

ANDREYEV, V.N.; VIL'NER, D.G.

Use of old horizontal control materials. Geod. i kart. no. 3:50-51
Mr '61. (MIRA 14:4)

(Aerial photogrammetry)

AUTHOR: Vil'ner, D. G., Engineer of the SSV/6-58-9-15/26
Sverdlovsk AGP

TITLE: On the Problem of the Revision of Maps (K voprosu ob obnovenii kart)

PERIODICAL: Geodeziya i kartografiya, 1958, Nr 9, pp 69 - 70 (USSR)

ABSTRACT: This is a letter to the editor. The following rules are laid down for the revision of maps: 1) Maps are to be reprinted in smaller editions, but using systematic methods of compilation. 2) The information required for the revision of maps must be made available by all institutions and authorities to the work of which alterations of geographical features are due. 3) On the basis of this information a diary is to be kept. 4) New flights will considerably reduce the amount of revision work to be done. 5) It will be expedient either to establish special departments in the Aerial Surveying Authorities, which are closely associated with the Gosgeonadzor (State Surveying Inspection) or to transfer the functions of the latter institution to the Aerial

Card 1/2

VIL'NER, D.Ye., inzh.

Automatic interlocking of autoclaves. Bezop. truda v prom. 3
no.11:32-34 N '59. (MIRA 13:3)
(Autoclaves--Safety appliances)

GUSEV, V.F.; STUPNIKOV, A.A.; BACHMURIN, A.F.; MOYTRICH, T.A.; VIL'NER, E.A.

Response to our opponents. Veterinarika 41 no.12:70-72 D '64.
(MIRA 18:9)

1. Leningradskiy nauchno-issledovatel'skiy veterinarnyy institut.

(... ..
... ..
... .. (MIRA 18:1)
... ..

GUSEV, V. F., STUPNIKOV, A. A., BASHMURIN, A. F., MOTRICH, T. A. and VIL'NER, E. A.
(Leningrad Scientific Research Veterinary Institute)

"Concerning the problem of toxicity of dithiophos"

Veterinariya, vol. 39, no. 7, July 1962 pp. 84

VIL'NER, (S)

25(5)

PHASE I BOOK EXPLOITATION

SOV/2100

Musyakov, Leonid Abramovich, Girsh Solomonovich Vil'ner, and Anatoliy Vasil'yevich Yastrebov

Avtomatizatsiya kak sredstvo ozdorovleniya usloviy truda (Improved Working Conditions Through Automation) [Moscow] Profizdat, 1958. 71 p. 5,000 copies printed.

Ed.: I.S. Denisova; Tech. Ed.: A.A. Golichenkova.

PURPOSE: This booklet is intended for personnel responsible for safety engineering.

COVERAGE: The booklet describes simple mechanization and automatization methods, that if used by individual plants may significantly reduce working hazards in casting, cutting, and forming metals and processing chemicals. Examples showing instrumentation of machine tools and other equipment with various feeders, loaders, and other safety devices are included. No personalities are mentioned.

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Improved Working Conditions Through Automation

SOV/2100

There are no references.

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AVAILABLE: Library of Congress (TJ213.M83)

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JG/bg
8-14-59

MUSYAKOV, Leonid Abramovich; VIL'NER, Girsh Solomonovich; YASTREBOV,
Anatoliy Vasil'yevich; DENISOVA, I.S., red.; GOLICHERKOVA,
A.A., tekhn.red.

[Automatization as a means of improving working conditions]
Avtomatizatsiia kak sredstvo ozdorovleniia uslovii truda.
Izd-vo VTsSPS Profizdat, 1958. 71 p. (MIRA 12:2)
(Automatic control)

VIL'NER, G.S.

Diamond needles for profilometers and profilographs. Standar.
tizatsiia 24 no.8:42-43 Ag '60.3 (MIRA 13:9)
(Diamonds, Industrial--Standards)

VIL'NER, G.S.

Truing and dressing abrasive wheels with diamond rolls. Stan. 1
instr. 32 no.2:37 F '61. (MIRA 14:2)
(Grinding wheels)

VIL'NER, G.S.

Diamond grinding wheels. Standartizatsia 25 no.12:46-48
D '61. (MIRA 14:11)

(Grinding, wheels--Standards)
(Diamonds, Industrial)

SIMKIN, Yevl' Leybovich; VIL'NER, G.S., inzh., retsenzent;
RYCHIN, S.A., inzh., retsenzent; ANDREYEVA-GALANINA,
Ye.TS., prof., nauchn. red.; MISHKEVICH, G.I., red.

[Safety measures in working with pneumatic hand tools
in shipbuilding] Tekhnika bezopasnosti pri rabote s
ruchnym pnevmaticheskim instrumentom v sudostroenii.
Leningrad, Sudostroenie, 1964. 60 p. (MIRA 18:2)

VIL'NER, I.A.

F. I. Romanovskii's "Fourier series. Field theory.
Analytical and special functions. Laplace transform."
Reviewed by I. A. Vil'ner. Usp. mat. nauk 16 no.1:235-238
Ja-F '61. (MIRA 14:6)

(Mathematics)
(Romanovskii, P.I.)

AUTHOR: Vil'ner, I.A. SOV/42-13-4-4/11
TITLE: Topology and Geometry of the Space of an Imaginary Anamorphosis
(Topologiya i geometriya prostranstva znimoy anamorfozy)
PERIODICAL: Uspekhi matematicheskikh nauk, 1958, Vol 13, Nr 4, pp 173-178 (USSR)
ABSTRACT: For imaginary nomograms in a complex projective plane of four dimensions the author gives a real practically realizable interpretation. Eleven theorems and several definitions and conclusions are formulated. The author partially uses own not generally usual notations introduced in earlier papers. There are 6 references, 5 of which are Soviet, and 1 German.
SUBMITTED: January 23, 1956

Card 1/1

VIL'NER, I. A.

Call Nr: AF 1108825

Transactions of the Third All-union Mathematical Congress * (Cont.) Moscow
Jun-Jul '56, Trudy '56, V. 1, Sect. Rpts., Izdatel'stvo AN SSSR, Moscow, 1956, 237 pp.

Vasil'yev, A. M. (Moscow). On Dependence Between
Differential-geometric Properties. 144

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of Surfaces. 144-145

Mention is made of Norden, A. P.

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Vil'ner, I. A. (Moscow). ^{Anamorphosis Problem and/} Nomographic Interpretation of
Complex Variable Functions. 145-146

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Volkov, Yu. A. (Leningrad). On the Existence of Convex
Surfaces With Given Metric. 146

Mention is made of Aleksandrov, A. D.
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~~VIL'NER, I. A.~~

Stereoscopic nomography and spatial anamorphosis with a given
scale [with summary in French]. Ukr.mat.shur. 9 no.2:121-133
'57. (MIRA 10:7)

(Nomography(Mathematics))

VIL'NER, I.A.

Nomographic approximation of elliptic functions and nomograms
in complex projective planes. Vych.mat. no.7:3-74 '61.
(MIRA 15:4)

(Nomography (Mathematics)) (Functions, Elliptic)
(Geometry, Projective)

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Vil'ner, I. A. *Geometry of analytic functions.* Doklady Akad. Nauk SSSR (N.S.) 63: 107-107 (1970). Russian. Continuing the study (especially Akad. Nauk SSSR, J. Appl. Math. Mech. N.S. 4, no. 2, 195-116, 1940, C. R. (Doklady) Acad. Sci. USSR (N.S.) 53, 187-190 (1940); these Rev. 9, 534; 8, 494] of the conditions under which an analytic function $f(z, w) = 0$ can be represented by an alignment chart with two scales for z and two scales for w , the author introduces parameters K_j ($j=1, 2, 3, 4$) and J_j ($j=1, 2, 3$) depending on the first four derivatives of w with respect to z . The representation in question is possible if and only if all of the K_j are real and constant. In that case all scales are curved if and only if K_1 and K_4 are both different from zero while if K_1 (or K_4) only is zero w (or z) only has straight scales and finally if both K_1 and K_4 are zero all scales are straight. Canonical forms are given for $f(z, w) = 0$ if it can be nomographed as indicated. They take the form of the integral of the reciprocal of the square root of a linear function of the Weierstrass elliptic function. The invariants g_2 and g_3 are given in terms of the parameters K_j . Details of applying these results are to be given elsewhere.

R. Church (Annapolis, Md.).

Source: Mathematical Reviews.

Vol 10 No

VIL'NER, I.A., kand.fiziko-matematicheskikh nauk

Nomogram for determining the excess of air during incomplete
combustion of fuel. Teploenergetika 7 no.2:88-89 F '60.
(MIRA 13:5)

1. Vsesoyuznyy nauchnyy politekhnicheskii institut.
(Combustion)

-AM I 800: INFORMATION 87/582

Zadaniya po sovremennym problemam teorii funktsii kompleksnykh peremennykh (Investigation of Modern Problems in the Theory of Functions of Complex Variables) Collection of Articles Moscow, Fizmatgiz, 1968. 517 p. 3,000 copies printed.

M. (Title page) A. I. Markovitch (Moscow) V. S. Vladimirov (Moscow) & M. Davison (Tech. Ed.) P. A. Markovitch.

RUSSIAN: This book is intended for specialists in the theory of functions of a complex variable. It may also be used by advanced university students, scientific workers, and specialists in other fields of mathematics.

CONTENTS: The book contains 48 papers originally read at the International Conference on the Theory of Functions of a Complex Variable held at Moscow University from May 23 to June 1, 1967. The articles are divided into 7 parts. The first part discusses the properties of meromorphic functions, boundary and extremal properties, the problem of extremal functions, functions and interpolation and approximation problems. The second part discusses functions of many complex variables. The third part discusses extremal problems and the theory of extremal problems. The fourth part discusses generalized analytic functions. The fifth part discusses extremal problems. The sixth part discusses extremal problems. The seventh part discusses extremal problems.

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PART V

VIL'NER, Iosif A. (Moskva A-167, Aviatsionnyy per.10, kv. 27, SSSR); GALAYDA,
Pavel [Galajda, Pavel]

Nonelementary relations of the equations of the third nomographic
order and their automorphic transformations. Mat fiz cas SAV
14 no.1:6-43 '64.

1. Department of Mathematics of the Faculty of Mechanical Engineering,
Higher School of Technology, Kosice, Komenskeho 40 (for Galajda).
Submitted March 1, 1963.

Vil'ner, I. A.

Vil'ner, I. A. Reduction of a binary rational function to a form in which the scales are straight lines. *Doklady Akad. Nauk SSSR*, 1947, 15, No. 1, 1-3.

The problem is to reduce a binary rational function $f(x, y)$ to a form in which the scales are straight lines. It is reducible if it can be nomogramized with four scales straight line (nonzero genus). Here he gives practical details on effecting this reduction and formulas for certain of the constants not explicitly determined. Some examples are given. The method also applies to curves of genus zero. The result is a nomogram with four scales straight lines and five constants. It is shown that there are no more than two integrable functions of the first class (i.e. those with no more than two of the four scales curved) previously discussed (C. R. Doklady Acad. Sci. URSS, N.S., 55, 183-185, 1947; here Rev. 9, 106) and give here a general algorithm for a nomogramizable function and can be expressed as a function of an integral of a rational function with an arbitrary complex variable as argument so that a nomogram is possible with two straight lines as a parameter in addition to the four scales straight lines. *Proceedings, Academy of Sciences, USSR, 1947, No. 1, 1-3.*

Source: Mathematical Reviews, Vol. 11, No. 9
Jan

WILKINSON

WILKINSON, I. A. Analytical functions of a complex variable and the first nomographic class and their nomograms. *Dokl. Akad. Nauk SSSR (N.S.)* 53, 187-190 (1957).

A functional relationship $F(x, y) = 0$, where F is analytic and $x = p_1 + ip_2$, $y = a + ib$, is defined to belong to the first nomographic class if it can be reduced to two real equations of the canonical form $f(p_1)X(a) + g(p_2)Y(b) + h(p_3) = 0$, for $a, b \in \mathbb{R}$. For such functions there exist nomographs with straight scales for a and b . The author gives a determination of all such functions in terms of elementary functions and elliptic integrals. The canonical representations of these functions are also given. P. H. KATZMAN.

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S/558/61/000/007/001/008
D299/D302AUTHOR: Vil'ner, I.A.

TITLE: On nomographic approximation of elliptic functions and nomograms in complex projective planes

SOURCE: Akademiya nauk SSSR. Vychislitel'nyy tsentr. Vychislitel'naya matematika, no. 7, 1961, 3 - 74

TEXT: The article consists of 2 chapters: I) Nomographic approximation of elliptic functions, and II) Nomograms in complex projective planes. Chapter I: A nomographic method is proposed for obtaining elementary approximations to elliptic functions. The theoretical aspect of the method was considered in earlier works by the author. The normalized elliptic integral of the first kind

$$W(1) = \frac{k^{(1)}}{\sqrt{1}} \int_0^{\frac{\pi}{2}} \frac{d}{\sqrt{1 - k^2 \sin^2 \varepsilon}} \quad (1.1)$$

is considered, where

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$$W(1) = p(1) + q(1)i, k^{(1)} = \frac{k}{|k|}, z = a + bi, i = \sqrt{-1}. \quad (1.2)$$

The canonical representation of Eq. (1.1) is given by 2 jointly nomographable and vanishing Masot determinants. The complex modulus k describes a lemniscate. Let $m = 1/k_1^2$ (k_1 being related to k).

The curves $m = \text{const}$, are drawn, and an exact nomograph is constructed for calculating elliptic functions and integrals. By a projective transformation of the first nomogram, one obtains another circular metrical one. It was found that the best nomogram for Eq. (1.1) (and in general for any analytic expression), is its exact nomogram. The latter not only facilitates the finding of a possible approximation, but can be also used for the construction of an approximate expression for Eq. (1.1). At present, there are no other means for nomographic approximation, except the exact nomograph. Let the function $w = f(z)$ be holomorphic inside and on the boundary of the circle C of radius R . This function is expanded in a Taylor series. With $n = 1$, one obtains

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$$|R_n| < \frac{MR}{R-r} \left(\frac{r}{R}\right)^2 \quad (3.6)$$

where one can take as R the distance between the point z_0 and the nearest singularity of the function $f(z)$. Under certain conditions Eq. (3.1) ($w = f(z)$) can be approximated by

$$w \approx f(z_0) + \frac{(z - z_0)}{1!} f'(z_0) + \frac{(z - z_0)^2}{2!} f''(z_0); \quad (3.9)$$

if $\arg f''(z_0) = \pi n/2$, then Eq. (3.9) is nomographable by a nomogram of the second kind. The first, more accurate approximation, is obtained by solving a system of elliptical equations. After computations one obtains

$$\operatorname{cn}^2(x, \sqrt{m}) = \frac{2m-1 + \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x \operatorname{ch}^2 x}}{2m \operatorname{ch}^2 x} \quad (5.11)$$

and

$$\operatorname{sh}^2(x, \sqrt{m}) = \frac{1 + 2 \operatorname{sh}^2 x - \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x \operatorname{ch}^2 x}}{2m \operatorname{ch}^2 x} \quad (5.12)$$

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$$\operatorname{dn}^2(x, \sqrt{m}) = \frac{\operatorname{ch} 2x - 2m \operatorname{sh}^2 x + \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x \operatorname{ch}^2 x}}{2 \operatorname{ch}^2 x} \quad (5.13)$$

Further, an approximate elementary formula is derived for Weierstrass's function $\wp(x, g_2, g_3) \equiv \wp(x)$. One obtains

$$\wp(x) \approx -\frac{2m(m-1)k^2 x_1 + 1 - 5m - (m+1)\sqrt{(2m-1)^2 + 4mm_1 \cos^2 x_1 \operatorname{ch}^2 x_1}}{(m+1)(m-2)(1-2m)k_2} \times \frac{3(1-m+m^2)g_2}{(m+1)(m-2)(1-2m)k_2} \quad (6.6)$$

where

$$x_1 = 3x \sqrt{\frac{(1-m+m^2)g_2}{(m+1)(1-2m)(2-m)g_2}} \quad (6.7)$$

By means of these formulas it is possible to find an approximate expression for any elliptic function. For the integral

$$\int_0^z \frac{d\xi}{\sqrt{1-k^2 \sin^2 \xi}}, \quad \omega = p + qi, \quad z = a + bi \quad (6.8)$$

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one obtains the approximate formulas

$$\cos z \approx \sqrt{\frac{|\cos w|}{\operatorname{ch} w}}, \quad \sin z \approx \sqrt{\frac{\operatorname{ch} w - |\cos w|}{\operatorname{ch} w}}, \quad (6.9)$$

for $m = 0.5$. The accuracy of the obtained approximations is very high. The obtained formulas can be also used for complex values of x . Weierstrass's formula can be rewritten as

$$\wp(v) = \varepsilon \frac{2m(m-2) \operatorname{sh}^2 x_1 + 1 - 5m - (m+1) \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x_1 \operatorname{ch}^2 x_1}}{1 + 2m \operatorname{sh}^2 x_1 - \sqrt{(2m-1)^2 + 4mm_1 \cos^2 x_1 \operatorname{ch}^2 x_1}} \times \quad (6.24)$$

$$x_1 = x \sqrt{-\varepsilon} \sqrt{\frac{3g_2}{4(1-m+m^2)}}. \quad (6.25)$$

where

Further, rougher approximation is considered. Nomographs are given of some elementary functions, (hyperbolic trigonometric functions of a complex argument). The accuracy of the obtained formulas is compared with well-known approximations of elliptic functions, ob-

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tained by expansion in infinite series or products. The obtained formulas yielded more accurate results. The numerical examples illustrated the usefulness of nomographic approximation of higher transcendental functions by means of elementary functions, and the nontriviality of this approximation. Further, general methodological principles of nomographic approximation are set forth and some function-theoretical nomographic results (obtained recently by A.N. Kolmogorov and his school), are reviewed. The case is considered when no best approximation (in the sense of Chebyshev) exists; instead of the best approximation, one determines the allowed approximation of the function $z = F(x, y)$, given on the set M , by the nomographic functions $z = f(x, y)$, also given on M . Let

$$d \equiv d(r, F; M) = \sup_M |F(x, y) - f(x, y)|. \quad (13.4)$$

The number $d_0 = \inf_r d$ is called the index of accuracy of the nomographic approximation of F on the set M , by functions which belong to a given class of functions r . Although the problem of finding nomographable approximations, is indeterminate in general and a large number of unrelated practical methods exist, the author proposes

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ses to calculate the indexes of accuracy of a nomographic approximation of F, by means of continuous nomographable functions of each of the given class of functions f, and to find the simplest possible method of choice of the allowed function f on the basis of the accuracy $\epsilon > d_0$ of the allowed nomographic approximation. The class of nomographable functions of a complex variable is expressed by

$$\bar{\omega} = A \int_0^{z=z_0} \frac{dz}{\sqrt{g(\sigma, g_1, g_2) - B}} + \omega_0 = A \int_{\infty}^{\varphi(z-z_0)} \frac{dz}{\sqrt{(z-B)(4z^2 - g_1z - g_2)}} + \omega_0 \quad (13.6)$$

Further, a concrete method of nomographic approximation to analytic functions by means of analytic nomographable functions is proposed; the method is based on a theorem proved by the author. Finally, it is shown that the approximate formulas for the derivatives of elliptic functions (Jacobi's as well as Weierstrass's), can be obtained in two different ways. The degree of accuracy of the approximations is estimated. Chapter II: The theory is developed of nomographing of functions of a complex double or dual variable in the real projective plane. The concept is introduced of double or dual nomo-

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grams of functions of type $f(z_1, z_2, z_3) = 0$, considered in the projective plane and defined over double (elliptic complex numbers $z = x + \varepsilon y$, $\varepsilon^2 = -1$) or dual (parabolic numbers $z = x + \omega y$, $\omega^2 = 0$) algebras, whose geometry is studied in reference 3 (B.A. Rozenfel'd Neyevklidovy geometrii (Non-Euclidean Geometries), GITTL, 1955). This chapter constituted the second part of an earlier work by the author (Ref. 1: Topologiya i geometriya prostranstva mnimoy anarfozy. UMN, v. 13, no. 4 (82), 1958); there it was published in abbreviated form. The basic formulas for nomographability of functions of double or dual variables, are derived. It is shown that many geometrical properties, characteristic of nomograms of ordinary functions of a complex variable, are retained. Further, a real space is constructed for the interpretation of the corresponding complex nomograms of functions of more than 2 complex variables $x + \varepsilon y$ or $x + \omega y$. The projective plane, constructed over double and dual algebras, is denoted by \mathbb{P}_2 and \mathbb{P}_2' , and the corresponding linear real spaces -- by \mathbb{L}_4^* and $\mathbb{L}_4'^*$. The linear interpretations of the complex nomograms have two applications: 1) The hyperbolic, parabo-

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lic and elliptic numbers are used in the study of the linear geometries of the corresponding non-Euclidean and Euclidean spaces, and 2) In the 9 plane geometries of Klein, corresponding to the 9 possible metrics of length and angle. After the projective space P_2^* has been constructed, the space L_4^* is defined as the space of pairs of real straight lines of the space E_{300} , which are reciprocal polars with respect to the imaginary sphere \tilde{K} . The pairs of straight lines are called "points" of the space L_4^* . The configuration theorems (Desargue's, Pascal's, etc.) hold in L_4^* . The above theoretical considerations make it possible to design a "straight line" of space L_4^* in the form of a material "ruler". This ruler is made of 2 rectangular metal strips, put together so as to form an "X-shape" (scissors); similar "rulers" are constructed in the spaces L_4^* and \tilde{L}_4^* .

The rulers for all 3 spaces L_4^* , \tilde{L}_4^* and \bar{L}_4^* can be executed in the form of a simple instrument, (shown in a figure). The constructed linear space contains a linear interpretation of double and dual variables, isomorphic to real nomograms. It is noted that all 3
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complex nomographs ($i^2 = -1$, $\varepsilon^2 = +1$, $\omega^2 = 0$), are of practical interest in nomographing functions of corresponding complex variables, met in linear real geometries of hyperbolic, elliptic and parabolic space. Finally, various conformal nomographs are considered, whereby the corresponding Euclidean and Riemannian metrics are introduced in the conformal planes $z = a + bi$, $z = a + b\varepsilon$, and $z = a + b\omega$. The author notes that the construction of nomographs in projective spaces can be further developed, in particular over other algebras (quaternions, alternions, etc.). There are 21 figures and 25 references (14 belonging to the first chapter, and 11 to the second): 17 Soviet-bloc and 8 non-Soviet-bloc (including 5 translations). The reference to the English-language publication reads as follows: A.A. Albert, Quadratic forms permitting composition. Ann. of Math., 43, 1942, 161-177.

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USSR/Mathematics - Nomography

1 May 53

"Algebraic Solution of the Problem of Anamorphosis of Functions in Invariant Form,"

I. A. Vil'ner

DAN SSSR, Vol 90, No 1, pp 5-8

Dets the vectors \mathbf{a}_i ($i = (1,2,3)$) from the eq $F = (a_{123})$. This eq is encountered in the problem of the anamorphosis of a function F that depends on three abstract variables z_1, z_2, z_3 and on any number of parametric abstract variables z_4, z_5, \dots (which influence automatically the dimension and nature of the scales and fields of the nomogram). Makes the nonrestrictive assumption that vector \mathbf{a}_3 does not depend on z_1, z_2 . Cites the book *Nomograficheskiy Sbornik (Nomographic Symposium)*, Moscow State Univ, 1951. Thanks Acad A. N. Kolmogorov, who presented the paper, 12 Mar 53.

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VILNER, I A

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Vilner, I. A. Diagrams for calculating the hyperbolic and circular tangents and cotangents of complex argument.
 Akad. Nauk SSSR J. Appl. Math. Mech. N.S. 4, no. 1, 145-152 (1940). (Russian. English summary)

An alignment diagram is presented which permits determination of any two of the four quantities in the relation $\tanh(\alpha + i\beta) = r e^{i\theta}$ when the other two are given. The four variables are $\alpha, \beta, r,$ and θ . The first equation very closely resembles the nomogram for $\tan \alpha$ given by H. Schuerdt [Die Anordnung der Nomographie in der Mathematik, Springer, Berlin, 1931, figure 235]. The equations connecting the variables are those of I. Vilner [Generalization of the nomogram for $\tan \alpha$, Vopr. Prikl. Matem. i Mekh. 33, no. 1, 1955]. Although the diagram is a conformal transformation of Schuerdt's diagram, it is shown to be a real improvement over his since the ranges of the variables that are included permit solution for any values. The scales are also calibrated so they can be used for $\tan(\alpha + i\beta) = r e^{i\theta}$.

R. Church (Annapolis, Md.)

Source: Mathematical Reviews, Vol 7 No. 7

Handwritten initials or mark.

Vilner, I. A. Sur les nomogrammes des systemes d'equations
 Vilner, I. A. Sur les nomogrammes des systemes d'equations
 J Appl Math, Mech N S 4 3 1940 555R
 (Russian French summary)
 Necessary and sufficient conditions are given for the
 possibility of constructing an nomogram of a system of two
 straight scales for w and z . The nomogram is constructed
 for w and z if and only if the following conditions are
 be determined from the nomogram. The nomogram is
 nomogram of a system of two straight scales for w and z .

Source: Mathematical Reviews,

Vol 1

and $w = f_1(z)$ and $z = f_2(w)$. The proof as
 outlined in the paper is to reduce the nomogram to form of the con-
 ditions are satisfied.

The method applied to analytic functions of a complex
 variable, where $z = a + ib$ and $w = p + iq$. It is shown
 that if both functions follow the conditions of the type of P.
 de Saint Venant, Mem. Acad. Sci. Torino Cl. Sci. Fis.
 Mat. Nat. (3) 1872 (1871), are satisfied,

$$\frac{a}{b} = \frac{p}{q} \text{ and } \frac{a}{b} = \frac{p}{q} \text{ or } \frac{a}{b} = \frac{p}{q} \text{ and } \frac{a}{b} = \frac{p}{q}$$

the nomogram is possible with eight scales for a, b, p, q ,
 where a, b, p, q are for second scales satisfied, the chart has
 a and b (or p and q) scales straight and the other two on a
 conic. An odd number of curved scales is impossible for an
 analytic function. Corresponding results are given for w in
 the form $w = f(z)$. The tests are applied briefly to eight functions
 as illustrations, one is the subject of the paper reviewed
 above.

(11/11/40)
 Scott

VIL'NER, I.A.

Topology and space geometry of imaginary anamorphosis. Usp. mat.
nauk 13 no.4:173-178 J1-Ag '58. (MIRA 12:1)
(Geometry) (Memography (Mathematics))

89048

S/O44/60/000/009/019/021
C111/C222

16.6500

AUTHOR: Vil'ner, I.A.

TITLE: The Problem of the General Anamorphosis in the Space and on the Plane, its Algebraization and Stereoscopic Nomography

PERIODICAL: Referativnyy zhurnal. Matematika, 1960, No.9, p.201,
Abstract No.11003. Sb.statey Vses.zaachn.politekhn.in-ta,
1958, vyp.21, pp.98-118

TEXT: The paper contains the consideration of numerous questions of the theoretical nomography, especially of those mentioned in the title. The problem of the anamorphosis in the $N+1$ -dimensional space is reduced to the N -dimensional case by a repetition of the variables and by an empirical selection of the solutions of certain functional equations.

[Abstracter's note: The above text is a full translation of the original Soviet abstract.]

Card 1/1

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99-102 (1978), AIR 10, 377. This is done in order to
parameter for the system of the "S" (S. 25-69)

eters for the system of the "S" (S. 25-69)

VIL'NER, I.A.

SUBJECT USSR/MATHEMATICS/Applied mathematics CARD 1/2 PG - 699
 AUTHOR VIL'NER I.A.
 TITLE Stereoscopic nomography and the solution of the problem of
 general anamorphosis in the N-dimensional space.
 PERIODICAL Uspechi mat.Nauk 11, 4, 123-130 (1956)
 reviewed 4/1957

The author proposes the application of spatial nomograms with the aid of the stereoscopic projection. Let the problem of the general spatial anamorphosis of the equation be solved, the point $M(x,y,z)$ of the spatial nomogram be given by the author's formulas (compare: Vil'ner, Doklady Akad.Nauk 58, 5, (1947); Doklady Akad.Nauk 90, 1, (1953); Uspechi mat.Nauk 8, (1953); Mat. Sbornik, n.Ser. 27, 1, (1950)). Let (a_i, b_i, c_i) be the centers of projection which e.g. agree with the pupil of the left hand eye ($i=1$) or the right hand eye ($i=2$). The projections of M onto the image plane of the nomogram (X,Y) for the left hand eye and the right hand eye are given by

$$X = a_i - c_i \frac{x-a_i}{z-c_i}, \quad Y = b_i - c_i \frac{y-b_i}{z-c_i}.$$

Taking $c_1 = c_2 = c$, $b_2 = b_1 = 0$ and $a_2 = -a_1 = -a$, then one obtains simpler relations. The obtained equations represent two simple simultaneously

Uspechi mat.Nauk 11, 4, 123-130 (1956)

CARD 2/2

PG - 699

nomogrammable systems the nomograms of which can be established in advance without difficulties so that such a spatial nomography becomes not more difficult than the ordinary one.
Under neglection of details some generalizations are given.

VIL'NER, I. A.

Analiticheskiye funktsii kompleksnogo peremennogo pervogo nomograficheskogo klassa i ikh nomogrammy. DAN, 53 (1946), 191-194.

Nomogrammy analiticheskikh funktsiy kompleksnogo peremennogo M., Dissertatsiya (1947).

SO: Mathematics in the USSR, 1917-1947

edited by Kurosh, A.G.,

Markushevich, A.I.,

Rashevskiy, P.K.

Moscow-Leningrad, 1948

VIL'NER, I.A.

Algebraic Solution of the Problem of the Anamorphose of Functions in an Invariant Form. DAN SSSR, n. Ser. 90, 5-8- (1953).

VIL'NER, I. A.

"Homograms of Analytical Functions of a Complex Variable (First Class)."
Sub 5 Mar 47, Moscow Order of Lenin State U imeni M. V. Lomonosov

Dissertations presented for degrees in science and engineering in Moscow
in 1947

SO: Sum No. 457. 18 Apr 55

VILNER, I. A. Cand. Physicomath. Sci.

Dissertation: "Nomograms of Analytical Functions of a Complex Variable (First Class)."
Moscow Order of Lenin State U. imeni M. V. Lomonosov. 5 Mar. 1947.

SO: Vechernyya Moskva, Mar. 1947 (Project #17836)

VIL'NER, I. A.

USSR/Mathematics - Nomograms

Card 1/1

Author : Vil'ner, I. A.

Title : Nomograms for the computation of elliptic functions and integrals

Periodical : Usp. mat. nauk, 9, No 2(60), 113-124, 1954

Abstract : Seven nomograms that permit one to find the value of $x = \text{sn}(t,k)$ for complex values of the modulus k and the variables x and t . Acknowledges the assistance of L. A. Lyusternik, Corresponding Member of the Academy of Sciences USSR. Methods are shown for finding the values of the other elliptic functions ($\text{cn}(t,k)$, $\text{dn}(t,k)$) and the integrals $t = \int_0^x \frac{dz}{\sqrt{1 - K^2 \sin^2 z}} - 1/2 dz$.

Submitted : May 8, 1952

VIL'NER, I. A.

Mathematical Reviews
Vol. 14 No. 10
Nov. 1953
Numerical and Graphical
Methods.

7-13-54

LL

Vil'ner, I. A. ✓ The analytic theory of nomographing a function of a complex variable of the first class. Mat. Sbornik N.S. 27(69), 3-46 (1950). (Russian)

In various earlier papers [see especially Doklady Akad. Nauk SSSR (N.S.) 58, 729-732 (1947); these Rev. 9, 534] the author has given summaries and certain practical applications of his work on representing an analytic function $f+ig=f(a+ib)$ as an alignment chart. The present paper gives a more detailed account of this work, stressing its mathematical aspects. The paper is, however, far from self-contained; essential steps in arguments and even statements of results are abbreviated by detailed references to the author's dissertation (1946) which is unfortunately not available to the reviewer. As not explicitly mentioned in previously reviewed papers the following may be mentioned: (1) several further sets of necessary and sufficient conditions for $w=f(z)$ to be of first class (i.e., no more than two of the four scales curved), (2) the theorem and some consequences that if $z=f^{-1}\int f(\zeta)d\zeta$ is of first class with z scales straight, the same is true of $z=\ln f(w)$, and (3) the derivation of relations among nomograms for branches of a multiple-valued function if they are of the first class.

R. Church (Monterey, Calif.)

① Math

2

VIL'NER, I.A.

Relations between the minors of one or two matrices. Usp.mat.nauk 8 no.5:139-
146 S-0 '53.

(MLRA 6:10)

(Matrices)

VIL,NER, I. A.

33009

Privedenie homografiruemoy analiticheskoy zavisimosti k normal'noy forme. Doklady Akad. Nauk SSSR, Novaya seriya, t. Lxix, No 1, 1949, s. 3-6 Bibliogr: 7 Nazv.

SO:Letopis' Zhurnal'nykh Statey, Vol. 45, Moskva, 1949

Vil'ner, I. A.

U S S R .

Vil'ner, I. A. Algebraic solution of the problem of anamorphosis of functions in invariant form. Dokl. Akad. Nauk SSSR (N.S.) 90, 5-8 (1953). (Russian)

I = F/H
b2

Vil'ner, I. A. Solution of the problem of anamorphosis of functions in (N-1)-dimensional space by vector-algebraic methods. Uspehi Mat. Nauk (N.S.) 8, no. 3(55), 153-156 (1953). (Russian)

In the first of these two papers it is stated that the vanishing of the fourth order determinant $|a_{ij}|$, $a_{ij} = F_{z_i z_j z_k z_l}^{-1}$, is necessary and sufficient for the representation as a scalar product:

$$F(z_1, z_2, z_3) = \sum_{i=1}^3 a_i(z_1) b_i(z_2, z_3).$$

Further necessary and sufficient conditions for the representation of F as a scalar triple product (Massau determinant) $\bar{a}_3 \cdot \bar{a}_1 \times \bar{a}_2$, where each vector \bar{a}_i depends only on the corresponding variable z_i , are the vanishing of two more determinants of third order: $|a_{ij}|$, $a_{ij} = F_{z_i z_j z_k}^{-1}$, $k=1, 2$. If it is

Vil'ner, I. I.

The author showed the existence of such nomograms earlier and gave [C. R. (Doklady) Acad. Sci. URSS (N.S.) 55, 783-786 (1947); MR 9, 106] the canonical representation and defining equations. Applications to the solution of certain equations involving elliptic integrals are outlined. Approximate formulas for elliptic functions that have been obtained from these investigations are given.

R. Church (Monterey, Calif.).

Vilner, I. A.

Vilner, I. A. On relations among the minors of certain matrices. *Uspehi Matem. Nauk (N.S.)* 8, no. 5(57), 139-146 (1953). (Russian)

This paper contains theorems which correspond to the theorem on "development by non-conforming cofactors". One such theorem is the following, which concerns minors of an $(n+1) \times n$ matrix. Let i, j be integers, $1 \leq i_1 < \dots < i_{s+1} \leq n$; $0 \leq j_1 < \dots < j_s < n$. Let M_0 be the $n \times n$ minor determinant on the first n rows; let M_0' be the minor determinant obtained by striking out rows with indices i_s (all s) and columns with indices $j_s + 1$ (all s). Let M_s be the $n \times n$ minor determinant on all rows except the i_s th; let M_s' be the minor determinant obtained by striking out the $(n+1)$ th row and rows with indices i_s ($s \neq s$) and columns with indices $j_s + 1$ (all s); then the relation $M_0 M_0' + \sum_{s=1}^n M_s M_s' = 0$ holds. More complicated theorems are given for minors of an $(n+r) \times n$ matrix.

J. L. Brenner (Pullman, Wash.).

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S/051/62/012/003/013/016
EO32/E314

24.3900

AUTHORS: Vil'ner, L.D. (Deceased), Rautian, S.G. and
Khaykin, A.S.

TITLE: On some possible applications of the Fabry-Perot
interferometer with internal illumination

PERIODICAL: Optika i spektroskopiya, v. 12, no. 3, 1962,
.437 - 439

TEXT: The authors are concerned with the properties of a
Fabry-Perot interferometer containing an emitting medium between
the plates. This type of modification of the Fabry-Perot inter-
ferometer is of interest in view of the suggestion made by
A.M. Prokhorov (Ref. 1 - ZhETF, 34, 1658, 1958) that it may be
suitable for use as a resonator for a quantum oscillator
(Ref. 2 - N.G. Basov, O.N. Krokhin, Yu.M. Popov - Usp. fiz.
nauk, 72, 161, 1960). Other applications are ^{also} discussed in the
present paper. It is assumed that the medium between the plates
has a finite absorption coefficient and emits uniformly through-
out its volume. A formula is derived for the intensity

f

Card 1/2

On some possible applications S/051/62/012/003/013/016
E032/E514

distribution and it is shown that the resulting interference pattern takes the form of concentric interference rings. Analysis shows that this arrangement improves the line-to-background ratio and may therefore be suitable for the spectral analysis of very small quantities of impurities and similar applications. There is 1 figure.

SUBMITTED: June 12, 1961

J

Card 2/2

MIRONOVA, L.L.; GOL'DRIN, N.Ye.; EL'BERT, L.B.; LASHKEVICH, V.A.;
VIL'NER, L.M.

Study of some conditions for trypsination of monkey kidneys
capable of increasing cell harvests. Vop.virus 7 no.4:119-121
Jl-Ag '62. (MIRA 15:8)

1. Institut poliomyelita i virusnykh entsefalitov AMN SSSR,
Moskva. (TISSUE CULTURE) (KIDNEYS) (TRYPSIN)

CHUMAKOV, M.P.; L'VOV, D.K.; SARMANOVA, Ye.S.; GOL'DFARB, L.G.; NAYDICH, G.N.;
CHUMAK, N.F.; VIL'NER, L.H.; ZASUKHINA, G.D.; IZOTOV, V.K.;
ZAKLINSKAYA, V.A.; UMA'NSKIY, K.G.

Comparative study of the epidemiological effectiveness of vaccinations with tissue culture and brain vaccines against tick-borne encephalitis. Vop. virus. 8 no.3:307-315 My-Je'63.
(MIRA 16:10)

1. Institut poliomyelita i virusnykh entsegalitov AMN SSSR,
Moskva i Kemerovskaya oblastnaya sanitarno-epidemiologicheskaya
stantsiya.. (ENCEPHALITIS--PREVENTIVE INOCULATION)

VIL'NER, L. M.: Master Med Sci (diss) -- "The chick embryo as an experimental model in the study of the virulence and immunogenicity of strains of *S. typhi*". Moscow, 1959. 15 pp (Min Health USSR, Central Inst for the Advanced Training of Physicians), 200 copies (KL, No 8, 1959, 138)

VIL'NER, L.M.

Cultivation of typhoid microbes in developing chick embryos. Zhur.
mikrobiol. epid i immun. 31 no.6:17-19 Je '60. (MIRA 13:8)

1. Iz Gosudarstvennogo kontrol'nogo instituta meditsinskikh biologiches-
skikh preparatov imeni Tarasevicha.
(SALMONELLA TYPHOSA)

ETINGOF, R.N.; DZAGUROV, S.G.; VIL'NER, L.M.

Possibility of culturing the poliomyelitis virus on simple media.
Vop. virus. 7 no. 1:115-118 Ja-F '61. (MIRA 14:4)

1. Institut po izucheniyu poliomyelita AMN SSSR, Moskva.
(POLIOMYELITIS)
(BACTERIOLOGY—CULTURES AND CULTURE : MEDIA)

DZAGUROV, S.G.; SHMELEVA, G.A.; VIL'NER, L.M.

Comparative study of the dynamics of the inactivation of a virus
in dialyzed and nondialyzed specimens of vaccine against poliomyelitis
detoxified with formaldehyde. Vop. virus. 6 no.5:616-617 S-0 '61.
(MIRA 15:1)

1. Institut poliomyelita i virusnykh entsefalitov AMN SSSR, Moskva.
(POLIOMYELITIS)

CHUMAKOV, M.P.; L'VOV, D.K.; GAGARINA, A.V.; VIL'NER, L.M.; RODIN, I.M.;
ZAKLINSKAYA, V.A.; GOL'DFARB, L.G.; KRASINA, M.K.

Study of conditions influencing the effectiveness of immunization
against tick-borne encephalitis. Report No.1: Influence of the
immunogenic properties of the vaccine on the effectiveness of
vaccination and revaccination. Vop. virus. 10 no.2:168-172 Mr-Ap
'65. (MIRA 18:10)

1. Institut poliomiyelita i virusnykh entsefalitov AMN SSSR, Moskva.

GAGARINA, A.V.; VILNER, L.M.; VASENOVICH, M.I.; SVET-MOLDAVSKAYA, I.A.; KHANINA,
M.K.; SVET-MOLDAVSKIY, G.Ya.

Nonencephalitogenic formalized vaccine against tick-borne encephalitis.
Vcp. virus. 9 no.2:167-169 Mr-Ap '64. (MIRA 17:12)

1. Institut poliomielita i virusnykh entsefalitov AMN SSSR, Moskva.

CHUMAKOV, M.P.; L'VOV, D.K.; GOL'DFARB, L.G.; ZAKLINSKAYA, V.A.;
GAGARINA, A.V.; MASHKOV, V.T.; YASIN, A.Ye.; RODIN, V.I.;
VIL'NER, L.M.

Effect of the length of intervals between inoculations on the
efficacy of vaccination and revaccination against tick-borne
encephalitis. Vop. virus. 10 no.3:266-270 My-Je '65. (MIRA 18:7)

1. Institut poliomyelita i virusnykh entsefalitov AMN SSSR, Moskva,
i Kemerovskaya oblastnaya sanitarno-epidemiologicheskaya stantsiya.

VII'NER, J.S.

Some data on the results of treatment of cancer patients with
cadmium iodide and arsenic trioxide hydrochloric acid at the
Second United Hospital of the Moscow district of Leningrad.
Vop. onk. 9 no. 6:126-128 '66. (MIR 17:2)

1. Iz 2-oy ob'yedinennoy bol'nitsy Moskovskogo rayona (glavnyy
vrish - P.G. Kachalova).

VIL'NER, P.D. (Kuybyshev); OSIPOV, N.Ya. (Kuybyshev)

Determining dynamic rigidities of rotors by the method
of expansion of dynamic flexures in series according to
natural forms. Izv. vys. ucheb. zav.; av.tekh. 2 no.1:
111-124 '59. (MIRA 12:3)

(Rotors)

VARENITSYA, Ye.T., doktor biolog. nauky KATKOVA, M.M., kand. sel'skokhoz.
nauky VIL'NER, R.A., staryiy zootekhnik

Increasing the butterfat percentage of black and white cattle
using hybrid bulls from the 'Gorki leninskiye' Farm.
Agrobiologiya no.3:40-410 My-Je '65. (MIRA 18:11)

1. Nauchno-issledovatel'skiy institut sel'skogo khozyaystva
tsentral'nykh rayonov severozapadnoy zony.

GAPEYEV, Boris Mikhaylovich; VIL'NER, S.L., rotsenzent; SMIRNOVA,
G.V., tekhn. red.

[Taking apart, cleaning and reassembling wrist watches] Raz-
borka, chistka i sborka naruchnykh chasov. Moskva, Mashgiz,
1961. 20 p. (MIRA 15:9)
(Clocks and watches--Repairing and adjusting)

VIL'NER, V.A., inzh. (Kiyev) SOKOLOV, V.G., inzh. (Kiyev)

Fine grained improved asphalt concrete. Gor. khoz. Mosk. 32
no.6:31 Je '58. (MIRA 11:7)

(Asphalt concrete)

VIL'NER, Yakov Moiseyevich, dots.; VORNYARSKIY, Iosif Pinkhusovich,
dots.; KOVALEV, Yakov Timofeyevich, dots.; KUZMENKOV,
Vasiliy Ivanovich, dots.; LAZAREVICH, Ivan Grigor'yeovich,
dots.; SHUL'PIN, Igor' Aleksandrovich, dots.; AKALOVICH,
N.M., red.

[Laboratory practice in hydraulics: Manual and methodological
instructions on laboratory procedures in hydraulics; for cor-
respondence and part-time students] Laboratornyi praktikum po
gidravlike: Rukovodstvo i metodicheskie ukazaniia po provede-
niiu laboratornykh rabot po gidravlik dlia studentov zaochno-
nogo i vechernego obucheniia. [By] I.A.M.Vil'ner i dr. Minsk,
Izd-vo M-va vysshego, srednego spetsial'nogo i professional'-
nogo obrazovaniia BSSR, 1961. 131 p. (MIRA 18:4)

1. Kafedra gidravliki Belorusskogo politekhnicheskogo insti-
tuta (for all except Akalovich).

VILNIANSKY, L. I.

EXCERPTA MEDICA Sec.3 Vol.11/9 Endocrinology Sept57

1683. VILNIANSKY L. I. Ukrainian Inst. of Tuberc. and Clin. Sect., Ukrainian Inst. of Exp. Endocrinol., Kharkov, USSR. *Some peculiarities in the clinical course of tuberculosis in patients with diabetes mellitus (Russian text) PROBL. ENDOKR. 1956, 2/3 (64-68)

The symptomatology of the infiltrative form of tb in diabetes mellitus shows some peculiarities: a more protracted course with little or no symptoms, less pronounced febrile reactions, a rare onset in form of a grippe, and difficulties in finding tb bacilli in the sputum. The subjective picture is at first reminiscent of diabetes mellitus manifestations. These peculiarities impose the necessity of systematic roentgenological investigations in all patients with diabetes to reveal the tb in time.

Krimsky - Moscow (XV, 3, 6)

VIL'NINA, M.A.

More about the quality and classification of fine wool. Tekst. proz.
23 no.8:25-27 Ag '63. (MIRA 16:9)

1. Glavnyy inzh. Nevinnoysskoy fabriki pervichnoy obrabotki
shersti. (Wool—Standards)

ORLOV, I.M., dotsent; VIL'NINA, M.A.; METEL'KOVA, T.V.

Quality of the wool from fine-wooled sheep bred in the Northern
Caucasus and Kalmyk A.S.S.R. Tekst. prom. 24 no.2:18-19 F '64.
(MIRA 17:3)

1. Kafedra tovarovedeniya i tekhnologii zhivotnogo syr'ya
Moskovskoy veterinarnoy akademii (for Orlov).
2. Glavnyy inzh.
Nevinnomysskoy fabriki pervichnoy obrabotki shersti (for Vil'nina).
3. Nachal'nik nauchno-issledovatel'skoy laboratorii Nevinnomysskoy
fabriki pervichnoy obrabotki shersti (for Metel'kova).

VILNIS, R., CAND TECH SCI, "THERMAL DECOMPOSITION OF
DAMP PEAT ^{discovery} IN DRYING WITH RECIRCULATING SUPERHEATED STEAM
UNDER PRESSURE." RIGA, 1961. (STATE COM ^{of} FOR HIGHER AND
SEC SPEC ED OF THE COUNCIL OF MINISTERS LASSR, LATVIAN
AGR ACAD). (KL, 3-61, 213).

AUTHORS: Gul', V. Ye., Vil'nits, S. A. S07/156-58-2-41/48

TITLE: Temperature Influence on the Kinetics of Growth of the Cutting of Vulcanizate (Vliyaniye temperatury na kinetiku razrastaniya nadreza v vulkanizate)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 2, pp. 365-368 (USSR)

ABSTRACT: Several new papers (Refs 1- 4) give evidence of the fact that the rupture of the vulcanizate represents a process which continues to develop in the course of time. A slow and a rapid stage of rupture is distinguished. (Ref 1). It was shown by slow-motion pictures that the velocity of tearing is first very small but later it increases jump-like. This can be observed with as well as without a cutting. The influence of cutting was investigated in detail (Ref 5). The tearing of a vulcanizate has much in common with the tearing of brittle materials (L.N. Tsarskiy and G.Z. Krasikova participated in the experiment). Nevertheless the difference between the mechanism of a highly elastic and a brittle

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Temperature Influence on the Kinetics of Growth
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tearing is so considerable that important changes of the time course of its growth within the range of the passing from the highly elastic to the vitrified state could be expected. This was the purpose of the present investigation. Filled vulcanizates served for the experiment: mixture Nr 1: rubber SKB and Nr 2: SKB with natural rubber at a ratio of 4 : 6, mixture Nr 1 contained 45%, Nr 2 - 10% of soot. The vulcanizates could be tested at temperatures of up to -57° . The projection of the slow-motion pictures made possible a retardation by 10 to 500 times. It can be seen from the elaboration of the motion pictures on the analyzer that at all temperatures the shape of the curves described already earlier could be observed (Ref 5). The initial velocity of tearing is so small that it cannot be investigated by means of the slow-motion picture method. Immediately before the end of tearing its velocity increases jump-like. In the case of the same conditions the maximum velocity is determined by the temperature of examination. At a lowering of temperature

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of the Cutting of Vulcanizate

SOV/156-58-2-41/48

from 22 to 0° the velocity decreases from 2500 to 1000 mm/sec. The latter continues to decrease and then increases again at -50° and lower: it then reaches values of approximately 3000 mm/sec. Figure 1 shows the dependence concerned. Velocity does not change regularly. Apparently this change of the time course is in connection with the passing from a highly elastic tearing to a brittle one. The passing from a highly elastic state into a vitrified one is accompanied by a decrease of velocity of the formation of cracks and other phenomena. Their consideration is of great importance for the solution of practical problems which are connected with the mechanical destruction of vulcanizates. There are 2 figures and 9 references, 8 of which are Soviet.

Card 3/4

Temperature Influence on the Kinetics of Growth
of the Cutting of Vulcanizate

SOV/156-58-2-41/48

ASSOCIATION: Kafedra fiziki Moskovskogo instituta tonkoy khimicheskoy
tekhnologii im. M. V. Lomonosova (Chair of Physics of the
Moscow Institute for Fine Chemical Technology imeni M.V.
Lomonosov Moscow)

SUBMITTED: October 29, 1957

Card 4/4

ZINOV'YEV, Vladimir Andreyevich, prof.[deceased]; PRISHED'KO,
Nikolay Avtonomovich; ~~VIL'NITS, Samuil Avseyevich;~~
FADEYEV, I.I., red.; BOCHAROVA, Yu.F., red.

[Machine parts] Detali mashin. Izd.2. Moskva, Vysshaia
shkola, 1964. 347 p. (MIRA 17:12)

SOV/138-58-10-6/10

AUTHORS: Gul', V. Ye.; ~~Vil'nits, S. A.~~; Gal'perin, N. I.; Il'in, N. S.;
Kaplunov, Ya. N.; Tsarskiy, L. N. and Krasikova, G. Z.

TITLE: Investigation of the Possibility of Pulverizing Chilled Rubber (Razrabotka sposoba izmel'cheniya okhlazhdennykh rezin)

PERIODICAL: Kauchuk i Rezina, 1958, Nr 10, pp 22 - 28 (USSR)

ABSTRACT: Much rubber scrap is not re-used because of the difficulty of pulverizing the material. This difficulty can be overcome by chilling the rubber. The authors first review the changes in physical and mechanical properties of rubber at low temperature. Fig.1 shows maximum speed of rupture (mm/sec) against temperature for a vulcanized mixture of SKB and natural rubber. Fig.2 shows the same for SKB (Butyl) rubber. Each figure shows curves for three different rates of deformation. The maximum speed of rupture is that which occurs immediately before the specimen parts. The re-orientation of material at the point where rupture commences was studied by scribing a line across the specimens, and comparing the thickness of the line where rupture commences with the thickness of the line in the unruptured part of the stretched specimen. In Fig.4 these relative thicknesses are plot-

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ted against time for specimens of SKB and natural rubber at four different temperatures. The specimens were deformed at a rate of 500 mm/min. At -53°C no re-orientation at the rupture point occurs. Fig.5 shows stress versus relative elongation for the same rubber mix at different temperatures. Fig.6a shows the relative elongation versus temperature, and Fig.6b the stress versus temperature at the moment of rupture, in each case for three different rates of deformation. In Fig.7 the work of deformation (kg/cm^3) is plotted against temperature for SKB-50 and the same in Fig.8 for SKB-50 plus natural rubber. By comparing Figs. 2, 6 and 7 one sees that the temperature for maximum work of deformation to rupture corresponds to that for minimum speed of rupture and for maximum relative elongation at rupture. At low temperatures the low mobility of the molecular structure prevents re-orientation at the point of rupture as is seen in Fig.4; the resistance to rupture and relative elongation decrease and the speed of rupture increases. Fig.9 shows stress versus relative elongation for samples of rubber and fabric, cut from a tyre casing, at three different rates of deformation for four temperatures. These follow

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the same form as the plain rubber specimens in Fig.5. In order to obtain a brittle state when pulverizing rubber and fabric materials the temperature must be lowered and the speed of pulverization or rupture must be increased. The apparatus shown in Fig.10 was constructed to determine optimum speed of deformation for pulverization. Specimens 10 - 20 mm wide and 1 - 6 mm thick are clamped to the periphery of a 200 mm disc which can be rotated at various speeds. The disc runs in an insulated tank. The specimens strike against a pin mounted on a spring, so that the force acting on the pin can be measured dynamometrically, and the energy of deformation in fracturing the specimens can be calculated. Optimum speed was found to be in the region of 3000 r.p.m. From the parameters established, the hammer-mill type of pulverizer, shown in Fig.11, was constructed. The gap between the hammers and the saw-toothed periphery of the mill casing is 1.5 - 2 mm. The mill runs at 3000 r.p.m. The mill is fed with pieces of rubber about 40 x 20 x 8 mm previously cooled in a dry ice and alcohol mixture. Pulverized material discharged through the grating at the

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base of the mill was subjected to sieve analysis. Energy input was measured by a recording wattmeter. Table 1 shows results with this pulverizer for various rubber and rubber fabric materials. The size of the openings in the discharge grating was either 5 mm or 2 mm. Material was cooled to temperatures of -66° , -60° and -50°C . Time and k.w.h. to pulverize 400 gramme quantities of material are given, and the specific energy requirement in k.w.h. per metric ton of material is given in the last column. Table 2 gives the sieve analysis for the various samples for 5 mm and for 2 mm openings in the discharge grating. To complete the calculation for energy requirements, the power in k.w.h. required to cool one ton of material to temperatures between 5°C and -55°C are given. These calculations are based on an initial temperature of 20°C ., specific heat of material $0.5 \text{ c.cal/kg}^{\circ}\text{C}$, and 59.5% cooling efficiency from a Freon 12-refrigeration circuit as

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in Fig.12 with a further 20% loss to air allowed for.
There are 12 Figures, 2 Tables and 7 Soviet References

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Card 5/5

POZIN, M.Ye.; KOPLYEV, B.A.; SEYTMAGZIMOV, A.; VIL'NITS, Ye.L.

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Experimental tuberculosis in white rats with alloxan diabetes.
Medych.zhur.24 no.4:27-34 '54. (MLRA 8:10)

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(m.Kharkiv)

(DIABETES MELLITUS, experimental,
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VIL'NYANSKIY, L.I. (Khar'kov)

Some clinical aspects of tuberculosis in diabetes mellitus. Probl.
endok. i gorm. 2 no.3:64-68 My-Je '56. (MLRA 9:10)

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i klinicheskogo otdela (rukovoditel' - prof. M.A.Kipalovich)
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kandidat meditsinskikh nauk S.V.Maksimov)

(DIABETES MELLITUS, compl,
tuberc., pulm., role of low resist. i diabetes, diag. &
ther.)

(TUBERCULOSIS, PULMONARY, etiol. and compl.
diabetes mellitus, role of low resist. in diabetes,
diag. & ther.)

EXCERPTA MEDICA Sec.15 Vol.10/5 Chest Diseases May57

1373. VILNANSKY L.I. Ukrainian Inst. of Tuberc. and Clin. Sect., Ukrainian Inst. of Exp. Endocrinol., Kharkov, USSR. *Some peculiarities in the clinical course of tuberculosis in patients with diabetes mellitus (Russian text) PROBL. ENDOKRINOL. GORMONOTERAPII 1956, 2/3 (64-68)

The symptomatology of the infiltrative form of tb in diabetes mellitus shows some peculiarities: a more protracted course with little or no symptoms, less pronounced febrile reactions, a rare onset in form of a grippe, and difficulties in finding tb bacilli in the sputum. The subjective picture is at first reminiscent of diabetes mellitus manifestations. These peculiarities impose the necessity of systematic roentgenological investigations in all patients with diabetes mel. to reveal the tb in time. The correct treatment of diabetes mel., the early discovery of tb and the timely combined treatment with the antibacterial preparations (streptomycin, phthyvaside) and, where indicated, with artificial pneumothorax and correcting operations, considerably improve the prognosis, lessen the frequency of progressive forms of tb in such patients and not infrequently achieve a complete cure.

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(Lenin, Vladimir Il'ich, 1870-1924)
(Relativity (Physics))

S/080/61/034/001/007/020
A057/A129

52200 1087, 1043, 1155

AUTHORS: Bezukladnikov, A.B., Vil'nyanskiy, Ya.Ye.

TITLE: Effect of the Chlorides of Iron and Aluminum on the Chlorination Rate of Titanium Dioxide

PERIODICAL: Zhurnal Prikladnoy Khimii, 1961, Vol. 34, No. 1, pp. 49-53

TEXT: Chlorination of titanium-bearing slags in molten chlorides (carnallite) is currently being introduced into industry. Amongst other questions the effect of iron and aluminum chlorides on the chlorination kinetics of titanium oxides is important. This question was investigated in the present paper and the results of laboratory experiments are presented. Chlorination was carried out with 100% chlorine gas at 500^o-900^oC. 150 g carnallite (0.20% Mg, 0.0005% Fe and 0.001% TiO₂) was mixed in a quartz tube with 1.6 g dried petroleum coke and melted at 700^oC during 1 hr, introducing chlorine gas at a rate of 4.5 l/hr. Then a dried mixture containing 1.6 g TiO₂ and 0.4 g coke were added after adjusting the heating to the temperature of the experiment. TiCl₄ evolved was absorbed in diluted H₂SO₄. The chlorination
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kinetics was investigated without additions of FeCl_3 or AlCl_3 . Reaction between the latter and suspended TiO_2 particles was studied by chlorination of molten carnallite (containing 2 g coke) during 1.5 hr at 750°C . After this period carnallite melt containing FeCl_3 (10 g) or AlCl_3 (24.6 g) was added, and after 10-15 min the first sample was taken. Then 3 g TiO_2 and 1 g coke was added and 3 g samples of the melt were periodically analyzed. The obtained results demonstrate (Fig.2) that in the first 15 min at low temperatures (500° and 600°C) the chlorination rate is high. This stage of chlorination was not taken into account in calculations of the medium chlorination rate (Fig.3). The results indicate that chlorination rate in the molten carnallite depends on the temperature of the bath. According to the slope of the curve 1 in Fig.3 the authors assume that chlorination at the investigated temperatures occurs in the kinetic range. Dependence of the chlorination rate constant on temperature is given by: $\log K = 4.114 - 11,200/4.574T$ (11,200 = apparent activation energy). The results obtained for the chlorination of TiO_2 with FeCl_3 and AlCl_3 admixtures (Fig.4 and 5) demonstrate

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that the chlorination rate increases with the concentration of these admixtures. A considerable increase in the FeCl_3 and AlCl_3 content at the end of reaction indicates that exchange reaction according to E.I. Krech [Ref.1: ZhOKh, VII, 8, 1249 (1937)] may occur. Experiments on the chemism of the reaction show (Fig.6) that at a concentration of 0.4% TiO_2 practically all ferrous chloride changes into ferri chloride. With decreasing TiO_2 the FeCl_3 content increases. Apparently the following reaction takes place:

$$4 \text{FeCl}_3 + \text{TiO}_2 + \text{C} \longrightarrow \text{TiCl}_4 + 4 \text{FeCl}_2 + \text{CO}_2, \quad 2 \text{FeCl}_2 + \text{Cl}_2 \longrightarrow 2 \text{FeCl}_3.$$

Exchange reaction with AlCl_3 (Fig.7) occurs until Al_2O_3 is formed. With decreasing TiO_2 concentration the content of AlCl_3 increases due to the chlorination of Al_2O_3 . Thus AlCl_3 and FeCl_3 are catalysts for the TiO_2 chlorination. Catalysis of iron compounds in chlorination of oxides was observed already by Ashkroft [Ref.2: V.M. Gus'kov, Sistematicheskoye sobraniye patentov (Systematic Collection of Patents) GONTI (1938)]. Chlorinations of TiO_2 in carnallite melt at 500°C - 900°C with 2% FeCl_3 demonstrated (Fig.3, curve 2) that at 680°C chlorination changes from the kinetic to the diffusion range

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and the apparent activation energy decreases from 7,340 cal to 770 cal. The obtained results indicate that above 680°C intensification of mixing of the melt is advantageous since a better mass exchange takes place. The chlorination rate can be increased not as much by raising the temperature, but by increasing the content of FeCl₃ or AlCl₃ in the melt. There are 7 figures and 2 references: 2 Soviet-bloc.

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SUBMITTED: February 24, 1960

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VILNER, L.M.

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