikyan, and M. T. Grigoryan; verified by O. L. Mndzhoyan and E. R. Bagdasaryan. A rapid stream of hydrogen chloride is passed into a mixture of β-chloroethyl ester of 75

furan-2-carboxylic acid, paraformaldehyde, chloroform, and anhydrous zinc chloride. The reaction temperature should not exceed 24-26°C; reaction time, 2.0-2.5 hrs. The yield of the obtained product is 78.9-79.8%; b.p. 145-146°/2 mm. One Slavic reference (1953).

Synthesis of ethyl ester of furoyl-2-acetic acid: Verified by A. A. Aroyan and G. L. Papayan. Ethyl ester of furan-2-carboxylic acid is heated to 75-80°C. Sodium wire is added to it and ethyl acetate is gradually added to the mixture. After the dissolution of sodium, the mixture is heated to 90-95°C, and sodium wire and ethyl acetate are again added. The mixture is solidified in about 20-30 min., after which it is dissolved in benzene. The addition of sodium wire and ethyl acetate followed by the addition of benzene (as above) is repeated six times. Reaction time, 10-12 hrs. The mixture is heated on a water

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bath for 8-12 hrs. at 90-95°C. The content of the flask is cooled and decomposed with ice water. Then the reaction mixture is added to dilute HCl, the benzene layer is separated, and the water layer is extracted with ether (three times). The ether solutions are added to the benzene solution, dried, the solvent removed, and the residue distilled in vacuo. The 119-125°/2 mm fraction is redistilled. The product obtained has a b.p. of 123-124°/2 mm; yield, 77.6-83.8%. Other methods of preparation: The ethyl ester of furoyl-2-acetic acid may be obtained by condensation of ethyl acetate with methyl ester of furan-2-carboxylic acid in the presence of sodium methylate; yield, 68.2%. Ethyl furoyl-2-acetate may be obtained by heating ethyl tert-butyl furoyl malonate with p-toluenesulfonic acid; yield 70%. Four references, none Slavic.

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AKHOYAN, A.A.; PAPAYAN, G.L.

Ethyl ester of furoyl-2-acetic acid. Sint.geterotsikl.soed. no.1:77-80 '56. (MIRA 10:11)

(Acetic acid)

AROYAN, A.A.; TITANYAN, S.G.; AKOYAN, G.A.

Chloromethylation of certain p-cresol esters [in Armenian with summary in Russian] Nauch.trudy Erev.un.no.53:45-51 '56. (MLRA 9:10)

1.Kafedra organicheskoy khimii.
(Cresol) (Chloromethylation)

AROYAN, A.A.; TITANYAN, S.O.; GEVORGYAN, M.G.

p-alkoxybenzylalkyl ethers and their behavior in a chloromethylating medium. Nauch.trudy Erev.un.no.53:53-56 '56. (MIRA 9:10)

1.Kafedra organicheskoy khimii.
(Ethers)

MNDZHOYAN, A.L.; AROYAN, A.A.

Ethyl ester of 5-(β-chloroethyl)-2-furoic acid. Sint. geterotsikl. soed. no. 2:85-87 '57. (MIRA 11:7)

(Furoic acid)

MMD:.:OYAN, A.L.; AROYAN [redacted]

5-ethyl-2-furoic acid. Sint. geterotsikl. soed. no. 2:85-91 '57.
(Furoic acid)

MKRTCHYAN, A.L.; AROYAN, A.A.

Bischloromethylation of alkoxybenzenes and utilization of obtained products in certain syntheses. Izv. AN Arm. SSR Ser. khim. nauk 10 no.3:203-212 '57. (MIRA 10:12)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Benzene) (Chemistry, Organic--Synthesis)

AROYAN, A.A.; TITAYAN, S.G.

Synthesis and chloromethylation of certain ethers of phenol and orthocresol. Izv. AN Arm. SSR Ser. khim. nauk 10 no.4:283-289 '57. (MIRA 10:12)

1. Yerevanskiy gosudarstvennyy universitet im. V.M. Molotva, Kafedra organicheskoy khimii.

(Ethers) (Methylation)

MNDZHOYAN, A.L.;AROYAN, A.A.

5-Benzylmercaptomethyl-2-furancarboxylic acid. Sint. geterotsikl. soed. no.3:9-12 '58 (MIRA 13:3)
(Furoic acid)

MNDZHOYAN, A.L.;AROYAN, A.A.

5-Carboxyfurfurylmercaptoacetic acid. Sint. geterotsikl. soed. no.3:43-45 '58 (MIRA 13:3)
(Acetic acid)

MNDZHOYAN, A.L.; AROYAN, A.A.

5-Oxymethy-2-furancarboxylic acid. Sint geterotsikl. soed. no.3: 61-64 '58 (MIRA 13:3)
(Furoic acid)

MNDZHOYAN, A.L.;AROYAN, A.A.

β-Furfuryloxypropionitrile. Sint. geterotsikl. soed. no.3:78-80 '58 (MIRA 13:3)
(Propionitrile)

MNDZHOYAN, A.L.; AROYAN, A.A.

Study of benzofurna derivatives. Report no.1: Chloromethylation of benzofuran-2-carboxylic acid esters and the use of the obtained products in other synthesis. Izv. AN Arm. SSR khim. nauk 11 no.1: 45-56 '58. (MIRA 11:6)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Benzofuran) (Chlorination) (Methylation)

MNDZHOYAN, A.L.; ARUYAN, A.A.; KHACHATRYAN, N.Kh.

Benzofuran derivatives. Report No.2: Synthesis of an[illegible]ethers of various 5-alkoxymethyl-2-benzofurancarboxylic ac[illegible]is. Izv. AN Arm.SSR. Khim.nauki 11 no.3:193-200 '58. (MIRA 11:11)
(Ethers) (Benzofurancarboxylic acid)

MKRTCHYAN, A.L., akademik; AROYAN, A.A.

Research in the field of furan derivatives. Report No.19.
Dokl. AN Arm. SSR 27 no.2:101-112 '58. (MIRA 11:10)

1.Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
2.AN Armyanskoy SSR (for Mkrtchyan).
(Furan)

MKRTCHYAN, A.L.; ARUTYAN, A.A.

5-Benzylsulfomethyl-2-furancarboxylic acid. Nauch. geterotsikl. soed. no.4:16-17 '59. (MIRA 13:11)

(Furoic acid)

MNDZHOYAN, A. L.; AROYAN, A. A.

2,3-Benzofuran (coumarone). Sint. geterotsikl. soed. no.4:19-21 '59. (MIRA 13:11)

(Benzofuran)

MKRTCHYAN, A.L.; ARUTYUNYAN, A.A.; AZARYAN, A.S.

1,2,3,4-Tetrahydroquinoline. Sint. geterotsikl. soed. no.4:80-84 '59. (MIRA 13:11)
(Quinoline)

MKDZHOYAN, A.L.; AROYAN, A.A.; AZARYAN, A.S.

(1,2,3,4-tetrahydro-1-quinolyl)ethanol. Sint. geter. tsikl. soed. no.4:85-86 '59. (MIRA 13:11)

(Quinolinesethanol)

MNDZHOYAN, A.L.; AROYAN, A.A.

5-Cyanoethylmercaptomethyl-2-furancarboxylic acid. Sint. geterotsikl. soed. no.4:95-97 '59. (MIRA 13:11)
(Furoic acid)

MNDZHOYAN, A.L.; AROYAN, A.A.; KHACHATRYAN, N.Kh.

Furan derivatives. Report No. 24: Synthesis of some amino esters of 5-ethyl- and 5- phenylethyl-2-furancarboxylic acids. Izv.AN Arm.SSR.Khim.nauki 12 no.6:443-450 '59. (MIRA 13:7)

1. Institut tonkoy organicheskoy khimii AN Armyanskoy SSR.
(Furancarboxylic acid)

MKRTCHYAN, A.L.; AROYAN, A.A.; AGBALYAN, S.O.

Syntheses based on harmine and tetrahydroharmine. Report No.2: Synthesis of symmetrical α,ω-polymethylene-bis-quaternary ammonium salts of Py-N-tetrahydroharmine. Izv. AN Arm. SSR Khim. nauki 13 no.2/3:211-215 '60. (MIRA 13:10)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Harmine)

MNDZHOYAN, A.L.; AROYAN, A.A.; OVSEPYAN, T.R.

Synthesis of some amino compounds based on 4 alkoxybenzyl chlorides.
Izv. AN Arm. SSR. Khim. nauki 13 no.4:275-285 '60. (MIRA 13:12)

1. Institut tonkoy organicheskoy khimii AN ArmSSR.
(Amino compounds)

MNDZHOYAN, A.L.; AROYAN, A.A.; AZARYAN, A.S.

Quinoline derivatives. Report No.1: Hydrogenation of quinoline on the industrial catalyst, nickel on chromium oxide. Izv. AN Arm. SSR.Khim. nauki 13 no.4:287-295 '60. (MIRA 13:12)

1. Institut tonkoy organicheskoy khimii AN Arm.SSR.
(Quinoline) (Hydrogenation)

MNDZHOYAN, A.L.; AROYAN, A.A.; KHACHATRYAN, N.Kh.

Derivatives of furan. Report No.26: Synthesis of some amino esters of 5-(α-alkoxyethyl)-furan-2-carboxylic acids. Izv.AN Arm.SSR.Khim.nauki 14 no.4:377-385 '61. (MIRA 14:10)

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(Furandicarboxylic acid)

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Derivatives of quinoline. Report No.3: Synthesis of some symmetric and asymmetric polymethylenediamines. Izv.AN Arm. SSR.Khim.nauki 15 no.5:473-480 '62. (MIRA 16:2)

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(Quinoline)
(Polymethylene compounds)

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Chloromethylation of esters of phenoxyacetic and β-(phenoxy) propionic acids. Izv AN Arm.SSR.Khim.nauki 16 no.1:59-67 '63 (MIRA 17:8)

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Synthesis of some 4-alkoxy- and 3-methyl-4-alkoxybenzil-bis-(-chloroethyl)-amines. Izv. AN Arm. SSR. Khim. nauki 16 no.5:491-497 '63. (MIRA 17:1)

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