67483

10,7000

SOV/24-59-5-10/24

AUTHOR: Shchelkin, K.I.   (Moscow)

TITLE: A Possible Mechanism for the Intensification of Weak
Shock Waves in the Turbulent Combustion Zone (The Theory
of High-frequency Vibrations of Flames)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
nauk, Energetika i avtomatika, 1959, Nr 5, pp 86-96 (USSR)

ABSTRACT: The paper is a continuation of previous work (Ref 1).
An analytical relationship is obtained between the
dimensionless change in pressure in a weak shock wave and
the dimensionless increase in combustion velocity
arising in an idealised combustion chamber of a reactive
engine.   Special attention is given to the dependence of
the intensity of the shock wave on combustion propagation
velocity and vice versa.   It is shown quantitatively
that the movement of a shock wave through the combustion
zone causes an increase in the velocity of turbulent
combustion.   A criterion is laid down for the intensifi-
cation of weak shock waves in the combustion zone,
equivalent to a condition for the establishment of high
frequency vibrations in the idealised combustion chamber.
There are 6 figures and 4 Soviet references.

Card
1/1

SUBMITTED: July 16, 1959.

DENISOV, Yu.N.; TROSHIN, Ya.K.; SHCHELKIN, K.I.

Analogy between combustion in an explosion wave and in a rocket
motor. Izv. AN SSSR. Otd. tekh. nauk. Energ. i avtom. no.6:79-89
N-D '59.   (MIRA 13:8)

1. Institut khimicheskoy fiziki AN SSSR i Institut khimicheskoy
kinetiki i goreniya Sibirskogo otdeleniya AN SSSR.
                 (Rockets (Aeronautics)—Combustion)

SOV/56-36-2-36/63

10(2)

AUTHOR: Shchelkin, K. I.

TITLE: Two Cases of Unstable Combustion (Dva sluchaya neustoychi-
               vogo goreniya)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
               Vol 36, Nr 2, pp 600 - 606 (USSR)

ABSTRACT: The first part of this paper deals with the unsteadiness
               of the ignition front in a detonation wave. The author first
               investigates a steady detonation wave. If the adiabatic
               expansion of the gas (after a decrease of gas temperature)
               increases the retardation of the ignition by a quantity of
               the order of magnitude (or by more) of the retardation it-
               self, any initial curvature of the front increases and a
               steady front becomes unsteady. A criterion is deduced for
               the unsteadiness of the plane ignition zone in the detonation
               wave:
               $$(E/RT_A)(1-T/T_A) \geqslant 1.$$
               This equation can be written down also as follows:

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Two Cases of Unstable Combustion

$$(E/RT_A)[\ 1-(P_J/P_A)^{(\gamma-1)/\gamma}] \geqslant 1.$$

E denotes the activation energy of the reaction, R – the gas
constant, P – the pressure, T – the temperature of the non-
burnt gas after its expansion. The index A apparently de-
notes the front of the shock wave, the index J – the Zhuge
point. This criterion can easily be applied to any concrete
case. The front of the shock wave is disturbed if the ignition
front becomes unsteady, and this fact causes the formation
of inclined compression jumps. If the breadth of the front
of the detonation wave λ is small with respect to the tube
diameter d, many inclined jumps can occur in the plane of
the front and in the whole cross section of the tube. This
cross section contains $(d/3\lambda)^2$ inclined jumps which, from
the surface of the shock wave, propagate in various directions
and ignite the gas in the inclined shock waves and especially
in the places of their collision. The front of the detonation
wave, therefore, assumes the shape of a pulsating brush.
There is a region of spin detonations with 2,3, etc. "heads"
(golova) between the one-head spin detonation and the de-
tonation with a front (brush). From the above mentioned

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Two Cases of Unstable Combustion   SOV/26-36-2-38/63

discussion a condition for the occurrence of a "one-head
spin" can be deduced: $3\lambda/d = 3\tau(D-W)/d > 1$, where W de-
notes the velocity of the gas in the compression jump,
d - the diameter of the tube, D - the velocity of the
detonation. An unsteadiness of the ignition compression
zone and a "brush-like" fine structure of the detonation
front can be observed also in the detonation of compressed
explosives. A spin detonation was, however, not observed
in compressed explosives. The "brush-like" structure of the
combustion zone in the detonation of explosives can
apparently be explained by the unsteadiness of the plane
zone of ignition and by the formation of many inclined shock
waves which collide with one another and ignite the explosive.
The second part of this paper deals with the unsteadiness
of the ignition zone as a source of high frequency combustion
vibrations in forced combustion chambers. A criterion is
given for the unsteadiness of the plane ignition zone. Also
in this case, pulsations of the combustion zone are caused
by disturbing the steadiness of the wave front. The frequency
of these pulsations can be estimated by means of a formula
given in this paper. The maximum drop in pressure (within

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Two Cases of Unstable Combustion   SOV/56-36-2-38/53

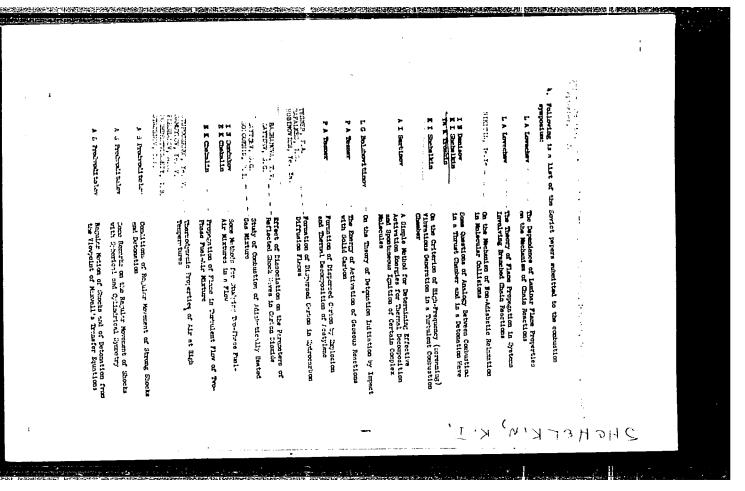the traveling wave) can in a very approximate manner be estimated according to $\Delta P_{max} = P_A(\pi-1)W/a$, where π denotes the increase in pressure for combustion in a constant volume. There are 6 figures and 7 references, 6 of which are Soviet.

SUBMITTED: August 28, 1958

Card 4/4

Following is a list of the Soviet papers submitted to the conduction symposium:

L A Lovachev — The Dependence of Laminar Flame Properties on the Mechanism of Chain Reactions

L A Lovachev — The Theory of Flame Propagation in Systems Involving Branched Chain Reactions

NIKITIN, Ye.Ye. — On the Mechanism of Non-Adiabatic Relaxation in Molecular Collisions

I H Denisov
K I Shchelkin
IA I Troshin — Some Questions of Analogy Between Combustion in a Thrust Chamber and in a Detonation Wave

K I Shchelkin — On the Criterion of High-Frequency (screaming) Vibrations Generation in a Turbulent Combustion Chamber

A I Serdiuev — A Simple Method for Determining Effective Activation Energies for Thermal Decomposition and Spontaneous Ignition of Certain Complex Molecules

L G Boluboritdinov — On the Theory of Detonation Initiation by Impact

P A Tesner — The Energy of Activation of Gaseous Reactions with Solid Carbon

P A Tesner — Formation of Dispersed Carbon by Explosion and Thermal Decomposition of Acetylene

TESNER, P.A.
ZAFALKO, ...
ROBINOVICH, Ye. M. — Formation of Dispersed Carbon in Hydrocarbon Diffusion Flames

B. ... — Effect of Dissociation on the Parameters of Reflected Shock Waves in Carbon Dioxide

... — Study of Combustion of Adiabatically Heated Gas Mixture

I H Denisov — Some Methods for Making Two-Phase Fuel-Air Mixtures in a Flow

K I Chakhin — Properties of Flame in Turbulent Flow of Two-Phase Fuel-Air Mixture

... — Thermodynamic Properties of Air at High Temperatures

A S Predvoditelev — Conditions of Regular Movement of Strong Shocks and Detonation

A S Predvoditelev — Some Remarks on the Regular Movement of Shocks with Spherical and Cylindrical Symmetry

A S Predvoditelev — Regular Motion of Shocks and of Detonation from the Viewpoint of Maxwell's Transfer Equations

SHCHELKIN, K. I.

28374
S/124/61/000/008/019/042
A001/A101

II. 8300

AUTHORS: Denisov, Yu.N., Troshin, Ya.K., Shchelkin, K.I.

TITLE: On a certain analogy between burning in a rocket engine and in a
             detonation wave

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 8, 1961, 36, abstract 8B221 (V
             sb. "3-ye Vses. soveshchaniye po teorii goreniya. T.1". Moscow,
             1960, 193 - 199)

TEXT: Without considering physico-chemical processes in the combustion
chamber of a rocket engine, the authors identify the burning zone in the rocket
engine chamber with the zone of strong discontinuity in which a substance goes
over from the initial state into the final state at the expense of energy libera-
tion. The state of perfect gas formed at fuel evaporation is assumed for the
initial state. In this schematization, operational conditions of rocket engines
are represented by Gugonio adiabatic curve (its lower branch). Based on a cer-
tain analogy of burning in a rocket engine and in a detonation wave, the authors
apply to burning in the rocket engine the criterion of instability of the plane
front of burning at detonation

Card 1/2

On a certain analogy ...

25374
S/124/61/000/008/019/042
A001/A101

$$\frac{d\tau}{dT} \Delta T \geqslant \tau$$

(where ΔT is gas temperature change in the disturbance zone), delay of ignition τ is connected with temperature by the equation $\tau = K e^{E/RT}$. These relations, together with the Gugonio adiabatic curve with heat supply q, yield the following condition for excitation in the rocket engine of oscillations with frequency $\nu = (1/\tau) (d/2 \lambda)^2$:

$$(\gamma - 1)^2 \frac{E}{RT_1} \frac{M_1^2 q}{a_1^2} \geqslant 1$$

Here τ and λ are certain delay time and width of the burning zone, d is chamber diameter, M_1 is Mach number for gas before the burning zone.

K. Artamonov

[Abstracter's note: Complete translation]

Card 2/2

AUTHOR: Shchelkin, K. I., Corresponding
             Member of the AS USSR

68860
S/030/60/000/02/002/040
B008/B014

TITLE: Detonation Processes

ABSTRACT: In this article the author reports on the study of detonation pro-
             cesses and describes the development of the detonation theory.
             First, he explains the fundamental principles of this theory (Figs
             1 and 2), which was later completed by Ya. B. Zel'dovich (Fig 3).
             This theory which has been developed for gases is successfully
             applied to the detonation of condensed explosives. Its reliability
             in calculating detonations of explosives was improved by the de-
             velopment of a theoretically founded equation of state for the
             explosion products. Numerous empirical formulas were replaced by
             this equation which was derived by L. D. Landau and K. P.
             Stanyukovich. In spite of the apparent perfection of the detonation
             theory it was not possible to explain an experimentally proved
             fact identified by the British scientists Campbell and Woodhead
             in 1926 as a spin detonation with the help of the scheme of a plane
             detonation (Fig 4). For comparison, the author shows a normal det-
             onation in figure 5. The spin was later detected also in other

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Detonation Processes

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S/030/60/000/02/002/040
B008/B014

slowly reacting mixtures by Kh. A. Rakipova, Ya. K. Troshin, and
the author of the article under review. The author showed (Ref 2)
that the spin nucleus represents an oblique (discontinuous) shock
wave in which the mixture detonates much more easily than in a
plane wave, as a result of higher temperature and pressure. An
oblique detonation is schematically represented in figure 6. The
spin detonation as a detonation directed by the oblique compression
shock could be sufficiently founded. Yu. N. Denisov and Ya. K.
Troshin assume that the angle K in figure 6 may assume the shape
shown in figure 7. The attempt was made to apply the classical
theory of plane detonation to spin detonation. The rate of spin
detonation, the state and the velocity of the combustion products
could be determined approximately. Determination of the reaction
zone of a spin detonation as a three-dimensional process can be
facilitated by transforming this problem into a two-dimensional
one. Figure 8 illustrates a "normal" detonation which gives a
reticular impression and in which a similar event as in the case
of spin detonation was detected. In connection with these experi-
ments the author performed an approximate quantitative analysis
of the unsteadiness of a plane detonation wave (Ref 4). It was
found that the intensity of the detonation is increased by this

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68860

Detonation Processes

S/030/60/000/02/002/040
B008/B014

unsteadiness due to the formation of zones with higher temperatures than those of the plane wave. These zones are reliable detonation centers. The unsteadiness of one type of detonation causes new steadier types. The practical application of the detonation theory is illustrated by the author by the combustion processes taking place in rocket chambers (Fig 9). There are 9 figures and 5 Soviet references.

Card 3/3

I. 1210

II. 8200

28348   S/124/61/000/007/010/044
A052/A101

AUTHORS: Volin, B. F., Troshin, Ya. K., Filatov, G. I., Shchelkin, K. I.

TITLE: On the reacton-kinetic nature of heterogeneities in the shock front and the part played by them in the process of propagation of gas detonation

TEXT: The process of origination of heterogeneities in the forward front of a flat detonation layer is considered theoretically. The disturbance develops in the ignition front and propagates over the front with the velocity of sound in the shock-compressed gas a_1. In the direction of propagation of detonation the disturbance is drifted by the flow behind the forward shock front and overtakes the front at the moment

$$t = \frac{\lambda}{a_1 - (D - \omega)}$$

where λ - the width of detonation zone, D - the velocity of detonation, ω - the

Card 1/3

On the reacton-kinetic nature ...

velocity of shock-compressed gas in the laboratory system of coordinates. By this moment t the disturbance over the ignition front will have the diameter

$$\Delta y \sim \tau D \frac{2\,(\gamma - 1)/(\gamma + 1)}{1 - 1/\sqrt{2\gamma/(\gamma - 1)}} \tau D \beta \qquad (1)$$

where τ - the period of the induction of ignition, $\gamma = c_p/c_v$ - the ratio of specific heats, $\beta = 0.5 \div 0.4$ at $\gamma = 1.4 \div 1.3$. The identification of Δy with the experimentally observed dimension of heterogeneities enables one to consider equation (1) as the dependence of the mean dimension of such heterogeneities on reaction-kinetic and gas-dynamic factors. The results of experiments on obtaining the track imprints of detonation wave on faceplates covered prior to the experiment with a thin layer of carbon black are described. Another proof has been found of the existence of heterogeneities, not only near the wall of the detonation tube, but over the whole surface of the detonation front in the tubes as well. It is shown that such heterogeneities exist also in the spherical detonation wave. It is found out that the total number of heterogeneities over the whole detonation front increases with the surface of the front. The authors arrive at a conclusion that spherical detonation, like the gas detonation in tubes, is pulsating one, that heterogeneities in its front emerge spontaneously, and that these heterogeneities are not connected with the presence

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S/124/61/000/007/010/044
A052/A101

On the reacton-kinetic nature ...

of walls of the detonation container. To bring the fact of multiplication of pulsations with the increase of the surface of detonation front in agreement with the periodical mechanism of detonation, the authors consider it necessary to complement the conception of the mechanism of detonation combustion, given in another study (Denisov, Yu. N., Troshin, Ya. K. Zh. prikl. mekhan. i tekhn. fiz. no. 1, 1960. 21-35), by introducing into the detonation cycle one more link of instability being the source of emergence of breaks in the shock front. A criterion of the limit of existence of the spin and pulsating detonations is also given. There are 23 references.

Yu. Denisov

[Abstracter's note: Complete translation]

Card 3/3

SHCHELKIN, K.I.

Penetrating into the interior of the atom and its nucleus. Priroda
50 no.10:11-22 O '61.   (MIRA 14:9)

1. Chlen-korrespondent AN SSSR.
                                (Nuclear physics)

SHCHELKIN, K.I.

Proof of the impossibility of strong deflagrations followed by weak detonations. Dokl. AN SSSR 139 no.2:420-423 Jl '61. (MIRA 14:7)

1. Institut khimicheskoy fiziki AN SSSR. Chlen-korrespondent AN SSSR.
(Shock waves)

SHCHELKIN, K.I.

Strange particles. Priroda 51 no.12:10-18 D '62.

(MIRA 15:12)

1. Chlen-korrespondent AN SSSR.
            (Particles (Nuclear physics))

SERBINOV, A.I.; TROSHIN, Ya.K.; SHCHELKIN, K.I.

Kinetic parameters of the processes of detonation, spontaneous
ignition, and isothermal oxidation of benzene. Dokl.AN SSSR 145
no.6:1314-1317 Ag '62.   (MIRA 15:8)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent
AN SSSR (for Shchelkin).
                    (Benzene)   (Combustion)

SHCHELKIN, Kirill Ivanovich; PODOSHVINA, V.A., red.; POPOVA,
S.M., tekhn. red.

[Physics of the microcosm; popylar essays] Fizika mikromira;
popyliarnye ocherki. Moskva, Gosatomizdat, 1963. 166 p.
(MIRA 16:5)
1. Chlen-korrespondent Akademii nauk SSSR (for Shchelkin).
(Nuclear physics)

s/

BOOK EXPLOITATION

AM4036542

Shchelkin, Kirill Ivanovich; Troshin, Yakov Kiriliovich

Gas dynamics of combustion (Gazodinamika goreniya). Moscow, Izd-vo
AN SSSR, 1963. 254 p. illus., biblio., plates. Errata slip in-
serted. 3000 copies printed.

TOPIC TAGS: gas detonation, gas explosion, gas combustion, rocket
engine, jet engine, gas deflagration, Hugoniot curve, combustion
chamber, flame acceleration

PURPOSE AND COVERAGE: This book is intended for scientific workers
and engineers interested in the combustion and detonation of gases,
and for students specializing in the physics and dynamics of gas
combustion. It may also be of interest to scientific workers,
engineers, and specialists in jet and rocket engines. The book was
written on the basis of the authors' research work from 1953 to 1962
at the Institute of Chemical Physics, Academy of Sciences SSSR.
The classical theory of combustion and detonation necessary for the
understanding of new materials is presented. Works of other Soviet

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AM4036542

   and non-Soviet authors in this field are cited. The book contains
   181 diagrams and photos.

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       plane ignition front in detonation -- 26
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       limits -- 53
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SHCHELKIN, K. I.; ALIKHANOV, A. I., akademik

Outstanding physicist of our times; the sixtieth birthday
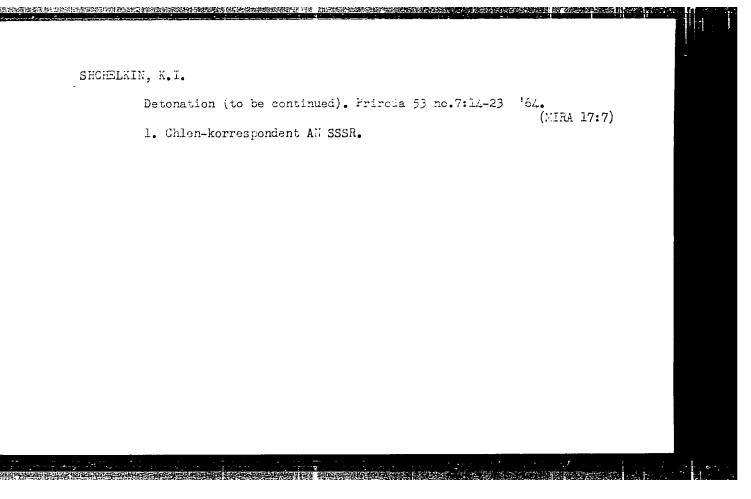anniversary of I. V. Kurchatov. Priroda 52 no.1:25-34 '63.
(MIRA 16:1)

1. Chlen-korrespondent AN SSSR (for Shchelkin).

(Kurchatov, Igor' Vasil'evich, 1903-1960)

OYSSAR, E. [Oissaar, E.] (Tallin); SHCHELKIN, K.I. (Moskva)

What is vacuum? Priroda 52 no.10:125-126 '63.   (MIRA 16:12)

1. Chlen-korrespondent AN SSSR (for Shchelkin).

SHCHELKIN, K.I.

        Detonation (to be continued). Priroda 53 no.7:14-23 '64.

                                              (MIRA 17:7)

        1. Chlen-korrespondent AN SSSR.

ACCESSION NR: AP4040961   S/0020/64/156/005/1178/1181

AUTHOR: Shchelkin, K. I.

TITLE: High-frequency pulsations in the combustion of solid fuels

SOURCE: AN SSSR. Doklady*, v. 156, no. 5, 1964, 1178-1181

TOPIC TAGS: solid propellant combustion, high frequency oscillation, combustion oscillation theory, solid propellant, combustion instability, rocket fuel

ABSTRACT: A theoretical study has been made of the causes of the initiation and intensification of high-frequency oscillations in solid fuel combustion. Based on published theories, conditions were found for the initiation and for the intensification of high-frequency oscillations in the gas evolved and in the solid fuel surface. Oscillations are absent under following conditions:

$$Ru_T^2 \rho^2 / \mathcal{H} \alpha_{mn} c_4 \rho_g^2 = \text{constant},$$

where R = radius of the grain, u_T = rate of combustion of the solid fuel, ρ = density of the solid fuel, ρg = density of the gas evolved from the solid fuel

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χ = thermal diffusivity of the gas evolved, α_{mn} = root of the Bessel equation, m and n are the tangential and radial wave numbers, and c_4 = sound velocity in the combustion products. The oscillations are initiated when one of the parameters in this equation is changed; in this case the oscillations may be prevented by changing the other parameters. The intensification of the high-frequency oscillations in the combustion of solid fuels is described by the following expression:

$$\frac{\chi_T c_3^2 \rho}{\gamma^{\chi}(c_3 + c_4) c_2 \rho_r} \quad q > 1$$

where χ, c_4, ρ, ρ_g are the same as in the above equation, c_3 = sound velocity in the unburned gas, c_2 = velocity of the longitudinal sound wave in the solid fuel, q = ratio of the heat release to the initial internal energy of the unburned gas. Orig. art. has: 18 formulas.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)
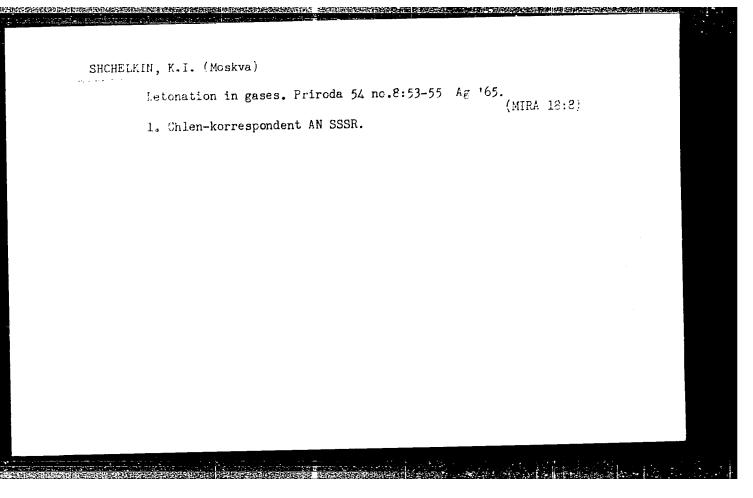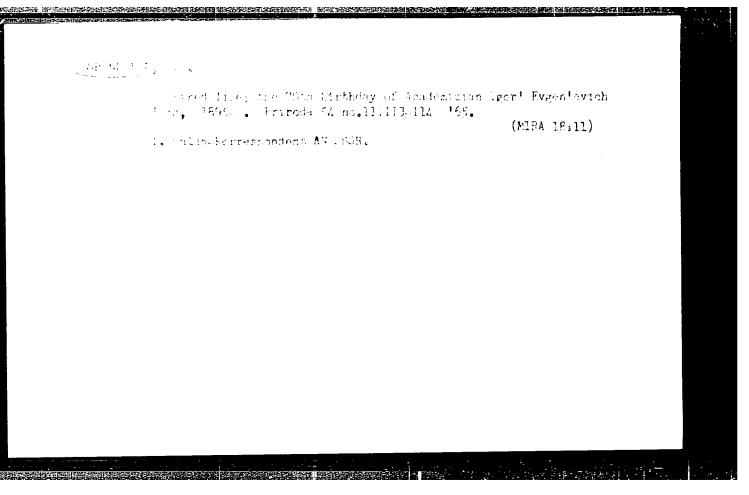
Card 2/3

ACCESSION NR: AP4040961

SUBMITTED: 21Feb64   ATD PRESS: 3044   ENCL: 00

SUB CODE: FP   NO REF SOV: 004   OTHER: 002

Card 3/3

SHCHELKIN, Kirill Ivanovich; POLOSHVILA, V.A., red.

[Physics of the microcosm popularized] Fizika mikromira;
populiarnye ocherki. Moskva, Atomizdat, 1965. 230 p.
(MIRA 18:10)
1. Chlen-korrespondent AN SSSR (for Shchelkin).

SHCHELKIN, K.I. (Moskva)

Letonation in gases. Priroda 54 no.8:53-55 Ag '65.
(MIRA 18:8)

1. Chlen-korrespondent AN SSSR.

...red ti... the 70th birthday of Academician Igor' Evgen'evich
... 1896... . Priroda 54 no.11:113-114 '65.

(MIRA 18:11)

1. Chlen-korrespondent AN SSSR.

L 16718-66   EWT(m)/T   WW/JW/WE

ACC NR: AP6005859

SOURCE CODE: UR/0053/65/087/002/0273/0302

AUTHOR: Shchelkin, K. I.

ORG: none

TITLE: Instability in combustion and detonation of gases

SOURCE: Uspekhi fizicheskikh nauk, v. 87, no. 2, 1965, 273-302

TOPIC TAGS: combustion gas dynamics, detonation kinetics, combustion instability

ABSTRACT: This paper is a brief survey of the experimental and theoretical literature on conditions of instability in various types of combustion and detonation of gases. The general theory of normal combustion is outlined and dimensionless formulas are given for determining conditions of instability in this type of combustion. Experimental data are given on diffusion combustion and the accompanying phenomenon of instability in a plane flame front. The theoretical basis of detonation is discussed and formulas are given for determining the instability of a plane gas detonation with respect to deformation of the combustion front. One-dimensional detona-

UDC: 534.222.2+536.46

Card 1/2

L 16718-66

ACC NR: AP6005859

tion instability and pulsating detonation are analyzed. The various factors affect-ing limits of detonation are reviewed. Orig. art. has: 25 figures, 2 tables, 28 formulas.

SUB CODE: 19/   SUBM DATE: 00/   ORIG REF: 034/   OTH REF: 006

Card 2/2

L 62769-65   EPA/EWP(m)/EPF(c)/EPR/EWA(h)/EWA(c)/EWT(1)/EWT(m)/FCS(k)/EWA(d)
Pr-4/Ps-4/Pi-4/Pt-7   WW/JW

ACCESSION NR: AP5007575   S/0020/65/160/005/1144/1146

AUTHOR: Shchelkin, K. I. (Corresponding member AN SSSR)

TITLE: One dimensional instability of detonation

SOURCE: AN SSSR. Doklady, v. 160, no. 5, 1965, 1144-1146

TOPIC TAGS: detonation stability, flame shock interaction

ABSTRACT: In this article the problem of one-dimensional instability of detonation, previously considered by Zaydel' [Zhur. Prikl. mech. i tekhn. fiz. No. 6, (1964)] is reconsidered. The derived instability criterion does not coincide with

$$\frac{E}{RT} > \frac{(h+3)(h+1+\sqrt{h+1})}{2(h+2)}.$$

derived by Zaydel', where E is the energy of activation of the combustion reaction, R is the gas constant, T is the temperature of the compressed but unburned gas, $h = (\gamma+1)/(\gamma-1)$ and γ is the ratio of heat capacity at constant pressure to heat capacity at constant volume. The expression derived here for the occurrence of

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ACCESSION NR: AP5007575

one-dimensional instability of detonation is in the form

$$\frac{\gamma-1}{\gamma}\frac{E}{RT}\frac{1}{1+c_r/c}qM > 1.$$

where c and c_r are velocities of sound in unburned and burned gas respectively. This criterion in contrast to that shown above includes the thermal effect of the reaction.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Chemical Physics Institute Academy of Sciences, SSSR)

SUBMITTED: 26Oct64   ENCL: 00   SUB CODE: FP

NO REF SOV: 003   OTHER: 000

Card 2/2

SHCHELKIN, K.I.

Interaction in physics. Priroda 55 no.1:7-12 Ja '66.
                                                    (MIRA 19:1)

1. Chlen-korrespondent AN SSSR.

L 25710-66

ACC NR: AP6010553   SOURCE CODE: UR/0026/65/000/011/0113/0114

AUTHOR: Shchelkin, K. I. (Corresponding member AN SSSR)   *3C*
27

ORG: none   *B*

TITLE: Inspired life of Academician I. E. Tamm

SOURCE: Priroda, no. 11, 1965, 113-114

TOPIC TAGS: physics personnel, particle physics

ABSTRACT: The life of Academician Igor' Yevgeniyevich Tamm is described
on the occasion of his 70th birthday. Following are the essential fea-
tures of this biography. He was born July 8, 1895, in Vladivostok. His
general education was obtained in the Elizavetgrad (now Kirovograd)
gymnasium. In 1913, he was admitted to the Edinburgh University (Scot-
land) but, in 1914, returned to Russia and entered the University of
Moscow. In 1915, he voluntarily entered the military service and serv-
ed as a hospital attendant. In 1917, he was elected to the Elizavetgrad
Soviet and was sent, as a delegate, to the first Convention of Soviets
in Petrograd. After graduation, he taught physics (1921-1922) in the
Odessa Polytechnic Institute and in 1922 returned to the Moscow Univer-
sity. In 1934, he became head of the theoretical department of the
Institute of Physics of AN SSSR im. P. N. Lebedev (FIAN) and has held

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ACC NR: AP6010553

3

this office up to the present time. In 1945, he presented a method
(based on the quantum mechanics) for solution of problems of meson
physics. This method is similar to that proposed in 1950 by Dancoff in
U.S.A. Thus, it was called the Tamm-Dancoff method. He predicted
(together with S. A. Al'tshuller) the existence of magnetic moment in
neutron. In 1950, he proposed (together with A. D. Sakharov) a method
for plasma confinement by magnetic field. In 1958, he received (with
P. A. Cerenkov and I. M. Frank) the Nobel Prize for his theoretical
study of the coherent radiation caused in a medium by a fast moving
electron (Cerenkov radiation). He also was bestowed many high Soviet
awards. Detailed information on his works and scientific achievements
were given in the publications of V. L. Ginzburg, Ye. L. Feynberg and
A. D. Sakharov. These publications were cited in the present article.
Orig. art. has: 1 photo.

SUB CODE: 20 / SUBM DATE: None / ORIG REF: 000 / OTH REF: 000

Card 2/2

SHCHELKIN, V.P., inzh.

Saturation choke with phase control. Trudy MAI no.85:5-22 '57.
(Magnetic amplifiers)   (MLRA 10:9)

PUDOVIK, A.N.; SHCHELKINA, L.P.; BASHIROVA, L.A.

Substitution reaction of phosphoacetic ester and phosphoacetone.
Zhur. ob. khim. 27 no.9:2367-2371 S '57.   (MIRA 11:3)

1.Kazanskiy gosudarstvennyy universitet.
              (Acetic acid) (Acetone)

S/081/62/000/004/060/087
B150/B138

AUTHORS: Liorber, B. G., Shchelkina, Ye. P., Deychmeyster, M. V.,
             Vompe, A. F.

TITLE: Some merocyaninocarbocyanine derivatives of imidazolinone-
             (4)

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 456, abstract
             4L418 (Tr. Vses. n.-i. kinofoto-instituta, no. 37, 1960,
             5-16)

TEXT: Symmetrical and asymmetrical merocyaninocarbocyanine derivatives
are synthesized from 1-cyclohexyl-3-methylimidazolinone-4 with the
residues of various heterocyclic bases in merocyanic and carbocyanic
components of the molecule. An investigation is made of the structural
dependence of the colors of these compounds and of the nature of the
electron density distribution in the chromophores of the molecule.
[Abstracter's note: Complete translation.]

Card 1/1

GAYDAMAK, S., student; SMIRNYAKOVA, G., studentka; KUZ'MINA, E., studentka;
LIPOVA, R., studentka; FOMINA, T., studentka; PAVLOVA, N.,
studentka; KALINOVA, M., studentka; SHCHELKO, A., student;
SHCHERBAKOVA, L., studentka; GUDOCHKINA, L.M.

Effect of salinity on the results of determining the specific
weight of soils. Sbor. nauch. trud. Kaz GMI no.19:197-198 '60.
(MIRA 15:3)

(Soils--Analysis)

GURFEIN, B.M.

Aneurism

Pseudoaneurism following intra-arterial infusion. Sov. med., 16, No. 4, 1962.

Monthly List of Russian Accessions, Library of Congress, October 1962. UNCLASSIFIED

SHCHELKO, I.M.

Late results of A.V.Martynov's method of herniotomy in oblique inguinal hernia. Sov.med.21 no.4:67-70 Ap '57.   (MLRA 10:7)

1. Iz khirurgicheskogo otdeleniya (zav. I.M.Shchelko) Yegor'yevskoy gorodskoy ob*yedinennoy bol'nitsy (glavnyy vrach I.D.Finkel'berg).
        (HERNIA, INGUINAL, surg.
              method & follow-up)

SHCHELKO, I.M.

Late results of surgery for inguinal hernia in children, using of Krasnobaev's method [with summary in English]. Khirurgiia 33 no.6: 75-79 Je '57.   (MIRA 10:12)

1. Iz khirurgicheskogo otdeleniya (zav. I.M.Shchelko) Yegor'yevskoy gorodskoy ob"yedinennoy bol'nitsy (glavnyy vrach I.D.Finkel'berg)
        (HERNIA, INGUINAL, in inf. and child
            surg., method)

SHCHELKO, I. M., Cand of Med Sci -- (diss) "After Effects of a Herniotomy by the

Method of A. V. Martynov for Oblique Inguinal Hernia, and by the Method of

T. P. Krasnobayev for Inguinal Hernia in Children," Yegor'evsk, 1958, 12 pp

(Second Moscow State Medical Institute im N. I. Pirogov) (KL, 7-60, 110)

Shchelkonogov, I.

Modernization of distillation units for petroleum residues. V. Allev, I. Blagovidov, I. Shchelkonogov, and Sh. Spektor. *Novosti Neftyanoi Tekh., Neftepererabotka* 1950, No. 4, 14-15.—The recovery of distillates from vacuum-distn. units was improved by increasing the size of the tubes in the radiant section of the furnace from 3.5 to 5.75 in., providing an atm.-pressure section for removal of the light fractions and introducing steam into the radiant tube sections of the furnaces for both the atm. and vacuum units.

H. G. Voelker

ISMAILOV, R.G.; MAMEDOV, M.A.; SPEKTOR, Sh.Sh.; IVANOVA, L.V.;
    KORNEYEV, M.I.; SULTANOV, Z.A.; SHCHELKONOGOV, I.A.

Petroleum refining industry of Azerbaijan on the threshold of
a glorious jubilee. Khim. i tekh. topl. i masel 9 no.11:15-19
N '64   (MIRA 18:1)

L 01806-67   EWT(m)/T   DJ

ACC NR: AP6030589 (AN) SOURCE CODE: UR/0413/66/000/016/0073/0073

INVENTOR: Ismailov, R. G. A. O.; Mamedov, M. A. A. O.; Spektor, Sh. Sh.; Seidov, M. M. M. O.; Vartapetov, A. A.; Shchelkonogov, I. A.; Kyazimov, A. A. O.; Aliyev, A. A. G. O.; Tangiyeva, T. A.; Kesel'man, L. G.; Lobanov, V. V.; Chikunov, V. A.; Blidchenko, I. F.; Tarumov, G. A.; Bombandirov, P. P.; Merkur'yev, G. D.; Petrov, S. A.

ORG: none

TITLE: Lubricating oil for bushings. Class 23, No. 184997

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 73

TOPIC TAGS: lubricant, bushing, petroleum

ABSTRACT: An Author Certificate has been issued describing a lubricant for bushings, with a solar fraction and mazut base. To expand the operating temperature range of the oil, a petroleum fraction with a boil-away of 4—5% at 240—320C is added to the lubricant. This fraction is obtained from the petroleum distillate at 300—310C. [Translation]   [NT]

SUB CODE: 11/ SUBM DATE: 05Nov64/
UDC: 629.11.012.26

Card 1/1

NOVRUZOV, G.M.; SHCHELKONOGOV, L.I.

New piston-stroke and stress gauges for teledynamometering
deep-well pumps. Mash. i neft. obor. no.9:33-36 '63.
(MIRA 17:2)

1. AzNIIElektrotekhprom.

S/137/62/000/012/047/085
A006/A101

AUTHORS: Aleksandrov, L. N., Shchelkonogov, V. Ya.

TITLE: Studies of diffusion and self-diffusion in solids with α- and β-radioactive isotopes

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1962, 98, abstract 121605 ("Uch. zap. Mordovsk. un-t", 1961, no. 18, 39 - 44)

TEXT: The authors describe the investigations and methods of calculating the diffusion coefficient by the consecutive removal of layers and determining autoradiographically the distribution of activity, depending on the penetration depth of the isotope into the specimen.

V. Srednogorska

[Abstracter's note: Complete translation]

Card 1/1

ACCESSION NR: AP4044908

S/0226/64/000/004/0028/0032

AUTHOR: Aleksandrov, L.N., Shchelkonogov, V.Ya

TITLE: A study of the diffusion of carbon in tungsten and molybdenum at low carbon concentrations

SOURCE: Poroshkovaya metallurgiya, no. 4, 1964, 28–32

TOPIC TAGS: tungsten, molybdenum, carbon diffusion, metal diffusion, solid solution, transition element

ABSTRACT: Previous investigations of carbon diffusion in the refractory transition metals have not yielded uniform values for the diffusion parameters. The present authors therefore attempted to clarify the conditions of contamination of tungsten and molybdenum by carbon, and thus to determine its basic diffusion parameters. In their studies, the carbon concentrations were low enough to avoid the formation of tungsten carbide (W_2C) or molybdenum carbide (Mo_2C); therefore, carbon diffusion could be studied in solid solutions of W-C and Mo-C. Tests were performed on tungsten (type VRN) specimens 0.8 mm in diameter, and with molybdenum (type Mch) specimens 0.4 mm in diameter. The specimens, covered with a graphite lubricant mixed with

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ACCESSION NR: AP4044908

radioactive C^{14} in the proportion 1:20 were inserted in quartz containers having diameters 1.2X that of the specimen and were diffusion-annealed in a hydrogen atmosphere for one hour at 1100-1450C in a furnace. After annealing, the layers of the specimens were analyzed for radioactivity, penetrating into the specimen by removing successive 0.5-1 μ layers electrolytically (in a 10% NaOH bath at a current density of 950 ma/cm^2, for 5 minutes). During these measurements, the activity of the specimens was determined only by the exposed surface layer because of the soft β-radiation of C^{14}. Distribution of the concentration of the diffusing element with depth could be described by the equation

$$c(x,t) = c\frac{h}{\sqrt{\pi D t}}\exp\left(-\frac{x^2}{4Dt}\right)$$

where x is the distance beneath the surface, t is the annealing time, D is the diffusion coefficient and h is the thickness of the original radioactive coating. At t = const,

$$\log n = const - \frac{x^2}{4Dt}$$

where n is the recorded count. From the slope of the straight lines relating log n to x^2, the diffusion coefficients of carbon in tungsten and molybdenum could be computed. For tungsten, the values did not fall on one straight line in each

Card 2/4

ACCESSION NR: AP4044908

diagram. It is belived that the first slope corresponds to carbon diffusion in tungsten in the presence of microcarbides, while the second slope corresponds to carbon diffusion in pure tungsten with the formation of a solid solution. The temperature dependence of the diffusion coefficient in tungsten was calculated from the mean values obtained as

$$D = 4 \times 10^{-2} \exp \frac{(-27\,000)}{T}$$

at a depth down to 1.5-2μ, and

$$D = 0.3 \exp \frac{(-25000)}{T} \text{ below that.}$$

For the diffusion coefficient in molybdenum

$$D = 2.8 \times 10^{-4} \exp \left(\frac{-17250}{T}\right).$$

The energy of activation of the diffusion process was also determined. Penetration of carbon into tungsten and molybdenum to depths of 5 and 40μ, respectively, was observed with annealing times of 3.5 hours over a temperature range of 1100-1450C. Orig. art. has: 5figures and 3 formulas.

ASSOCIATION: Mordovskiy gosudarstvenny*y universitet (Mordovian State University)

Card 3/4

ACCESSION NR: AP4044908

SUBMITTED: 31Mar63   ENCL: 00   SUB CODE: MM

NO REF SOV: 007   OTHER: 002

Card 4/4

L 34126-65 EWT(m) Peb DIAAP GS

ACCESSION NR: AT5006125   S/0000/64/000/000/0209/0212

AUTHOR: Petrovich, I. K.; Shchelkonogova, M. I.

TITLE: Changes in the blood system of dogs intravenously injected with yttrium-91

SOURCE: Raspredeleniye, biologicheskoye deystviye, uskoreniye vyvedeniya radio-
aktivnykh izotopov (Distribution, biological effect, acceleration of the excretion
of radioactive isotopes); sbornik rabot. Moscow, Izd-vo Meditsina, 1964, 209-212

TOPIC TAGS: yttrium-91, radioisotope, radioactivity, blood, radiation sickness

ABSTRACT: Y^{91} injected intravenously once in a dose of 0.1 to 0.2 µc/kg produced
marked changes in the composition of the peripheral blood and hematopoietic organs
of dogs. The acute phase of radiation sickness caused by injection of 0.1 µc/kg of
Y^{91} was characterized by leukopenia for 3-5 weeks due to a decrease in the number
of neutrophils, a decrease in the number of erythrocytes (by 30%) for 4-7 weeks,
and a decrease in the number of thrombocytes for 2-3 weeks after injection. In the
animals that survived the acute phase, erythrocytopoiesis was restored after the
second month, but leukocytopoiesis remained 50% below the original level for 14
months after injection of the isotope. Orig. art. has 1 table.

Card 1/2

L 34126-65
ACCESSION NR: AT5006125

ASSOCIATION: none

SUBMITTED: 10Apr64   ENCL: 00   SUB CODE: LS

NO REF SOV: 000   OTHER: 000

Card 2/2

SHCHELKONOGOVA, N.K., ordinator

Typhoid fever three times in a child. Med. zhur. Uzb. no.3:75
Mr '61.   (MIRA 14:5)

1. Iz Tashkentskoy detskoy infektsionnoy gorodskoy bol'nitsy No.3
(glavnyy vrach - A.P.Udalova).
                        (TYPHOID FEVER)

SHCHELKOTUNOV, V.A.

Experimental testing of a thermoelectric effect. Sbor.st.LITMO
no.47:56-62 '59.   (MIRA 16:10)

S/181/63/005/003/026/046
B102/B180

AUTHORS: Fomenko, L. A., Shchelkotunov, V. A., and Sochivko, V. L.

TITLE: Thermal conductivity of nickel-zinc ferrites in the
             temperature range 20-400°C

PERIODICAL: Fizika tverdogo tela, v. 5, no. 3, 1963, 874-882

TEXT: The heat conduction coefficient λ of nickel-zinc ferrites of
almost stoichiometric composition was measured in dependence on temperature,
composition and sintering temperature t_S. The compositions investigated
were $Ni_x Zn_{1-x} Fe_2 O_4$ with x = 0, 0.1, 0.2, 0.25, 0.3, 0.35, 0.4, 0.5, 0.6,
0.7, 0.8, 0.9 and 1.0. The specimens, discs ~1.5 cm in diameter and
~0.4 cm high, were sintered at t_s = 1100, 1150, 1200, 1250, 1300 and 1350°C.
At room temperature λ was 0.006-0.009 cal/cm·sec·deg and it was found to
decrease slowly and almost linearly for those compositions whose Curie
points were beyond the temperature range measured (x = 0, 0.1, 0.2, 0.8,
0.9, 1.0); the other compositions had distinct maxima at the Curie point,
caused by a sudden increase of about ten percent in the specific heat.
Card 1/3

Thermal conductivity of nickel-zinc...

S/181/63/005/003/026/046
B102/B180

The effects of the components of the heat conduction coefficient ($\lambda = \lambda_1 + \lambda_2 + \lambda_3 + \lambda_4$) are studied in detail. λ_1, the lattice component (phonon scattering), made the main contribution, the contributions of the other components (λ_2 - spin-wave scattering; λ_3 - electron diffusion, λ_4 - heat radiation) depend largely on temperature and composition. E. g., for x=0.3 (t_s=1300°C), Curie point 348°K, λ_2 is great. λ plotted as a function of x for T = 348, 453, 543, 613°K generally shows two maxima: one connected with the Curie point, which shifts to higher temperatures with rising θ_c (x), the other remaining at x=0.3 for all temperatures. At T=438°K both maxima coincide at x=0.3. The $\lambda(t_s)$-curves for all compositions have a maximum around t_s=1200°C. This is attributed to the fact that all ferrites have maximum homogeneity when sintered at 1200-1250°C. The results are in qualitatively good agreement with theory. The weak drop in λ with rising T (i. e. specific heat) is attributed to increase in phonon-phonon scattering, the increase in λ with x to reduced phonon scattering from imperfections (paramagnetic Zn ions).
Card 2/3

S/181/63/005/003/026/046
Thermal conductivity of nickel-zinc ... B102/B180

and reduced anharmonicity of the thermal vibrations caused by an increase
in exchange interaction. There are 4 figures and 1 table.

SUBMITTED: August 24, 1962

Card 3/3

KUDINOV, G.P.; SHCHELKOV, G.K., inzh

Networks for checking the occupancy of track circuits. Avtom.,
telem. i sviaz' 9 no.10:30-31 O '65.   (MIRA 18:11)

1. Gosudarstvennyy proyektno-konstruktorskiy i nauchno-issledo-
vatel'skiy institut Giprouglaavtomatizatsiya.

SHCHELKOV, N., predsedatel'.

Attention of the shop committee is focused on the concern for workers' welfare. Sov. profsoiuzy 1 no.2:53-55 O '53.

(MLRA 6:12)

1. Komitet professional'nogo soveta moskovskogo metallurgiche-skogo zavoda "Serp i molot."   (Housing)

AFANAS'YEV, N.; SIL'NOV, V., glavnyy inzh.; SHCHELKOV, O.; GORDON, A.;
        GORELIK, S., glavnyy konstruktor; SOKOLOV, Ya.; TRUKHANOVA, A.,
        tekhred.

[Tower silos with 35 to 40 ton capacity made of precast reinforced
concrete rings. Plan No.006] Silosnaia polubashnia na 35-40 tonn
iz sbornykh zhelezobetonnykh kolets. Proekt no.006. Minsk, Gos.
izd-vo BSSR, Red.nauchno-tekhn.lit-ry, 1955. 3 p.   (MIRA 12:4)

1. White Russia. Ministerstvo gorodskogo i sel'skogo stroitel'stva.
2. Direktor "Belsel'proyekta"(for Afanas'yev). 3. Nachal'nik proyektnogo
otdela "Belsel'proyekta"(for Shchelkov). 4. Rukovoditel' masterskoy No.1 "Bel-
sel'proyekta"(for Gordon). 5. Ispoln.obyazan. nachal'nika smetnogo
sektora "Belsel'proyekta"(for Sokolov). 6."Belsel'proyekt"(for Sil'nov,
Gorelik).   (Silos)   (Precast concrete construction)

AFANAS'YEV, N.; SIL'NOV, V., glavnyy inzh.; SHCHELKOV, O.; GORDON, A.;
GORELIK, S., glavnyy konstruktor; SOKOLOV, Ya.; TRUKHANOVA, A.,
tekhred.

[Pit silos of 50 ton capacity; brick, rubble, and stick-reinforced
clay walls. Plan No.008] Silosnye iamy na 50 tonn; steny kirpich-
nye, butovye i glinopletnevye. Proekt no.008. Minsk, Gos.izd-vo
BSSR, Red.nauchno-tekhn.lit-ry, 1955. 3 p.   (MIRA 12:4)

1. White Russia. Ministerstvo gorodskogo i sel'skogo stroitel'stva.
2. Direktor "Belsel'proyekta" (for Afanas'yev). 3. Nachal'nik
proyektnogo otdela "Belsel'proyekta" (for Shchelkov). 4. Rukovoditel'
masterskoy No.1 "Belsel'proyekta" (for Gordon). 5. Ispolnyayushchiy
obyazannosti nachal'nika smetnogo sektora "Belsel'proyekta" (for
Sokolov). 6. "Belsel'proyekt" (for Sil'nov, Gorelik).
                              (Silos)

AFANAS'YEV, N.; SIL'NOV, V., glavnyy inzh.; SHCHELKOV, O.; GORDON, A.;
        GORELIK, S., glavnyy konstruktor; SOKOLOV, Ya.; TRUKHANOVA, A.,
        tekhred.

[Pit silos with a capacity of 12 and 19 tons made of precast
reinforced concrete rings for siloing corn cobs. Plan No.007]
Silosnye iamy emkost'iu 12 i 19 tonn iz sbornykh zhelezobetonnykh
kolets dlia silosovaniia pochatkov kukuruzy. Proekt no.007.
Minsk, Gos.izd-vo BSSR, Red.nauchno-tekhn.lit-ry, 1955. 4 p.
                                                    (MIRA 12:4)
1. White Russia. Ministerstvo gorodskogo i sel'skogo stroitel'stva.
2. Direktor"Belsel'proyekta" (for Afanas'yev). 3. Nachal'nik
proyektnogo otdela"Belsel'proyekta"(for Shchelkov). 4. Rukovoditel'
masterskoy No.1 "Belsel'proyekta" (for Gordon). 5. Ispolnyayushchiy
obyazannosti nachal'nika smetnogo sektora"Belsel'proyekta"(for
Sokolov). 6."Belsel'proyekt"(for Sil'nov, Gorelik).
              (Silos)   (Precast concrete construction)

AFANAS'YEV, N.; SIL'NOV, V., glavnyy inzh.; SHCHELKOV, O.; GORDON, A.;
        GORELIK, S., glavnyy konstruktor; SOKOLOV, Ya.; TRUKHANOVA, A.,
        tekhred.

     [Combined silo and water tank; capacity of silo - 100 and 150 tons,
     of water tank - 15 and 20 cubic meters. Plan No.005] Silosnaia
     bashnia s vodonapornym bakom emkost'iu bashni 100 i 150 tonn i baka
     15 i 20 kub.metrov. Proekt no.005. Minsk, Gos.izd-vo BSSR, Red.
     nauchno-tekhn.lit-ry, 1955. 16 p.   (MIRA 12:4)

     1. White Russia. Ministerstvo gorodskogo i sel'skogo stroitel'stva.
     2. Direktor "Belsel'proyekta"(for Afanas'yev). 3. Nachal'nik proyektnogo
     otdela "Belsel'proyekta"(for Shchelkov). 4. Rukovoditel' masterskoy No.1
    "Belsel'proyekta"(for Gordon). 5. Ispolnyayushchiy obyazannosti
     nachal'nika smetnogo sektora"Belsel'proyekta"(for Sokolov). 6."Bel-
     sel'proyekt"(for Sil'nov, Gorelik).
                (Silos)   (Tanks)

ZHIL'TSOV, A.G.; SHCHELKOV, Ye.Ye.; BONDARENKO, G.F.

Some accessory elements in the Kenkol intrusive complex.
Zap. Kir. otd. Vses. min. ob-va no.3:49-58 '62.
(MIRA 17:11)

LARIOSHCHENKO, T.G.; SHCHELKOVA, T.D.

Method for combined therapy of malignant melanomas. Med.rad.
no.11:6-10 '61.   (MIRA 14:11)

1. Iz rentgenoterapevticheskogo otdeleniya Gosudarstvennogo
onkologicheskogo instituta imeni P.A. Gertsena.
                    (MELANOMA)

IUSHFEY, M.K., inzh.; SHCHELKUNOV, A.D., inzh.

Welded alumiunum gaskets for high-pressure apparatus. Khim. mash.
no.4:37 Jl-Ag '61.   (MIRA 14:8)
                        (Chemical apparatus)

A. V. Shchelkunov

Distr: 4E4j/4E2c(j)

Compounds containing a three-membered oxide ring. XVII. Condensation of chloroacetonitrile with ketones. Synthesis of β,β-disubstituted nitriles of glycidic acids. V. F. Martynov and A. V. Shchelkunov (State Univ., Leningrad). Zhur. Obshchei Khim. 27, 1188–91(1957); cf. C.A. 50, 14578e.—To 12 g. ClCH₂CN, 10.1 g. Me₂CO and 100 ml. abs. Et₂O at −10° was added 9.7 g. dry EtONa; after stirring 0.5 hr. at −10° and 1 hr. at room temp. the mixt. yielded 67% $Me_2C.CH(CN).O$, b_{14} 40–40.5°, d_{20} 0.9560, n_D^{20} 1.4150. MeEtCO similarly gave the $MeEt$ analog, 72%, b_{14} 46–6.5°, 0.9420, 1.4215. Use of cyclopentanone gave 73% $(CH_2)_4C.CH(CN).O$, b_{14} 93–4°, 1.0200, 1.4575; cyclohexanone gave the $(CH_2)_5$ analog, b_5 84–4.5°, 1.0275, 1.4665, while AcPh gave 80% $MePhC.CH(CN).O$, b_1 128–9.5°, 1.0520, 1.5147. XVIII. Reaction of ethyl ester of β-tetramethyleneglycidic acid with aromatic amines. V. F. Martynov. Ibid. 1191–5.—Heating 10 g. $(CH_2)_4$-C.O.CHCO₂Et with 18 g. o-MeC₆H₄NH₂ in an ampul 20 hrs. at 160–70° gave 46% $(CH_2)_4C(NHC_6H_4Me-o)CH(OH)$-$CO_2Et$, $b_{1.5}$ 135–6°, d_{20} 1.1105, n_D^{20} 1.5445, which heated strongly with 4 parts concd. H₂SO₄ gave 30% 6-methyl-1,2,3,4-tetrahydrocarbazole, m. 96–7°; picrate, m. 118–19°. Similarly, m-MeC₆H₄NH₂ gave $(CH_2)_4C(NHC_6H_4Me-m)$-

MARTYNOV, V. F.; SHCHELKUNOV, A. V.

CH(OH)CO₂Et, 75%, b. 143–5°, m. 83–4°, which with H₂SO₄ gave a methyl-1,2,3,4-tetrahydrocarbazole, m. 82–90°, probably mixed 5- and 7-methyl deriv. Similarly p-toluidine gave 50% (CH₃)₂C(NHC₆H₄Me-p)CH(OH)-CO₂Et, m. 94–5°, which yielded 6-methyl-1,2,3,4-tetrahydro-carbazole, m. 135–6°. Reaction of 2-C₁₀H₇NH₂ similarly gave (CH₃)₂C(NHC₁₀H₇-2)CH(OH)CO₂Et, 54%, m. 114–15°, which yielded on reaction with H₂SO₄ a sulfo deriv. of the expected 1,2,3,4-tetrahydro-5,6-benzocarbazole, the sulfo deriv. being a cryst. waxy solid.

G. M. Kosolapoff

6 May
2 V.

2/2

AUTHORS: Martynov, V. F., Shavrygina, A. V.   SOV/79-28-12-19/41

TITLE: Investigation in the Field of Compounds With a Three-Membered
              Oxide Ring (Issledovaniye v oblasti soyedineniy,soder-
              zhashchikh trekhchlennoye okisnoye kol'tso) XXIV. Synthesis
              of β,β-Disubstituted Nitriles of Glycidic Acids (XXIV.
              Sintez β,β-dizameshchennykh nitrilov glitsidnykh kislot)

PERIODICAL: Zhurnal obshchey khimii, 1958. Vol 28, Nr 12, pp 3248-3253
              (USSR)

ABSTRACT: In an earlier report (Ref 1) the authors had described the
              reaction of the nitrile of monochloroacetic acid with some
              ketones and had obtained the β,β-disubstituted nitriles of
              glycidic acids unknown before. To obtain further syntheses
              of this class the authors introduced further ketones into
              this reaction, which are of aliphatic, aliphatic-aromatic,
              and aromatic character, namely, diethyl-diisobutyl, dibenzyl,
              diphenyl, di-p-tolyl, and di-p-dimethylamino-phenyl ketone.
              Diisobutyl ketone had the smallest yield of all these ketones
              introduced into the reaction; the aromatic ketones, the di-p-tolyl
              ketone, however, offered the highest yields (81 and 80%).
              M. Miers (Mikhler) ketone does not react with the nitrile

Card 1/3

Investigation in the Field of Compounds With a
Three-Membered Oxide Ring. XXIV. Synthesis of
β,β'-Disubstituted Nitriles of Glycidic Acids

SOV/79-28-12-19/41

of monochloro acetic acid to a corresponding nitrile of
glycidic acid, which can be explained by the highly nucleo-
philic character of the dimethyl amine group (Scheme 1). The
glycide nitriles synthesized and characterized are given
in scheme 2, among which the nitrile of diphenyl glycidic
acid (Ref 2) has already been described in publications. The
nitriles with aromatic groups are very stable, the others,
however, change with time. The nitriles with aliphatic
chlorine containing radicals are hardly to be obtained in
pure state. The combination dispersion spectrum taken of
β,β'-dimethyl glycide nitrile has proved this fact. The
infrared spectra (Figs 1-2) taken prove the results earlier
obtained. The acid hydrolysis of the β-pentamethylene glycide
nitrile was investigated; the corresponding aldehyde was
obtained, which indicates that the hydrolysis begins with the
saponification of the nitrile group. There are 2 figures and
5 references, 3 of which are Soviet.

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Investigation in the Field of Compounds With a   SOV/79-28-12-19/41
Three-Membered Oxide Ring. XXIV. Synthesis of
β,β'-Disubstituted Nitriles of Glycidic Acids

ASSOCIATION: Leningradskiy gosudarstvennyy universitet   (Leningrad State
                 University)

SUBMITTED: December 21, 1957

Card 3/3

MARTYNOV, V.F.; SHCHELKUNOV, A.V.

Synthesis of indoles based on glycidic acid nitriles. Zhur.ob.khim.
32 no.7:2381 Jl '62.   (MIRA 15:7)

1. Leningradskiy gosudarstvennyy universitet.
              (Indole)   (Glycidic acid)

83700

9,4220

S/058/60/000/010/009/014
A001/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 10, p. 311, # 27434

AUTHORS: Afanaskya, M.N., Onbyahav, V.G., Dunayev, S.A., Zusmanovskiy, S.A.,
             Lyubinov, M.I., Miakhin, A.G., Shchelikunov, O.P.;

TITLE: Twenty Megawatt Klystron Amplifier for 10-cm Band

PERIODICAL: Tr. Konferentsii po elektronike SVCh, 1957, Moscow-Leningrad, Gosen-
             ergoizdat, 1959, pp. 56 - 79

TEXT: The authors describe a 20-Mw pulse amplifying klystron of KИУ-1
(KIU-1) type operating on the 10-cm band. The design of a klystron constructed
earlier in the USA was adopted as a basis for development. Drawbacks of the
American klystron are described in detail. Essential changes were made in the
method of fixing the cathode shank, in the design of the electron gun and resona-
tors, as well as in the adjustment of the focusing system. These changes made it
possible to increase the coefficient of current transmission up to 96-98% and the
electric strength between the anode and the cathode, and to eliminate sparking in

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resonators. The changes mentioned made it possible to construct a device con-
siderably excelling the klystron built in the USA in efficiency, operational
reliability, service life, and other characteristics. The detailed description
of the KIU-1 klystron and its individual assemblies is given.

                                                        O.P. Germanovich

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

OGANESYAN, A.S., kand.med.nauk; SHCHELKUNOV, I.P.

Polypo of the duodenum. Khirurgiia 37 no.2:65-68 F '61.
(MIRA 14:1)

1. Iz kafedry khirurgii (zav. - zasluzhennyy deyatel' nauki
prof. G.M. Gurevich) Khar'kovskogo meditsinskogo stomatologi-
cheskogo instituta i 17-y bol'nitsy.
(DUODENUM—TUMORS)

SHCHELKUNOV, I. I.; RUDENKO, V. F.; SHEYNIN, B. Ya (Khar'kov)
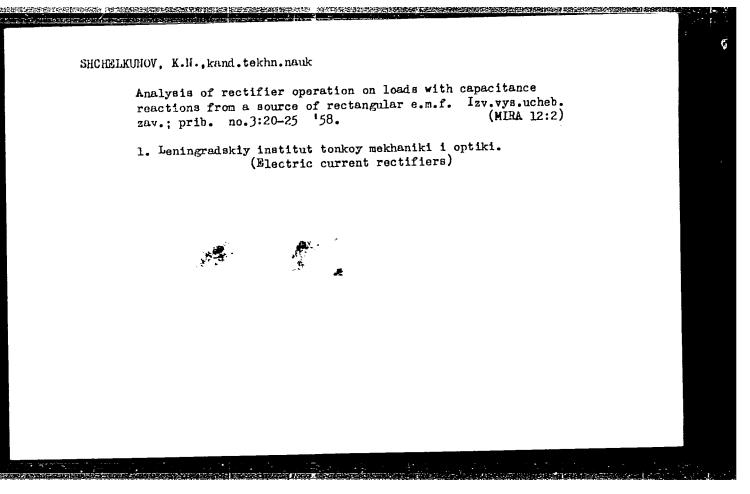
Changes in the osteoarticular system of chippers and their relation-
ship to working conditions. Gig. truda i prof. zab. no.12:28-34
'61.   (MIRA 14:12)

1. Ukrainskiy institut usovershenstvovaniya vrachey, Ukrainskiy
institut gigiyeny truda i profzabolevaniy i Medob*yedineniye
No. 17.

        (VIBRATION--PHYSIOLOGICAL EFFECT)
        (BONES--DISEASES)   (OCCUPATIONAL DISEASES)

[illegible], K.

[illegible], [illegible]_ "Rectification of Electric Current and Voltage Doubling." Min
of Higher Education [illegible], Leningrad Inst. of Precision Mechanics and Optics, Leningrad, 1955
(Dissertation for Degree of Candidate of Technical Sciences)

S : Knizhnaya Letopis' No. 34, June 1957, Moscow

SHCHELKUNOV, K.N.,kand.tekhn.nauk

Analysis of rectifier operation on loads with capacitance reactions from a source of rectangular e.m.f. Izv.vys.ucheb. zav.; prib. no.3:20-25 '58.   (MIRA 12:2)

1. Leningradskiy institut tonkoy mekhaniki i optiki.
          (Electric current rectifiers)

9.3250

67464

SOV/146-2-4-2/19

AUTHOR: Shchelkunov, K.N., Candidate of Technical Sciences

TITLE: The Performance of a Voltage-Doubling Rectifier
             With a Rectangular E.M.F. Source

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroye-
             niye, 1959, Nr 4, pp 12-18 (USSR)

ABSTRACT: The analysis and rating methods for rectifiers with
             sinusoidal e.m.f. sources have already been treated
             in a series of works /Reference 1-5/. The rectangu-
             lar voltage-rectification process is of practical
             interest, but, up to now, it has been rather neg-
             lected. In a previous work, the author of the pre-
             sent article made analysis and relationship calcu-
             lations /Reference 6/ for the simplest single-phase
             half-wave rectifier. In this article, the same pro-
             blem is solved for a full-wave voltage-doubling rec-
             tifier (circuit diagram Figure 1) with a rectangular

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SOV/146-2-4-2/19

The Performance of a Voltage-Doubling Rectifier With a Rectangular
E.M.F. Source

e.m.f. source. It is assumed that the rectifier re-
sistances for the direct current are linear, while
for the alternating current they are infinite. The
results are shown in graphs (Figure 2, 3), and the
equations obtained facilitate the calculation of
values which are used for analyzing and evaluating
the performance of rectifiers. This article was re-
commended by the Kafedra radiotekhniki (Chair of Ra-
dio Engineering). There are 2 diagrams, 1 graph,
and 6 references, 2 of which are English, 4 Soviet.

ASSOCIATION: Leningradskiy institut tochnoy mekhaniki i optiki
(The Leningrad Institute of Precision Mechanics and
Optics)

SUBMITTED: July 18, 1959

Card 2/2

S/058/60/000/007/005/014
A005/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 7, p. 309, # 17871

AUTHORS   Shchelkunov, K. N., Alakhov, Ye. K.

TITLE.   Measuring Oscillations and Other Small Displacements With the
           Klystron-Autodyn

PERIODICAL: Nauchn. tr. Leningr. in-t tochnoy mekhan. i optiki, 1959, No. 29,
           pp. 125-129

TEXT: The authors discuss briefly the possibility of using SHF oscilla-
tions for measuring small displacements. Results are presented of an investi-
gation of the method of measuring oscillations or other small mechanic displace-
ments by the klystron autodyn. The measuring apparatus consists of a klystron
generator and a waveguide emitter. When the distance between the emitter and
the surface, the displacement of which is being measured varies, the total
resistance of the klystron load changes, which causes a variation in its anode
current. The method is notable for simplicity, and it may be expected that a
displacement of the order of some microns may be recorded by this method.
                                        D. N. Klyshko
Translator's note: This is the full translation of the original Russian abstract.
Card 1/1

SHCHELKUNOV, K.N.

Operation of a rectifier with voltage doubling from an e.m.f. source
having a sinusoidal shape. Izv.vys.ucheb.zav.; prib. 3 no.3:27-37
'60.
(MIRA 14:4)

1. Leningradskiy institut tochnoy mekhaniki i optiki. Rekomendovana
kafedroy radiotekhniki.
(Electric current rectifiers)

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S/146/61/004/002/001/011
B124/B206

9,6/50

AUTHORS: Zilitinkevich, S. I., Shchelkunov, K. N., Balobey, F. P.,
            Alakhov, Ye. K.

TITLE: Device for measuring secondary radiation, operating with a
            reflecting clystron-autodyne

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye,
            v. 4, no. 2, 1961, 3-9

TEXT: This article describes a device developed at the kafedra radio-
tekhniki Leningradskogo instituta tochnoy mekhaniki i optiki (Department
of Radio Engineering of the Leningrad Institute of Precision Mechanics and
Optics), where the problem of replacing reception- and transmission
channels was radically solved through application of the autodyne
principle by means of a reflecting clystron, the latter serving not only
for generating the emitted oscillations, but also for detecting oscilla-
tions which are received as a consequence of secondary radiation of the
objects concerned. When the object to be investigated is shifted in the
radiation field of the device, the reflected high-frequency energy acts on

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Device for measuring...

the clystron-autodyne and generates at its output resistance a voltage
with Doppler frequency proportional to the energy of the secondary radiant
flux. The device for measuring the parameters of secondary-radiation
sources was built according to the block diagram shown in Fig. 2. It
contains the following main components: 1) the measuring channel
consisting of the clystron generator, a directional coupler, an antenna
and a measuring amplifier; 2) a system for controlling the clystron-
autodyne sensitivity, consisting of a generator for sensitivity control,
the clystron-autodyne, a measuring amplifier and a sensitivity-control
indicator; 3) a system for controlling the autodyne-generator power output,
consisting of a directional coupler, a detector, an amplifier and an
indicator for output control; 4) a system for recording the movement
parameters of the model, consisting of a device for recording the rotation
(electronic counter with rotation indicator) and a velocity recording
device (velocity pickup and -indicator); 5) a control panel intended for
switching on and adjusting the entire measuring device as well as other
devices representing part of the measuring complex, and 6) the current
sources. The clystron-autodyne is connected with the antenna and serves
for generation, reception and autodyne detecting. In the presence of a

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Device for measuring...

S/146/61/004/002/001/011
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moving object in the radiation field of the device, the reflected energy
passes to the antenna and acts on the clystron autodyne, thus causing
working conditions corresponding to the change of its outer high-frequency
load.   In this way, an intelligence signal with Doppler frequency is
generated in the load resistance of the clystron-resonator circuit.   For
easier calculation of the autodyne-generator reaction on changes of the
outer high-frequency load, the notion of sensitivity is introduced with
the aid of which the ratio of the signal voltage obtained at the load
resistance of the autodyne, to the corresponding change of the outer
conductivity of the clystron is denoted, i.e..

$$S = \frac{U_{sign}}{\Delta Y_{ext}/Y_{ext}} .$$

The analysis of the expression for the sensitivity shows that this
strongly depends on the selection of the operating point within the
generation zone in the reflecting clystron.   The approximate dependence
of the sensitivity along the generation zone is given graphically in
Fig. 3, from which it can be seen that maximum sensitivity during opera-
tion can be obtained at the zone borders, the working conditions of the
generator-autodyne being, however, rendered very unstable thereby.   For an

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Device for measuring...

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S/146/61/004/002/001/011
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increase of the dynamic range of the device and the stability of its
operation, the operating point of the clystron within the generation zone
must be selected with a sensitivity of 0.8 to 0.9 of the maximum value.
The noise level of the device lies at 1 mv, warranting at least equal
sensitivity for the receiver channel as for the direct-amplifier-receiver.
The voltage pulsation amplitude was reduced by means of suitable filters
and a high degree of stability of the supply voltages; a further measure
for increasing the sensitivity was the selection of the working frequency
band of the measuring channel. Fig. 5 shows a simplified diagram for
sensitivity control. The device described mainly serves for measuring
the secondary radiation energy, which is required for measuring reflection
coefficients of surfaces of different shape, composition and structure,
for measuring secondary radiation diagrams of various objects, etc. It
can also be used for contactless measurements of displacements and vibra-
tions with small amplitudes, for measuring vibrations with arbitrary
maximum frequencies, etc. This study was recommended by the Department of
Radio Engineering of the Association. There are 5 figures and 4 Soviet-
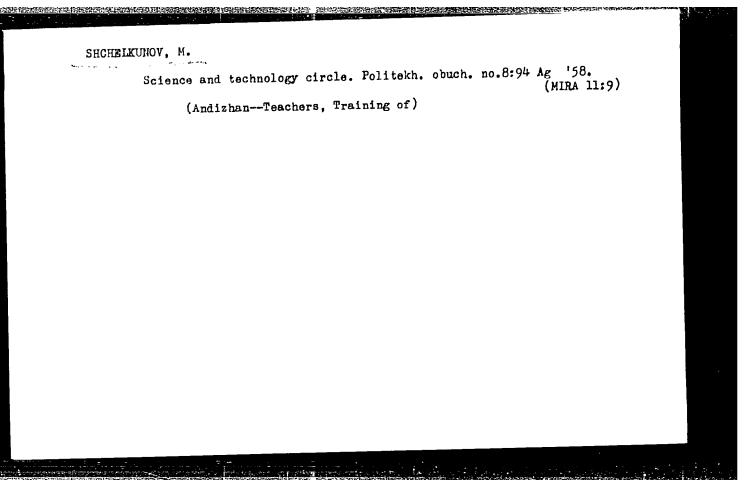bloc references.

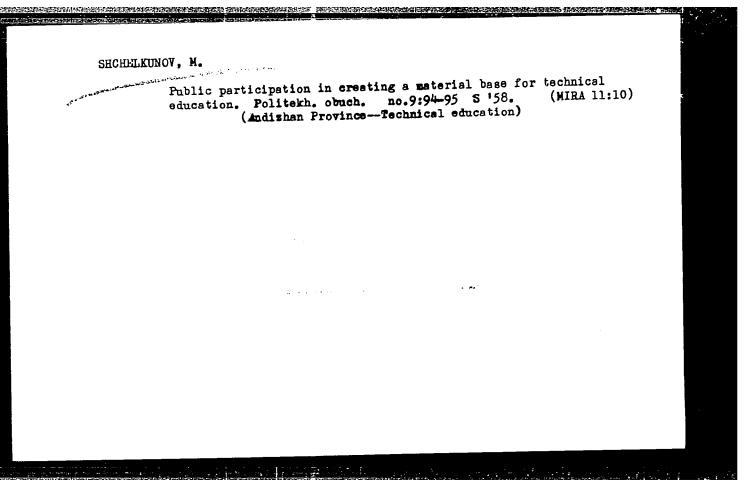Card 4/8

SHCHELKUHOV, K. V.

SHCHELKHOV, M. V.: "The preparation of conditions for general inter-
mediate education in the Uzbek SSR." Min Education RSFSR.
M scow Oblast Pedagogical Inst. Tashkent, 1956. (Dissertation
for the Degree of Candidate in Pedagogical Sciences)

Source: Knizhnaya letopis'   No. 28   1956   Moscow

SHCHELKUNOV, M.

Science and technology circle. Politekh. obuch. no.8:94 Ag '58.
(MIRA 11:9)

(Andizhan--Teachers, Training of)

SHCHELKUNOV, M.

Public participation in creating a material base for technical
education.   Politekh. obuch.   no.9:94-95 S '58.   (MIRA 11:10)
(Andizhan Province--Technical education)

SHCHELKUNOV, M. (g.Andizhan)

In rural schools of Andizhan Province. Politekh.obuch. no.5:87
My '59.   (MIRA 12:7)
    (Andizhan Province--Agriculture--Study and teaching)

SHCHELKUNOV, M.

Student brigades in Andizhan Province. Politekh.obuch.
no.12:80-81 D '59.   (MIRA 13:5)

1. Andizhanskiy pedinstitut.
 (Andizhan Province--Agriculture--Study and teaching)

SHCHELKUNOV, S.I.

Results of studying the plasticity and reactivity of the epithelium and muscle tissues. Trudy LSGMI 16:5-7 '53.   (MLRA 10:8)

1. Kafedra gistologii i embriologii Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta (zav. kafedroy, prof. S.I. Shchelkunov)
          (EPITHELIUM, physiology.
               plasticity & reactivity)
          (MUSLCES, physiology.
               plasticity & reactivity)

SHCHELKUNOV, S.I.

Transformation of the epidermis in reparative regeneration. Trudy
ISGMI 16:8-22 '53.   (MLRA 10:8)

1. Kafedra gistologii i embriologii Leningradskogo sanitarno-
gigiyenicheskogo meditsinskogo instituta (zav. kafedroy prof. S.I.
Shchelkunov)
        (SKIN, physiology,
            regen. of epidermis, histol. aspects)
        (REGENERATION,
            skin, histol. aspects)

SHCHELKUNOV, S.I.

Cells of Langerhans and their modification during regeneration of the epidermis. Trudy LSGMI 16:23-32 '53.   (MLRA 10:8)

1. Kafedra gistologii i embriologii Leningradskogo saniterno-gigiyenicheskogo meditsinskogo instituta (zav. kafedroy prof. S.I.Shchelkunov)
        (SKIN, physiology,
            regen., role of epidermic ells of Langerhans in frog)
        (REGENERATION,
            skin, role of epidermic cells of Langerhans in frog)

SHCHELKUNOV, S. I.

ZAVARZIN, ALEKSEY ALEKSEYEVICH. Rukovodstvo Po Gistologii (Handbook for

Histology, by) A. A. Zavarzin (1) S. I. Shchelkunov. Izd. 7. Perer. 1 Dop.

Leningrad, Medgiz, 1954.

698 p. Illus,, Diagrs.

SHCHELKUNOV, S.I.

Initial stage of development of somatic muscles in phylogonesis.
Arkh. anat. gist. i embr. 32 no.3:48-48 Jl-S '55.   (MLRA 9:5)

1. Iz kafedry gistologii i embriologii (zav.-prof. S.I. Shchelkunov)
Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.
      (MUSCLES)
             initial stage of develop. of somatic musc. in phylogenesis)