BIDZHIYEV, R.A.; ZEMSKOVA, G.K.;   NEVYAZHSKIY, I.I.; SHIROKOVA, I.Ya.

New discoveries of Tertiary flora in central Yakutia. Trudy VAGT
no.2:177-179 '56.   (MLRA 10:5)
          (Yakutia--Paleobotany, Stratigraphic)

NEVYAZHSKIY, I.I.; BIDZHIYEV, R.A.

Aeolian relief forms in central Yakutia. Izv.AN SSSR.Ser.
geog. no.3:90-95 My-Je '60.   (MIRA 13:6)

1. Vsesoyuznyy Agrogeologicheskiy trest.
          (Yakutia--Sand dunes)

BRYUKHANOV, V.N.; KOZITSKAYA, M.T.; NEVYAZHSKIY, I.I.

Some problems in the theory of geological interpretation. Trudy
VAGT no.8:109-123 '62.   (MIRA 15:11)
                            (Aerial photogrammetry)

NEVYAZHSKIY, I.I.

Using aerial photography in studying the natural complexes of central
Yakutia. Vest.Mosk. un. Ser. 5: Geog. 17 no.1:43-49 Ja-F '62.
(MIRA 16:7)

1. Vsesoyuznyy aerogeologicheskiy trest.
Yakutia--Landforms) (Photography, Aerial)

NEVYAZHSKIY, I. M.

D-56   NEVYAZHSKIY, I. M.   Radioperedayushchiye
       ustroystva (Radio transmitter installations). Moscow Gos.
       izd-vo lit-ry po voprosam svyazi i radio, 1959. 481 p.
       DLC TK6561.N62;   VIT No. 176-A;   N/5 653.1.N4,
       283221.

           This is a textbook on radio transmitters. It explains
           the processes in radio transmission including the
           micro-wave range, applying a pre-eminently graphic
           method, but no calculus. It was approved by the
           school department of the Communications Ministry of
           the USSR as a textbook for the middle technical schools.

YEFREMOV, D.V.; MESHCHERYAKOV, M.G.; MINTS, A.L.; DZHELEPOV, V.P.;
        IVANOV, P.P.; KATYSHEV, V.S. [deceased]; KOMAR, Ye.G.; MA-
        LYSHEV, I.F.; MONOSZON, N.A.; NEVYAZHSKIY, I.Kh.; POLYAKOV,
        B.I.; CHESTNOY, A.V.

        Six-meter synchrocyclotron built by the Institute of Nuclear
        Problems, Academy of Sciences of the U.S.S.R. Atom.energ. no.4:
        5-12 '56.   (MLRA 9:12)
                (Cyclotron)

VEKSLER, V.I.; YEFREMOV, D.V.; MINTS, A.L.; VEYSBEYN, M.M.;VODOP'YANOV;
    P.A.; GASHEV, M.A.; ZEYBLITS, A.I.; IVANOV, P.P.; KOLOMENSKIY,
    A.A.; KOMAR, Ye.G.; KALYSHEV, I.F.; KONOSZON, M.A.; NEVYAZHSKIY,
    I.Kh.; PETUKHOV, V.A.; RABINOVICH, M.S.; GUBCHINSKIY, S.M.; SL-
    HEL'NIKOV, K.D.; STOLOV, A.M.

    Ten Bev energy synchrocyclotron built by the Academy of Sciences
    of the U.S.S.R. Atom.energ. no.4:22-30 '56.   (MLRA 9:12)
                (Cyclotron)

NEVYAZHSKIY, I KH.

"Some Peculiarities and Fundamental Data of the High-Fre-
quency System of a 6-meter Phasotron," A. L. Mints, I. Kh.
Nevyazhskiy, and B. I. Polyakov, Radiotekhnika i Elektro-
nika, No 7, Jul 56, pp 893-902

The technical peculiarities, construction, and fundamental parameters
of the high-frequency system (26.5 to 13.6 megacycles), of a 6-meter pha-
sotron of the Institute of Nuclear Problems of the Academy of Sciences
USSR are presented.

Participants and their contributions to the project were V. M. Lupu-
lov and I. F. Malyshev, dealing with the mechanical problems; engineers
G. P. Grudinskaya, G. I. Zhileyko, B. T. Zarubin, V. G. Kul'man, and A.
L. Savenkov, dealing with the radio engineering problems; and I. G. Kly-
atskin, N. K. Titov, and V. F. Trubetskoy, dealing with the construction
of the high-frequency system of a 5-meter phasotron.

SUM. 1305

NEVYAZHSKIY, I.Kh; DRABKIN, V.F.; TRUBETSKOY, V.F.; TEMKIN, A.S.

Use of ferrite-core inductance in the high-freqyency power stage circuit of the proton synchrotron. Radiotekh.i elektron.1 no.7:954-964 J. '56.   (MIRA 10:1)

(Synchrotron)

NEVYAZHSKIY, I. Kh., MINTS, A. L., POLYAKOV, B. I.

"Radio-Frequency System for the 680 MeV Proton Synchrocyclotron,"
paper presented at CERN Symposium, 1956, appearing in Nuclear Instruments,
No. 1, pp. 21-30, 1957

BORZUNOV, N.A.; KUZ'MINA, N.Ya.; NEVYAZHSKIY, I.Kh.; OSOVETS, S.M.;
PETROV, Yu.F.; POLYAKOV, B.I.; POPOV, I.A.; KHODATAYEV, K.V.;
SHIMCHUK, V.P.

Studying a plasma on a traveling wave setup. Dokl. AN SSSR 152
no.3:581-584 S '63.   (MIRA 16:12)

1. Predstavleno akademikom A.L.Mintsem.

Nevyjel, Emil.

U-S-S-R.

Recent contributions to the crisis of silicosis. Emil C 4 Nevyjel. Báňský Obzor 4. 97-103 (1950).—In diseases of the air-passages of the lungs caused by dust, a decisive part is played by sericite, which is a talc- or kaolin-like decompn. product of most silicates, including quartz and tourmaline. Various views regarding atomic therapy are presented. Explanations considered include the agglomerization of SiO_2 and Al_2O_3 to form coarser grains and the replacement of Si atoms by Al atoms in the crystal lattice. A further explanation is the release of F inclusions in the lung tissue. Silicosis and its relation to the dust of various minerals. Ibid. 113-17.—The dust from different minerals produces very different effects on the human organism. Possible explanations of this phenomenon include paramorphism of quartz, mineralogical-crystallographic causes of the injury to lung tissue, amorphous modification of quartz with F inclusions, piezoelectricity, etc. Investigation of the damage produced by the dust of different minerals is necessary before silicosis can be explained. Through Chem. Zentr. 1952, 729.   M. G. Moore

KARPISEK, J.; NEVYJEL, P.; VACKOVA, Vl.; VANECEK, R.

Contribution to the picture of renal osteodystrophy. Cas.lek.
cesk. 98 no.37:1158-1165 11 S '59.

1. Statni sanatorium v Praze XVI, reditel dr. F. Zavodny. II.
patologickoanatomicky ustav fakulty vseobecneho lekarstvi v
Praze, prednosta prof.dr. V. Jedlicka.
          (RICKETS RENAL)

NEVZGLYAD, G.I.

Morphology of receptors of the rectum under normal and pathological
conditions. Vrach. delo no.8:86-91 Ag '61.   (MIRA 15:3)

1. Kafedra operativnoy khirurgii i topograficheskoy anatomii
(zav. - prof. I.P. Kallistov) Kiyevskogo meditsinskogo instituta.
                    (RECEPTORS (NEUROLOGY))
                    (RECTUM—INNERVATION)

A 53
dd

469. Generalisation of Dirac's Method for Determination of Energy Levels of a System. V. G. Neveglladov. Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R. 8. pp. 347-350. 1935. In German.—The interaction energy of a many-electron system with weak interaction being expressed as a sum of permutation operators, it is shown how the effect on the energy levels of a further type of degeneracy can be calculated. G. C. McV.

Deduction of the equation of state in the Gibbs statistics.
V. G. Nevzglyadov. *J. Expt. Theoret. Phys.* (U. S. S.
R.) 10, 70-5(1940).—Applying the variational method to
the normalization conditions for the d. of mols., H. de-
duces the equation of state $\partial \phi / \partial a_i = (\partial H / \partial a_i)$ ($i =
1, 2, 3, \ldots$), where ϕ is the free energy, H is the Hamilton-
ian and a_i macroscopic parameters detg. the outside con-
ditions.   Roksiana Garnow

NEVZGLYADOV, VG.

"A Phenomenological Theory of Radiometric Forces," Zhur. Eksper. i Teoret. Fiz., 12, Nos. 5-6, 1942.

A phenomenological theory of turbulence. V. Nevi-ryadov (Leningrad State Univ.). J. Phys. (U.S.S.R.) 9, 255-43(1945).—Math.
A. O. Alkm
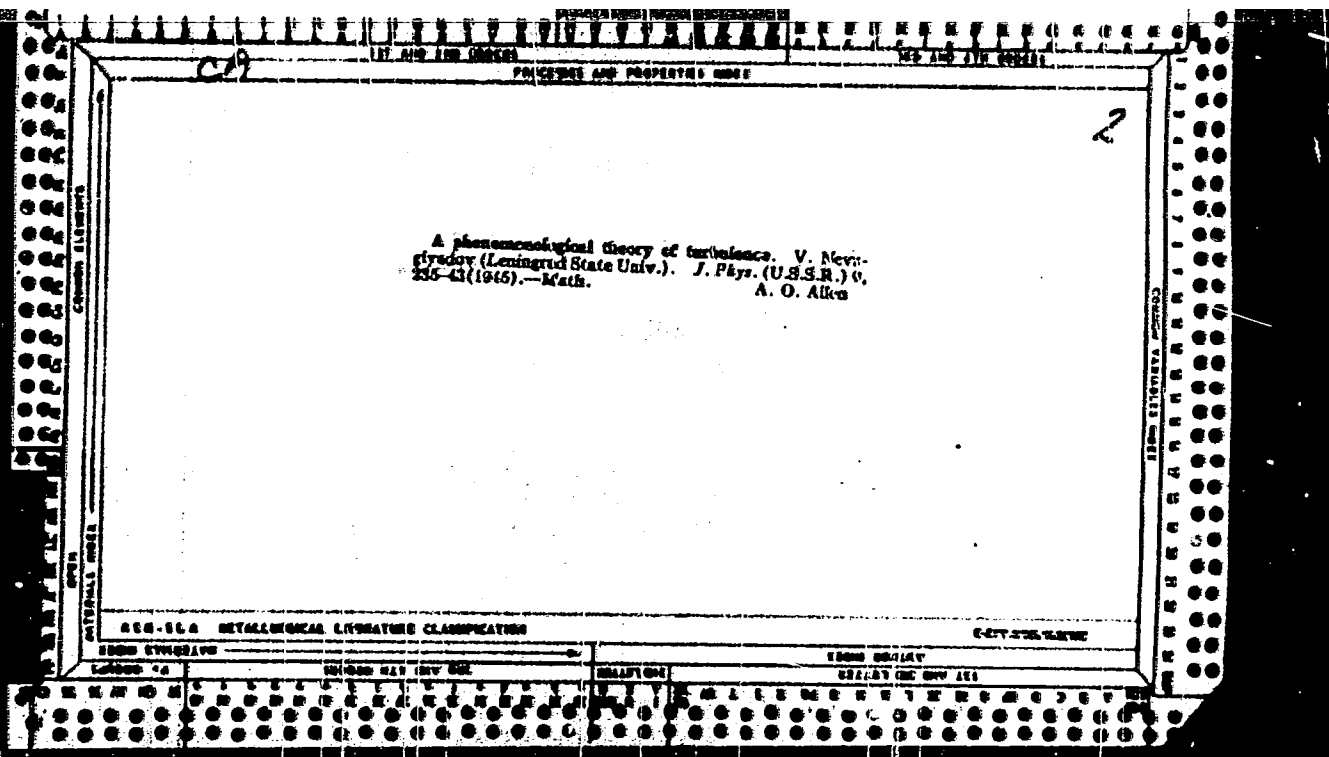
NEVZOLYADOV, V. G.

Leningrad State University. "Concerning Eddies in Liquid-Conveying Circular Pipes."
Iz. Ak. Nauk SSSR, Otdel. Tekh. Nauk, No. 9, 1945. Submitted 19 Apr 1945

Report U-1582, 6 Dec 1951.

NEVZGLIADOV, V.G.

K fenomenologicheskoi teorii turbulentnosti. (Akademiia Nauk SSSR. Dok-
lady. Novaia seriia, 1945, v. 47, no. 3,p. 169-173)
Title tr.: A contribution to the phenomenological theory of turbulence.
Also published in English in comptes rendus de l'Academie des Sciences de
l'URSS. Nouvelle serie, 1945, v. 47, no. 3, p. 165-168(.60. .A52)
A262. S3663 v. 47

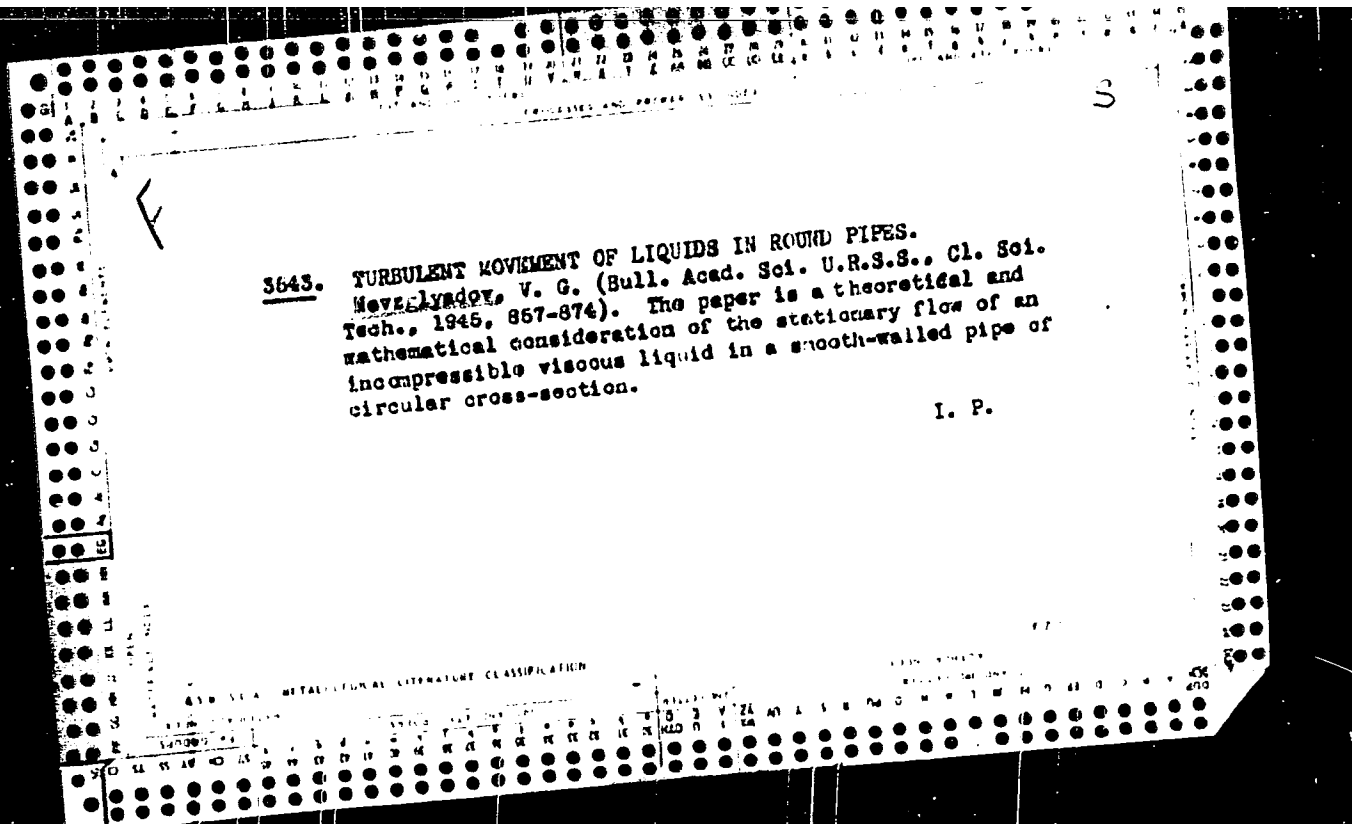SO. Aeronautical Science and Aviation in the Soviet Union. Library of
Congress, 1955.

NEVZLIADOV, V.G.

K statisticheskoi teorii turbulentnosti. (Akademiia Nauk SSSR. Doklady. Novaia seriia, 1945, v. 47, no. 7, p. 482-485)

Title tr.: Contribution to the statistical theory of turbulence. Also published in English in Comptes rendus de l'Academie des Sciences de l' URSS. Nouvelle serie, 1945, v. 47, no. 7, p. 466-468 (260. A52)

AS262. S3563 v. 47

SC. Aeronautical Science and Aviation in the Soviet Union. Library of Congress, 1955.

3643. TURBULENT MOVEMENT OF LIQUIDS IN ROUND PIPES.
Nevelyadov, V. G. (Bull. Acad. Sci. U.R.S.S., Cl. Sci.
Tech., 1945, 867-874). The paper is a theoretical and
mathematical consideration of the stationary flow of an
incompressible viscous liquid in a smooth-walled pipe of
circular cross-section.

I. P.

NEVZGLYADOV, V. G.

"Some recent contributions to the study of transition and turbulent boundary layers," paper presented at the sixth International Congress for Appl. Mech., Paris, 1946.

Aug 1946

USSR/Physics
Flow, Turbulent
Flow, Viscous

"Phenomenological Theory of Turbulence," V. G. Nevzglyadov, Leningrad State University, 11 pp

"Zhur Eksper i Teoret Fiz" Vol XVI, No 7

Problem of completing the Reynolds equations for the average quantities describing the turbulent flow of an incompressible viscous fluid is worked out. Problem is solved by the equations of state method which is based on subdividing the average quantities into two groups: the group of fundamental units and the group of units termed as reducible quantities.

40T95

LC

USSR/Physics (Contd)   Aug 1946

Latter are expressed in a functional manner in terms of the fundamental units, these expressions being called the dynamical equations of state. Form of dynamical equations of state is set up in the first approximation by formal phenomenological reasoning. A kinetic equation of turbulent transfer is found from which the equations of state follow. By determining the equations of state a full system of equations is set up for describing the turbulent motion of an incompressible viscous liquid. Distribution of velocity for a stationary flow in a circular pipe is found by solving the system. Distribution agrees well with the experimental results.

40T95

LC

NEVZGLYADOV, V.

Turbulence, Boundary ... T

674. V. G. Nevzglidoff, "Application of the phenomenological turbulence theory to flow in pipes" (in Russian), *J. tech. Phys. (ZA tekh. Fiz.)*, Nov. 1947, vol. 17, pp. 1350-1370

The author applies the phenomenological theory of turbulence he developed in an earlier paper [*J. Phys. Acad. Sci. USSR (ZA Fiz. 11 Nauk SSSR)*, 1946, vol. 9, pp. 235-243] to the flow of fluids through circular pipes. Some preliminary results for this problem were also given at the end of the earlier paper. After making certain simplifying assumptions the author solves his equations approximately for the mean velocity profile, for the case of both smooth and rough walls. Comparison with Nikuradse's experimentally determined velocity profiles seems to show exceptionally good agreement. A discussion is also given of the accuracy of his equations and of his approximate method for solving them.

For a short description of the author's approach see Rev. 326, APPLIED MECHANICS REVIEWS, Feb. 1948.

J. V. Wehausen, USA

NEVZGLYADOV, V. G.

PA 20T1

USSR/Aeronautics   Jan 1947
     Flow, Turbulent
     Mathematics, Applied

"Turbulent Flow in Coarse Pipes," V. G. Nevzglyadov,
4 pp

"Dok Ak Nauk SSSR" Vol LV, No 2

Presented by V. I. Smirnov 25 Jul 1946. Discusses
the phenomenological theory of turbulence with re-
lation to the inner problems in a straight tube of
round cross section with coarse sides. Mathematical
with several formulae for determining turbulence in
coarse pipes from data derived from smooth pipes.

20T1

NEVZGLYANDOV, V. G. Docent   PA 22/49T87

USSR/Physics   Mar 48
    Flow, Laminar
    Flow, Turbulent

"The Fundamentals of the Phenomenological Theory
of Turbulence," Docent V. G. Nevzglyandov, 13½ pp

"Vest Leningrad U" No 3

Treats subject under following: (1) O. Reynold's
views on nature of turbulence, (2) laminar flow
equations of a compressible liquid, (3) turbulent
flow equations of a compressible liquid, (4)
higher phenomenological neutralizations, (5)
method of linearization, and (6) object and trend
of experiments.
IC   22/49T87

AIR

Incompressible flow; laminar; descent

1789. **Neregradov, V. G.** A new method in the dynamics of a viscous fluid (in Russian) *Izd. Akad. Nauk SSSR (N.S.)* 77, 4, 573-576, Apr. 1951.

The flow of a viscous fluid past rigid bodies is considered as a generalization of a problem studied by Thom [*Proc. roy. Soc. Lond.* (A) 141, 651] in the case of a circular cylinder. If the streamlines surrounding a rigid body form a tube of comparatively small cross-section at infinity, then either the flow corresponds to a real flow in any interval of small Reynolds numbers, or it approaches a model which can be used in the case when the specific weight of the turbulent wake is small. A flow of this kind occurs when a fluid flows easily around a body or around a thin profile. In treating such a flow, one is not restricted to small Reynolds numbers, which is of considerable practical importance. Author gives a method for solving the dynamic problem in this field. When the stream tube, mentioned above, is conveniently chosen, the velocity u₀ of the outer flow is found approximately by considering the case of vanishing viscosity. Supposing u₀ is known, the velocity u is introduced as the sum u₀ + v, the component v bring in the mean small as compared with u₀. Taking Navier-Stokes equations in the dimensionless form, the unknown function v(x, y, z) satisfies the equations

$$(u_0 \cdot \nabla)v + (v \cdot \nabla)u_0 = -\nabla p + \frac{1}{Re}\Delta v$$

$$\text{div } v = 0; \quad v_{|x \to \infty} = 0 \quad [1]$$

At great distances from the body u₀ → u_∞, and the former equation goes over to Oseen's equation. In the region near the body, a good representation of the real flow which is convenient even in the case of greater Reynolds numbers. The theory is developed in the similar case of two-dimensional flow. Finally, an expression is given for the force acting on a stationary viscous flow on unit length of a cylindrical body, when the solution of Eq. [1] is known.

J. Brdička, Czechoslovakia

A/MR

PROCESSES AND PROPERTIES INDEX

168. **Neragfredov, V. G.,** Flow of a viscous fluid around a plate (in Russian). Doklad Akad Nauk SSSR (N S) 77, N 703 704, Apr 1951.

Author solves three equations for slightly viscous fluid flow past a finite plate. Boundary conditions are investigated a small distance ±λ above and below the plate where Reλ¹~1, Re being the Reynolds number based on plate length and assumed large, so that equations may be taken known without undue error. The conditions on the transversal component are satisfied far downstream, while those on the longitudinal component are satisfied at the plate midpoint. The resulting drag coefficient is c_r = 1.17 $Re^{-1/2}$ in good qualitative agreement with Blasius. Paper is hypersonic flow is essentially the same concept as that referred to in English literature as Newtonian flow, although this is not discussed in paper. Dean R. Chapman, USA.

Incompressible Flow, Laminar Viscous

17

Jan '52

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

10(2)

AUTHOR: Nevzglyadov, V.G.

TITLE: On the Formulation of the Flow Problem in the Phenomenological Turbulence Theory (K postanovke zadachi obtekaniya v fenomeno- logicheskoy teorii turbulentnosti)

SOV/43-58-19-13/16

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii,1958, Nr 19(4),pp 156-169 (USSR)

ABSTRACT: The author uses the phenomenological turbulence theory [Ref 1 - 2] developed by him for a general theoretical in- vestigation of the flow problem for viscous liquids. Several expressions for the force carried out on the immovable body by the flow are found, generalized Bernoulli - Cauchy equations are set up; the Umov vector is generalized to tur- bulent flows; finally the equations of motion are written in the form of the Euler - Lagrange equations for the variation problem. Most of the results are obtained by linearization. Several results are contained in former papers of the author [Ref 1 - 4].
There are 4 Soviet references.

Card 1/2

24(6)   PHASE I BOOK EXPLOITATION   SOV/2984

Nevzglyadov, Vsevolod Gordeyevich

Teoreticheskaya mekhanika (Theoretical Mechanics) Moscow, Fizmatgiz,
   1959. 584 p. Errata slip inserted. 15,000 copies printed.

Ed.: V.I. Rydnik; Tech. Ed.: Ye. A. Yermakova.

PURPOSE: This book is intended for students in physics departments
   of universities.

COVERAGE: This is the first part of a course on theoretical physics
   and is based on the material presented by the author in the course
   on mechanics at the Physics Department of Leningrad University.
   The book is divided into two parts. The first part deals with the
   mechanics of a material particle, the mechanics of a system of
   particles, and the mechanics of a rigid body. The subjects dis-
   cussed include kinematics and dynamics of a particle, motion in
   a central force   field, constrained motion and types of con-
   straints, dynamics of a system of particles, kinematics and dyna-

Card 1/17

10(2)

AUTHOR: Nevzglyadov, V. G.   SOV/20-'24 ...

TITLE: On the Vector of the Density of the Flow of Turbulent Energy
          (O vektore plotnosti potoka turbulentnoy energii)

PERIODICAL: Doklady Akademii nauk SSSR, 1959. Vol '24 Nr 2, pp ...
              (USSR)

ABSTRACT: The author first points out the deficiencies of earlier papers
            dealing with this subject. The anisotropic connection between
            the vector $\vec{I}$ (which is the analogue of the heat flow ...
            and the vector $\nabla \Pi$ can be expressed in the most simple man.
            by the second degree tensor L_{ki} of the turbulent ...

            $$I_k = -L_{ki}\, \partial\Pi / \partial x_i \quad (k = 1, 2, 3).\text{ Here it holds that}$$

            $$\Pi = (1/3)\rho\,(\overline{u_1'^2} + \overline{u_2'^2} + \overline{u_3'^2}) = (2/3)\rho\tau ; \quad u_1 \dots \bar{I}_1 = \dots \text{ are the}$$

            pulsation rates. The tensor L_{ki} is symmetric, and when

            determining an explicit expression for L_{ki} general ...

Card 1/4   concerning covariance, dimension number, and similar ...
            used.

On the Vector of the Density of the Flow of
Turbulent Energy

SOV/20-124-2-...

In the turbulent flows there are some tensors of second rank,
by which L_{ki} can be expressed. The most essential among them
(which depend upon the "internal state" of the liquid particle)
are

$$\overline{u'_i u'_k} \; ; \; \frac{\partial \bar{u}_i}{\partial x_k} + \frac{\partial \bar{u}_k}{\partial x_i} \; ; \; \frac{\partial^2 \Pi}{\partial x_i \partial x_k} \quad . \text{ These 3 tensors are not}$$

independent of one another. When calculating the explicit form
of L_{ki} , the conditions $L_{ki} \rightarrow 0$ at $\Pi \rightarrow 0$ and $L_{ki} \rightarrow L(\Pi)\delta_{ki}$
must be taken into account. These conditions are satisfied by
an expression of the form $L_{ki} = f(\Pi)\delta_{ki} + l(\Pi) \overline{u'_i u'_k}$, where
$f(\Pi) \rightarrow 0 \; ; \; l(\Pi) \rightarrow 0$ at $\Pi \rightarrow 0$ holds. The expression just
written down for L_{ki} is, however, not the final one, for the
tensor $\overline{u'_i u'_k}$ must yet be expressed by basic quantities.
The author then suggests the expression

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$$L_{ki} = L(\Pi)\delta_{ki} + N(\Pi) \left(\frac{\partial \bar{u}_i}{\partial x_k} + \frac{\partial \bar{u}_k}{\partial x_i} - \frac{2}{3} \text{div } \vec{u} \; \delta_{ik} \right)$$

On the Vector of the Density of the Flow of
Turbulent Energy

$L(\pi) \rightarrow 0$, $\Xi(\pi) \rightarrow 0$ at $\pi \rightarrow 0$. The two expressions given
here for L_{ki} are equivalent if an isotropic connection exists
between the tensor of turbulent flow and the tensor of the
rate of deformation. For the flow in a circular tube it holds
(in polar coordinates) that $L_{rr} = L_{\varphi\varphi} = L_{zz} = L$; $L_{r\varphi} = L_{z\varphi} = 0$;
$L_{rz} = -N \, d\bar{u}/dr$ if $\bar{u}_r = \bar{u}_\varphi = 0$ holds. It is, by the way,
always possible to assume $L > 0$. For the components of the
vector $\vec{I}$ it holds that $I_r = -L \, d\pi/dr$; $I_\varphi = 0$;
$I_z = N(\overline{du}/dr)(d\pi/dr)$, if π depends solely on r. The component I_z
has different signs for the axis and for the wall of the tube
and in 3 points becomes equal to zero. These facts are checked
by means of experiments. The results obtained by measurements
carried out in a circular tube can be applied, by using a

Card 3/4

On the Vector of the Density of the ?er of
Turbulent Energy   SOV/?(-12.1-?-1? 7:

known analogy, also to the boundary layer. There re
5 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

PRESENTED: September 5, 1958, by V. I. Smirnov, Academician

SUBMITTED: July 23, 1958

Card 4/4

88450

S/056/60/039/006/042/063
B006/B063

//.7200

AUTHOR: Nevzglyadov, V. G.

TITLE: Thermodynamics of Turbulent Systems

PERIODICAL: Zhurnal eksperimental noy i teoreticheskoy fiziki, 1960,
             Vol. 39, No. 6(12), pp. 1727 - 1753

TEXT: The purpose of the present work was to deduce several conclusions
following from the second law of thermodynamics for single-component
turbulent systems. First of all, the fundamental thermodynamic equations
for a single-component system in which the deviator of the stress tensor
is independent of the deformation tensor, and the averaged equations
holding for the case of turbulence are derived. The equations of state are
described by the six parameters v_i, p, T and R_i. When checking the con-

clusions to be drawn from the second law of thermodynamics, it is

necessary to introduce two additional quantities $\overline{T'^2}$ and $\overline{\rho'^2}$, where
T'=T-$\tilde{T}$ and ρ'=ρ-$\tilde{\rho}$. Some new relations are obtained after several ex-
pansions and averaging. The conclusions to be drawn from the second law of

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Thermodynamics of Turbulent Systems   S/056/60/039/006/042/063
                                              B006/B063

thermodynamics result in the equation $\frac{\partial \bar{s}}{\partial t} + \frac{\partial \bar{Q}_k}{\partial x_k} = \bar{\vartheta}_1 + \bar{\vartheta}_2$ with

$\bar{\vartheta}_1 = J_k \frac{\partial}{\partial x_k}(\frac{1}{T})$, $\bar{\vartheta}_2 = \frac{P_{1k}}{T} \frac{\partial v_1}{\partial x_k}$, $\bar{Q}_k = \bar{s}_v v_k + \overline{s'v'_k} + (T^{-1} J_k)$, and the con-

ditions that $\bar{\vartheta}_1 > 0$ and $\bar{\vartheta}_2 > 0$. $\bar{s}_v$ characterizes the turbulent condition of
the system and depends not only on T and ρ but also on $\overline{T'^2}$ and $\overline{\rho'^2}$;
$\bar{s}_v = \bar{Q}\bar{s} + \overline{\rho's'}$. The question how the second law of thermodynamics is to be
generalized to become applicable to turbulent systems is examined next.
Its consequences as stated above are insufficient because the averaged
entropy $\bar{s}$ cannot be used to characterize the state of turbulence since it
is independent of the energy of turbulence E_t. The first (molecular)
averaging permits introduction of the entropy s, whereas the second
averaging (phenomenological, according to Reynolds) requires the
existence of a new function, called the "turbulent-thermal entropy" S_e,
which is independent of s. This function is used to generalize the second
law of thermodynamics to turbulent systems. S_e is taken to be a function

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Thermodynamics of Turbulent Systems   S/056/60/039/006/042/063
                                             B006/B065

of the turbulent "inner" condition of the system, i.e., a function of
$\bar{u}$, $\bar{Q}$, $\overline{Q''^2}$, $\overline{T'^2}$, and $\bar{E}_t$, and it holds that $\partial(\bar{\rho} S_e)/\partial t + \mathrm{div}\, \vec{Q}_e - \vartheta_e > 0$.
Hence, the following relation is obtained for the current density of
turbulent-thermal entropy $(\vec{Q}_e)_k = \bar{\rho} S_e \bar{v}_k + T_e^{-1}(\bar{J}_k + J_k + I_k - \overline{P_{ik} v''_i})$; the rate
of its appearance is given by

$$\vartheta_e = (j_k + J_k + I_k - \overline{P_{ik} v''_i})\, \frac{\partial}{\partial x_k}(\frac{1}{T_e}) - T_e^{-1}(T_{ik} - P_{ik})\, \frac{\partial \bar{v}_i}{\partial x_k} \; ; \; \hat{T}_{ik} = T_{ik} + H\delta_{ik}$$

$$> 0 \qquad\qquad 0 \qquad ; \; T_{ik}\partial \bar{v}_i/\partial x_k > 0 ;$$

T_e is the function of the turbulence state; H is the pressure of
turbulence; $H = \frac{2}{3}\bar{\rho} E_t$. There are 5 references: 3 Soviet, 1 German, and
1 US.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State
             University)

SUBMITTED: July 6, 1960

Card 3/3

10,0000

AUTHOR: Nevaglyadov, V. G.

TITLE: Theory of Anisotropic Turbulence

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 2,
             pp. 283 - 286

TEXT: The generalizations of the theory of anisotropic turbulence re-
presented in this paper try to explain the experimental results which were
obtained during the last years. The explanations are beyond the scope of
the old straightforward theory. The relation $\hat{\Pi}_{ik} = 2K\hat{e}_{ik}$ gives the
connection between the turbulent stress tensor $\Pi_{ik} \equiv -\overline{\varrho u_i' u_k'}$ (1.1) (u_i' are
the pulsation rates) and the deformation tensor $\hat{e}_{ik} \equiv \left(\frac{1}{2}\, \partial \bar{u}_i/\partial x_k + \partial \bar{u}_x/\partial x_i\right)$.
$\hat{\Pi}_{ik} = \Pi_{ik} + \Pi\delta_{ik}$ represents the deviator. The results of Laufer show that
the experiment agrees for the isotropic relation (1.1) in the core of the
flow but deviates at some distance from the core. This deviation is called
anisotropic turbulence. The difference is $\hat{\Pi}_{ik} - 2K\hat{e}_{ik} \equiv \hat{F}_{ik}$, where
Card 1/2

Theory of Anisotropic Turbulence   S/C20/60/135/002/010/036
                                                    B019/B077

$\hat{F}_{ik} = F_{ik} - \frac{1}{3F'_{ss}\delta_{ik}} \cdot \hat{F}_{ik}$ is the deviator of F_{ik}; F_{ik} is an additional

tensor representing the observed deviation from the isotropic relation.
In order to determine the tensor F_{ik}, it is assumed that the equation of

state is only a function of the inner conditions. Thus, a few tensors may
be canceled. The remaining tensors are divided into two groups: one con-
sists of tensors independent of $\dot{e}_{ik}$ and called P_{ik}; the others are a

function of $\dot{e}_{ik}$ and are called T_{ik}. The stress tensor deviator is

$\hat{\Pi}_{ik} = 2(K\delta_{im}\delta_{kn} + \hat{K}_{ikmn})\dot{e}_{mn} + \hat{P}_{ik}$. This deviator is discussed, and the
role of the introduced tensors is investigated in a two-dimensional
problem. There are 6 references: 4 Soviet and 1 US.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
             (Leningrad State University imeni A. A. Zhdanov)

PRESENTED: March 28, 1960, by V. A. Fok, Academician

SUBMITTED: March 16, 1960

Card 2/2

32424

24.4100   1327 1057 1191

AUTHOR: Nevzglyadov, V. G.

TITLE: Rotation of a deformable body

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 6, 1961, 1328-1331

TEXT: A closed theory of a rotating deformable body is developed. It is assumed that the body to be investigated is subject to a homogeneous deformation, i.e., if the shift of the mass points from their natural position is described by the vector $\vec{u} = \vec{u}_1(a_1,a_2,a_3,,t)\vec{e}_1$, then the following expression is valid for the instantaneous position of an arbitrary point of the body: $\vec{r} = x_1(a_1,a_2,a_3;t)\vec{e}_1$. The homogeneous deformation is defined by

X

$$x_i = a_i + \frac{\partial u_i}{\partial a_k} a_k = a_i + (e_{ik} + \varphi_{ik})\, a_k. \qquad (1.2) \text{ and}$$

$$e_{ik} \equiv \tfrac{1}{2}(u_{ik} + u_{ki}) = e_{ki}(t); \cdot \varphi_{ik} \equiv \tfrac{1}{2}(u_{ik}) - u_{ki} = -\varphi_{ki}(t); u_{ik} \equiv \partial u_i/\partial a_k \qquad (1.3).$$

Card 1/2

32l42

S/020/61/141/006/0C7/C21
B104/B112

Rotation of deformable body

With the help of the Lagrange formalism, the mechanical theory of a rotating deformable body is set up as a generalization of the model for an absolutely solid body. Explicit expressions are derived for internal and external potential energies, for forces without potential, and for a function taking into account the viscous properties of the body. The mechanical properties of the system are described by six coefficients of inertia (mass m of the body does not appear since the center of mass is assumed to rest in the origin of the coordinates), two coefficients of elasticity, and two coefficients of viscosity. The theory is considered as closed like the one for solids. The interaction between rotation and deformation is studied by investigating the expressions for the kinetic energy of the body. There is 1 Soviet reference.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A.
               Zhdanova (Leningrad State University imeni A. A. Zhdanov)

PRESENTED: July 6, 1961, by V. A. Fok, Academician

SUBMITTED: June 28, 1961

Card 2/2

24.4400

AUTHOR: Nevzglyadov, V. G.

TITLE: Quantum theory of rotating and deformable particles

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 1, 1962, 59-62

TEXT: The quantum theory of a rotating, deformable particle is developed from the classical equation of motion of the generalized model of a solid (V. G. Nevzglyadov, DAN, 141, no. 6 (1961)). The Schrödinger equation is written in Cartesian coordinates, and in order to study deformation, rotation, and the coupling between them, other coordinates are used: six deformation coordinates ε_{nm} and three "orientation" coordinates ϑ_n. The Schrödinger equation is then obtained in the form

$$(H_{dl} + H_{rot} + H_{rd})\,\psi = E\psi,$$

где $H_{dl} \equiv -\dfrac{2\hbar^2}{f_s^0}\left[e_{rm}\,\dfrac{\partial^2}{\partial e_{rs}\partial e_{ms}} + \dfrac{\partial^2}{\partial v_{rs}\partial e_{rs}} + \left(\varkappa_{nr}\dfrac{\partial\varkappa_{nm}}{\partial e_{rs}} + \dfrac{1}{2}\,h_{ns,r}\,\dfrac{\partial\varkappa_{nm}}{\partial\theta_r}\right) \times\right.$ (3.8)

$\left. \times \dfrac{\partial}{\partial e_{ms}}\right] + U + U_{dl}^{ex};\; H_{rot} \equiv -\dfrac{\hbar^2}{2f_k^0}\left[h_{nk,r}\,\dfrac{\partial}{\partial\theta_r}\left(h_{nk,m}\dfrac{\partial}{\partial\theta_m}\right) + 2\varkappa_{nr}\dfrac{\partial h_{nk,m}}{\partial e_{rk}} \times\right.$

Card 1/2

32813
3/020/62/142/001/009/021
B104/B102

Quantum theory of rotating ...

$$\times \frac{\partial}{\partial \theta_m} \Big] + U_{rot}^{ex}; \quad H_{rd} \equiv - \frac{2\hbar^2}{l_s^0} \varkappa_{nr} h_{ns,m} \frac{\partial^2}{\partial e_{rs} \partial \theta_m}.$$

which expresses the interaction between rotation and deformation. It becomes evident that ϑ_n is not a pure rotational degree of freedom: ϑ_n is not a linear, homogeneous function of the vector Ω_i. In (3.8), $\mathcal{E}_{nk,rs} = \varkappa_{nr}$ at $k = s$, $\mathcal{E}_{nk,rs} = \varkappa$ at $k = r$, and $\mathcal{E}_{nk,rs} = 0$ at $k \neq s$, $k \neq r$, $\mathcal{E}_{nm,rs} = \partial \mathcal{E}_{rs}/\partial \varkappa_{nm}$, $h_{nm,r} = \partial \vartheta_r/\partial \varkappa_{nm}$; $\varkappa_{nm}$ are the canonical variables of the classical equation of motion. There are 7 references: 3 Soviet and 4 non-Soviet. The reference to the English-language publication reads as follows: S. C. Wang, Phys. Rev., 34, 243 (1929).

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

PRESENTED: July 6, 1961, by V. A. Fok, Academician

SUBMITTED: June 28, 1961

Card 2/2

NEVZGODIN, A.Ye.;KRUPPA, P.D.

    Business accounting now used on railroad sections. Put' i put. khoz.
no.3:9-11 Mr '57.   (MIRA 10:5)

    1. Nachal'nik Orlovskoy distantsii (for Nevsgodin).   2. Glavnyy
bukhgalter Orlovskoy distantsii (for Kruppa).
        (Railroads--Accounts, bookkeeping, etc.)

NEVZGODIN, A.Ye.(Orel); VASYUTIN, M.P. (Orel)

 Railroad division striving for an honorable title. Put' i
put.khoz. 4 no.1:5-7 Ja '60.   (MIRA 13:5)

 1. Nachal'nik Orlovskoy distantsii Moskovskoy dorogi (for
Nevzgodin). 2. Sekretar' partiynoy organizatsii Orlovskoy
distantsii puti Moskovskoy dorogi (for Vasyutin).
   (Orel District--Railroads)

GERASIMOV,A.P.; NEVZGODIN, A.Ye.; KOTOV, S.I.

Five kolometer of rapair work achieved in three hours. Put' i put.
khoz. 8 no.9:5-7 '64.   (MIRA 17:11)

1. Zamestitel' nachal'nika otdeleniya dorogi, stantsiya Orel, Moskov-
skoy dorogi (for Gerasimov). 2. Nachal'nik Orlovskoy distantsii puti
Moskovskoy dorogi (for Nevzgodin). 3. Zamestitel' nachal'nika Orlov-
skoy distantsii puti Moskovskoy dorogi (for Kotov).

KHVOSTOVA, V.V.; NEVZGODINA, L.V.

Frequency of chromosome reorganizations in the tissues of
radiosensitive and radioresistant pea plants. TSitologiia
1 no.4:403-407 Jl-Ag '59.   (MIRA 12:10)

1. Laboratoriya radiatsionnoy genetiki Instituta biofiziki AN
SSSR, Moskva.
            (CHROMOSOMES)   (RADIATION--PHYSIOLOGICAL EFFECT)
                            (PEAS)

NEVZGODINA, L.V.

S/560/61/000/010/011/016
D298/D302

27 17 20

AUTHORS: Glembotskiy, Ya. L., Prokof'eva-Bel'govskaya.
A. A., Shamina, Z. B., Goldat, S. Yu.,
Khvostova. V. V., Valeva, S. A., Eyges, N. S.,
and Nevzgodina, L. V.

TITLE: Effect of cosmic flight factors on the heredity
and development of actinomycetes and higher
plants

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki
Zemli. no. 10. Moscow, 1961, 72-81

TEXT: The second cosmic space-ship was utilized to study
the combined genetic effect of cosmic flight on organisms. This
article deals with the study of the following cultures: actino-
myces erythreus, stems 2577 and 8594, and actinomyces strepto-
mycini Kras., stem ЛC-3 (LS-3). After the cosmic flight, the

Card 1/4

4

Effect of ...

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stems were foun... to be sensitive to conditions of cosmic flight.
The vitality (i.e., the number of spores which survived and
developed colonies) of the radio-resistant act. erytnreus 2577,
as compared to the standards, increased 6 times; the no. 8594
decreased 12 times; the act. aureofaciens P? 5-220; (LSB-2201)
dropped in vitality by about 75% on the average. In the roots
of all 5 types of experimental seeds, the percentage of chromo-
some changes was somewhat increased. However, only in the case
of 2 types was this increase statistically valid. In 3 types
of plants, in increase of mitosis was noted. In the case where
the percentage of anaphases with chromosome changes was found

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4

Effect of cosmic ..

S/560/61/000/010/011/016
D258/D302

to be high (about 5%), the tempo of mitosis fell. The condi-
tions of cosmic flight stimulated the growth intensity compared
to the standards. The following microscopic morphology features
of the experimental cultures confirm this fact: (a) development
of a more basiphyllic and powerful gif, (b) growth of a thicker
intertwining of mycelia, (c) lengthy growth of well-developed
gifs Data on the survival of the 8594 and 2577 stems are not
completely valid since the concentrations of the spore suspen-
sions of the control and experimental cultures were determined
visually from the suspension turbidity. The morphology changes
in the colonies were investigated on the act. erythreus 8594
and act. aureofaciens LSB-2201.. Obtained data show that the
morphology changes in the actinomyces, both in the experiment
(cosmic flight) and control, lie within the same limits. The
cytology analysis of agricultural plant seeds affected by cosmic
flight was conducted by studying the chromosome impairment in
the ana- and telophases of the first mitosis. Obtained results

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S/560/61/000/010/011/016
D298/D302

Effect of cosmic...

showed that in all the investigated plants there is a certain
increase of cells with chromosome changes, and in only 2--winter
wheat and Spartanet's peas--is this increase statistically
valid. There are 4 figures, 2 tables and 5 references 4 Soviet-
bloc and 1 non-Soviet-bloc. The reference to the English-
language publication reads as follows: S. B. Pipkin, W. N.
Sullivan, Aerospace Med., 30, 585, 1959.

SUBMITTED: May 3, 1961

Card 4/4

S/205/61/001/004/027/032
D298/D303

AUTHORS: Khvostova, V. V. and Nevzgodina, L. V.

TITLE: A cytological analysis of the causes of resistance to
                  in plants

PERIODICAL: Radiobiologiya, v. 1, no. 4, 1961, 611-618

TEXT: In previous works by S. A. Valeva (Ref. 1: Biofizika, 5, 244,
1960) and by V. V. Khvostova and L. V. Nevzgodina (Ref. 2: Tsitologiya,
1, 403, 1959) it was found that the greater sensitivity of the bud to
radiation was caused by the fact that more chromosome reconstructions
occur in their cells which leads to death of some of the cells and to
inhibition of growth. The authors set out in the present work to clarify
which of the processes of chromosome reconstruction formation proceeds
differently in the cells of plants resistant to radiation and plants
sensitive to radiation. For a comparative study, the air-dried seeds
(about 8% moisture content) of fodder peas and Kapital variety table pea

Card 1/4   ✓

A cytological analysis...

S/205/61/001/004/027/032
D298/D303

were irradiated with gamma-radiation from a Co^{60} source at an intensity
of 450 r/min. and with fast neutrons. In the latter case the pea seeds
were irradiated in the horizontal channel of an APT (IRT) reactor in a
mixed stream of fast neutrons and gamma-rays at a distance of 240 cm
from the active zone. The total dose received by the seeds in 5 hours
of irradiation in the channel was 500 r from fast neutrons and 270 r
from the gamma-rays. It was found that the seeds of the fodder pea were
more resistant to gamma-radiation than were the Kapital pea seeds,
judged on the criterion of "damageability"—the percentage of anaphases
with chromosome reconstructions in the first mitoses of the radicles and
the mean number of reconstructions per anaphase. No difference in the
sensitivity to fast neutron activity was noted. Storage of the fodder
pea, irradiated with gamma-radiation for 1 and 6 months and also with
fractional irradiation at intervals of 1 month, showed no increase in
the number of chromosome reconstructions. Furthermore, no change in the
number of chromosome reconstructions was noted in seeds irradiated with
neutrons. Storage of the Kapital pea seeds, irradiated with gamma-

Card 2/4

A cytological analysis...

S/205/61/001/004/027/032
D298/D303

radiation for 1 and 6 months and also with fractional irradiation, showed
that the number of chromosome reconstructions increased markedly. Storage
of seeds irradiated with neutrons gave a much lower rise in the number
of chromosome reconstructions. The OBE of neutrons compared with gamma-
radiation was 40 times more with the fodder pea and 10 - 15 times greater
with the Kapital variety, judging from the percentage of anaphases with
chromosome reconstructions. $/$ Abstracter's note: OBE not defined. Per-
haps "obshchaya biologicheskaya effektivnost' (general biological effec-
tiveness)"$/$. A study of the types of reconstructions showed that,
after neutron irradiation of the seeds, chromatide bridges comprised
about 10% of all the bridges, whereas after gamma-irradiation they com-
prised about 30%. Storage of the seeds irradiated with neutrons gave
no change in the number of reconstructions, but the percentage of chro-
matide bridges increased. With storage of the Kapital seeds irradiated
with gamma-radiation, the percentage of chromatide bridges almost.
doubled. U. N. Bregadze helped with irradiation of the seeds in the
reactor and in calculating the doses of fast neutrons. There are 3
tables and 13 references: 6 Soviet-bloc and 7 non-Soviet-bloc. The 4

Card 3/4

A cytological analysis...

S/205/61/001/004/027/032
D298/D303

most recent references to the English-language publications read as follows: O. Gelin, L. Ehrenberg, S. Blixt, Agric. hort. genet., 16, 1/2, 78, 1958; A. V. Beatty, J. W. Beatty, Genetics, 45, 3, 331, 1960; J. D. Adams, R. A. Nylan, Rad. Res., 8, 2, 111, 1958; G. J. Neary, S. M. Tonkinson, F. S. Williamson, Int. J. Rad. Biol., 1, 3, 201, 1959.

ASSOCIATION: Institut biologicheskoy fiziki AN SSSR (Institute of
               Biophysics, AS USSR), Moscow

SUBMITTED: March 20, 1961

Card 4/4

S/747/62/000/000/025/025
D243/D308

AUTHORS: Khvostova, V. V. and Nevzgodina, L. V.

TITLE: The causes of the radiostability in plants

SOURCE: Radiatsionnaya genetika; sbornik rabot. Otd. biol. nauk
             AN SSSR. Moscow, Izd-vo AN SSSR, 1962, 358-366

TEXT: The present work was aimed at determining at which stage the
formation of chromosome reorganization proceeds differently in ra-
diosensitive and radioinsensitive plant cells. Air-dried seeds of
maple and Capital peas were irradiated with total doses, over 5
hours, of 270 r of Co^{60} γ rays at 450 r/min, and 500 r of fast neu-
trons. Maple pea seeds were found to be more resistant to γ rays,
while both types were equally susceptible to fast neutrons. The seed   √
reaction, as measured by the percent of anaphase cells with chromo-
somal reorganization, was more uniform after neutron than after γ
radiation, especially in Capital peas. Two series of experiments,
with 7500 r and 5000 r of γ radiation respectively, were then car-
ried out to study the effect of chromosome reorganization, in γ-

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The causes of ...   S/747/62/000/000/025/025
                                               D243/D308

sensitive and insensitive peas, of storing irradiated seeds and of
irradiation at monthly intervals. In the sensitive Capital strain
the percentage of cells showing chromosomal reorganization rose
steadily during storage and when they were irradiated at monthly
intervals. This did not occur in maple pea cells. It is suggested
that in ɣ-sensitive peas certain biochemical characteristics of the
cellular medium are responsible for more frequently converting po-
tential chromosome damage into actual breaks. A high RNA content
in maple pea cells and its delayed decline after irradiation may
slow down these conversions or cause the fragments formed to re-
combine. There is 1 figure and 2 tables.

ASSOCIATION: Institut biologicheskoy fiziki AN SSSR, Moskva (In-
               stitute of Biological Physics, AS USSR, Moscow)

Card 2/2

NEVZGODINA, L.V.

GLEMBOTSKIY, Ya.L.; PROKOF'YEVA-BEL'GOVSKAYA, A.A.; SHAMINA, Z.B.;
KHVOSTOVA, V.V.; VALEVA, S.A.; EYGES, N.S.; NEVZDOGINA, L.V.

Effect of space flight factors on the heredity and development in actinomycetes and higher plants. Probl.kosm.biol.
1:236-247 '62.   (MIRA 15:12)
                    (SPACE FLIGHT—PHYSIOLOGICAL EFFECT)

KHVOSTOVA, V.V.; GOSTIMSKIY, S.A.; MOZHAYEVA, V.S.; NEVZGODINA, L.V.

Further study of the effect of space flight conditions on the
chromosomes of rudimentary rootlets of germs in pea and wheat
seeds. Kosm. issl. 1 no.1:186-191 Jl-Ag '63.   (MIRA 17:4)

Khvostova, V.V.; NEVGODINA, ... ; ... KIN, N...

Analysis of the aftereffects of gamma rays and fast neutrons on
protons in chromosomes. Dokl. AN SSSR 161 no.4:919-921 Ap
'65.

MIRA ...

1. Institut tsitologii i genetiki AN SSSR ... Predstavleno
AN SSSR (for ...).

L 08270-67   EWT(1)   SCTB   DD/GD

ACC NR: AT6036465   SOURCE CODE: UR/0000/66/000/000/0009/0010

AUTHOR: Abramova, V. M.; Gertsuskiy, D. F.; Alekseyenko, L. V.; Nevzgodina, L. V.; Topkova, S. A.

ORG: none

TITLE: Sensitivity of potato seeds to proton and gamma radiation. [Paper presented at conference on problems of space medicine held in Moscow from 24-27 May 1966]

SOURCE CODE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 9-10

TOPIC TAGS: ionizing radiation biologic effect, relative biologic efficiency, cosmic radiation biologic effect, radiation genetic effect, plant genetics

ABSTRACT:

Proton irradiation is the greatest spaceflight hazard to the plant link in a closed ecological system. Unfortunately, little is yet known about the RBE of protons as compared with x-rays or gamma rays. Experiments were conducted to study the RBE of protons and gamma rays for higher plants. Potato seeds were irradiated with 660-Mev protons (dose power 84 rad/sec) from and OIYAI synchrocyclotron or with gamma rays from an EGO-4 apparatus in a dose range from 500—50,000 rad (dose power

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L 08270-67

ACC NR: AT6036465 O

182 rad/min). Experimental results showed that potato seeds are twice
as resistant to radiation as potato tubers. In addition, it was found that
proton irradiation caused more significant changes in the growth and de-
velopment of potato seedlings than gamma irradiation. The LD_{100} for
proton-irradiated seeds is about 30,000 rad: for gamma-irradiated seeds
the LD_{100} is more than 50,000 rad. These results agree with literature
data. Doses from 500 to 10,000 rad were found to stimulate tuber formation,
while doses above 10,000 rad depressed this process. From these data it
was determined that the RBE of 660-Mev protons varies from 0.5 to 2.3.
Study of the effect of radiation on the chromosome structure of the cell
showed that for protons the coefficients of RGE (Relative Genetic Effective-
ness—defined as the percentage of cells with chromosome aberrations) in
the dose range 500—50,000 rad vary from 0.7—2.6. A close correspondence
between extremal values of RBE and RGE of 660-Mev protons for potato
seeds was observed. Literature data and results of these experiments show
that a year is sufficient to produce a potato crop from seeds. It was con-
cluded that cultivation of potatoes from seeds can be of great practical value on
long spaceflights, especially during radiation emergencies.
/W.A. No. 22; ATD Report 66-116/
SUB CODE: 06 / SUBM DATE: 00May66

Card 2/2

ACC NR: AT6036657   SOURCE CODE: UR/0000/66/000/000/0286/0286

AUTHOR: Nevzgodina, L. V.; Grigor'yan, N. M.

ORG: none

TITLE: Effect of ionizing radiation on the chromosome apparatus of higher plants
[Paper presented at the Conference on Problems of Space Medicine held in Moscow
from 24-27 May 1966]
SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy
kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii,
Moscow, 1966, 286

TOPIC TAGS: cosmic radiation biologic effect, proton radiation biologic effect,
radiation genetic effect, plant genetics

ABSTRACT:
The effect of proton irradiation on higher plants was studied, and the
RGE (Relative Genetic Effectiveness) of protons and gamma rays was de-
termined. This information is essential for calculating shielding thicknesses,
which are based on equivalent doses in rem. Cabbage, potato, and carrot
seeds were used because these plants may be included in a space greenhouse,
and because they have different natural radiosensitivities. Seeds were irrad-
iated with 660-Mev protons from an OIYAI synchrocyclotron or with gamma

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ACC NR: AT6036657

rays from an EGO-4 apparatus (dose range 0.5—250 krad).

Experimental results showed no difference in the effect of proton and gamma irradiation in small doses, i. e. 0.5 to 5 krad for potato, 0.5 to 25 krad for cabbage, and 0.5 to 1 krad for carrots. However, with high doses (potato—10—50 krad, cabbage—50—250 krad, and carrot—5—100 krad) protons have a greater effect than gamma rays. Within the dosage limits used, the RGE of protons increases with increasing dose; for potato from 0.7 to 2.6, for cabbage from 1 to 3.6, and for carrots from 1 to 11.

[W. A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 2/2

ACC NR: AT6036528   SOURCE CODE: UR/0000/66/000/000/0117/0118

AUTHOR: Gortsuskiy, D. F.; Nevzgodina, L. V.; Alekseyenko, L. V.; Abramova, V. M.;
Smirennyy, L. N.

ORG: none

TITLE: Evaluation of radiation hazard for plants in space greenhouses /Paper
presented at the Conference on Problems of space medicine held in Moscow from
24 to 27 May 1966./

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmiches-
koy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966,
117-118

TOPIC TAGS: cosmic radiation biologic effect, life support system, radiation
genetic effect, plant genetics, space food, ionizing radiation biologic effect,
proton radiation biologic effect, relative biologic efficiency

ABSTRACT: Plants in a space greenhouse must be both highly productive and suf-
ficiently radioresistant. In this work the effect of proton and gamma ir-
radiation on some higher plants was studied, and the RBE of 660-Mev
protons was determined. Potato tubers, beans, beets, and lettuce are
usually classified among radiosensitive plants. Experiments showed
that with a 4000-rad dose of gamma rays only a few potato tubers sprouted.

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ACC NR: AT6036528

It was found that doses of gamma rays from 1000—5000 rad and a proton dose of 250 rad (not higher) had a stimulating effect on potato growth. However, when potato seeds (which are much more radioresistant than tubers) were irradiated, a proton dose of approximately 40,000 rad was required to kill the plants, or a dose of gamma rays in excess of 50,000 rad. Of this group, beets, beans, and lettuce are slightly more radioresistant than potato tubers. Radioresistant plants include cabbage, carrots, radishes, and tomatoes. Doses of more than 200,000 rad were required to kill cabbage, radish, and carrot plants, and the range of stimulating doses was correspondingly higher.

The experiments described in this article were conducted to determine the RBE and RGE (Relative Genetic Effectiveness—the percentage of cells with chromosome rearrangements) of 660-Mev protons as compared with Co^{60} gamma rays during irradiation of seeds of the following plants in the dose range indicated: potato—0.5—50, cabbage—0.5—250, and carrot—0.5—100 rad. The RBE of portons increased with increased dosage from 0.7 to 2.6, 1 to 3.6, and 1 to 11, respectively. These experimental data suggest that a relationship exists between the RGE value and the general radioresistance of the plants. It was observed that limits of change in RBE coefficients (the criterion is the potato yeild) and RGE values of 660-Mev

Card 2/3

ACC NR: AT6036528

protons for potatoes in the dose range 500-50,000 rad, coincide. This
is interesting in view of a possible correlation between the observed genetic
effects and subsequent changes in plant development. / [W. A. No. 22; ATD Report
66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 3/3

NEVZGODINA, M.N.

New developments in socialist competition in the leather and
footwear enterprises of the Leningrad Economic Council. Kozh.
obuv.prom. 4 no.1:6-9 Ja '62.   (MIRA 15:3)
    (Leningrad Economic Region—Socialist competition)

POLIKARPCVA, Ye.F.; NEVZGODINA, M.V.

Breed-related characteristics of the development of ovaries
in newborn lambs. Trudy Inst. morf. zhiv. no.35:186-207
'61.   (MIRA 14:6)

(Lambs) (Ovaries)

DMITROVSKIY, A.A.; ZAYTSEVA, N.I.; BALAKAYEV, B.B.; YEROFEYEVA, N.N.;
        NEVZGODINA, M.V.; BURLAKOV, A.F.

        Stimulating effect of vitamin A on the function of the
        sexual glands in Karakul herd rams. Vit. res. i ikh isp.
        no.6:178-184 '63.   (MIRA 17:1)

        1. Institut biokhimii imeni A.N. Bakha AN SSSR i Turkmenskiy
        sel'skokhozyaystvennyy institut imeni M.I. Kalinina.

POLIKARPOVA, Ye.F.; NEVZGODINA, M.V.

Specific features of the development of ovaries in newborn Romanov ewe lambs. Dokl.AN SSSR 136 no.5:1252-1255 F '61. (MIRA 14:5)

1. Institut morfologii zhivc.nykh im. A.N.Severtsova AN SSSR. Predstavleno akad. K.I.Skryabinym.
              (Lambs)   (Ovaries)

POLIKARPOVA, Ye.F.; NEVZGODINA, M.V.

Degree of the development of thyroid glands in newborn Romanov
ewe lambs. Dokl. AN SSSR 141 no.3:758-761 N '61.   (MIRA 14:11)

1. Institut morfologii zhivotnykh im. A.V. Severtsova AN SSSR.
Predstavleno akademikom Yu.A. Orlovym.
            (Lambs)   (Thyroid gland)

NEVZOROV, A.

Seeding and planting exhibits at the All-Union Agricultural Exhibition.
Zemledelie 4 no.7:7-13   Jl '56.   (MIRA 9:9)

1.Glavnyy agronom upravleniya rasteniyevodstva Vsesoyuznoy sel'skokho-
zyaystvennoy vystavki.
                (Moscow--Agricultural exhibitions)

NEVZOROV, A. I.

"Investigation of the Machinability of Steel at High Cutting Speed." Sub 21 May 51, Moscow Order of the Lenin Aviation Inst imeni Sergo Ordzhonikidze

Dissertations presented for science and engineering degrees in Moscow during 1951.

SC: Sum. No. 480, 9 May 55

25(1)   PHASE I BOOK EXPLOITATION   SOV/1135

Khrichenko, Yevgeniy Prokof'yevich and Nevzorov, Aleksandr Ivanovich,
    Candidates of Technical Sciences

Povysheniye tochnosti obrabotki kopirovaniyem pera lopasti vozdushnogo
    vinta (The Use of Copying Techniques for Increasing the Accuracy
    With Which the Aerodynamic Profiles of Aircraft Propeller Blades
    Can Be Machined) Moscow, Oborongiz, 1957. 4 p. (Series: Moscow.
    Aviatsionnyy institut im. Sergo Ordzhonikidze, Trudy, vyp. 96)
    2,140 copies printed.

Ed.: Zdanyukevich, A.K.; Ed. of Publishing House: Loseva, G.F.;
    Tech. Ed.: Pukhlikova, N.A.; Managing Ed.: Zaymovskaya, A.S.,
    Engineer.

PURPOSE: This book may be useful to engineers, technicians, scienti-
    fic personnel, and students interested in the manufacture of air-
    craft-propeller blades.

COVERAGE: The book considers the construction of duralumin aircraft-
    propeller blades and technological methods used in the fabrication
    of such blades. The authors discuss the kinematic configuration
Card 1/3

The Use of Copying Techniques (Cont.)   SOV/1135

and the principles of operation of milling machines for duplica-
ting propeller-blade profiles and consider a number of problems in-
volved in setting up and adjusting such machines. A detailed dis-
cussion is given of the origin of various types of machining errors
and suggestions are made for minimizing them. There are 22 figures
and 6 Soviet references.

TABLE OF CONTENTS:

Card 2/3

SOLOV'YEV, V.; NEVZOROV, A.

Improving the "Volga" automobile. Avt. transp. 36 no.9:30-31 S '58.

(MIRA 11:10)

1.Gor'kovskiy avtomobil'nyy zavod.

(Automobiles--Design and construction)

NEVZOROV, A.

Installing overhead-valve engines instead of bottom-valve engines
on "Volga" automobiles. Avt. transp. 36 no.10:31-32 O '58.

(MIRA 13:1)

(Automobiles--Engines)

NEVZOROV, Aleksandr Mikhaylovich; SOLOV'YEV, Vladimir Sergeyevich;
BORISOV, N.I., glavnyy inzhener, otv.red.; KNYAZEV, V.V.,
red.; BRULIKOVSKAYA, R.G., tekhn.red.

["Volga" automobile; construction and operation] Avtomobil'
"Volga"; ustroistvo i ekspluatatsiia. Gor'kii, Gor'kovskoe
knizhnoe izd-vo, 1959. 165 p.   (MIRA 12:9)

1. Gor'kovskiy avtozavod (for Borisov).
                (Automobiles)

NEVZOROV, A. K.

The "Volga-1959" automobile. Avt.prom. no.1:36 Ja '59.
                                                (MIRA 12:1)
1. Gor'kovskiy avtozavod.
            (Automobiles)

NEVZOROV, Aleksandr Mikhaylovich; SOLOV'YEV, Vladimir Sergeyevich;
KNYAZEV, V.V., red.; YUNISOVA, M.I., tekhn. red.

[The "Volga" automobile]Avtomobil' "Volga." 2., perer. i dop.
izd. Gor'kii, Gor'kovskoe knizhnoe izd-vo, 1962.   326 p.
                                                  (MIRA 15:8)
                (Automobiles)

BORISOV, V.I.; GOR, A.I.; NEVZOROV, A.M.; RYBINSKIY, D.A.; SOLOV'YEV,
V.S.; EVART, G.V.; PROSVIRNIN, A.D., red.; VASIL'YEVA, I.A.,
red.; UVAROVA, A.F., tekhn. red.

[The M-21 "Volga" automobile; construction and maintenance]
Avtomobil' M-21 "Volga"; konstruktsiia i tekhnicheskoe ob-
sluzhivanie. [By] V.I.Borisov i dr. Pod red. A.D.Prosvirni-
na. Moskva, Mashgiz, 1962. 447 p.   (MIRA 15:3)

1. Glavnyy konstruktor Gor'kovskogo avtomobil'nogo zavoda (for
Prosvirnin).

(Automobiles)

L 27641-66   EWT(l)   IJP(c)

ACC NR: AP6015756   (A, N)   UR/0048/66/030/005/0749/0753

AUTHOR: Spivak, G.V.; Dyukov, V.G.; Sedov, N.N.; Nevzorov, A.N.

ORG: Physics Department, Moscow State University im. M.V.Lomonosov (Fizicheskiy fakul-tet Moskovskogo gosudarstvennogo universiteta)

TITLE: Observation of transient processes in silicon diodes by means of a stroboscopic emission microscope /Report, Fifth All-Union Conference on Electron Microscopy held in Sumy 6-8 July 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 5, 1966, 749-753

TOPIC TAGS: electron microscopy, silicon diode, pn junction

ABSTRACT: In the introductory paragraphs note is made of the advantages of employing a stroboscopic or gating electron microscope for studying transient processes in semi-conductors and observing the dynamics of microfields. In the work described in the present paper the stroboscopic microscope diagramed in the preceding report by the authors (see Abstract AP6015755) was used to observe the individual phases of establish-ment of direct current flow in silicon diodes. It is pointed out that the time resolu-tion of the given electron microscope approaches the nanosecond range. A special simple resistance-capacitance circuit with a vacuum tube was employed to provide the

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ACC NR: AP6015756   /

requisite dc pulse repetition rate. Micrographs of the surface of a diffused silicon
diode, of a p-n junction in a mesa-diode under - 40 V bias and of a section of an
alloyed diode are reproduced in the text together with oscillograms of the dc pulse and
the transient process in the case of one experiment. The effects revealed by the micro-
graphs are discussed. Further experiments were concerned with investigating the in-
fluence of temperature on the structure of a p-n junction; the results are very briefly
described: heating to 260°C resulted in a 200 ohm reduction of the back resistance of
the diode. The authors are grateful to A.E. Yunovich for discussion of the results.
Orig. art. has: 5 figures.   [15]

SUB CODE: 09, 20/   SUBM DATE: none/   ORIG REF: 002/   OTH REF: 001/
ATD PRESS: 5/0/   f.

Card 2/2   CE

L 11958-63   EWP(q)/EWI(m)/BDS—AFFTC/ASD/ESD-3—RM/JD
ACCESSION NR: AP3000479   S/0153/63/006/001/0163/0164   6 D

                                                                            59

AUTHOR: Nevzorov, A. N.; Songina, O. A.

TITLE: Oxalate complex compounds of niobium and tantalum

SOURCE: Izv. VUZ: Khimiya i khim. tekhnologiya, v. 6, no. 1, 1963, 163-164

TOPIC TAGS: niobium oxalate complexes, tantalum oxalate complexes, K sub 3, NbO trioxalate, 2H sub 2 O, K sub 5, Nb oxalate sub 5

ABSTRACT: The authors investigate the composition, properties, and formation condi-
tions different from those in previous studies for complex oxalate compounds of
niobium and tantalum. The preparation method finally selected for the niobium oxa-
late complexes was as follows: dried niobium hydroxide was dissolved in hot concen-
trated oxalic acid solution. The solution was then neutralized with KOH to a pH of
3 to 3.5, during which time excess oxalate separated out as potassium bioxalate.
The filtrate was evaporated to a niobium concentration of 100 to 120 gm/l and
cooled to room temperature, whereupon a crystalline precipitate was obtained.
Analysis of the mother liquor and of the precipitate showed a ratio of Nb to oxa-
late ion of 1:3. The precipitate composition corresponds to the formula K sub 3
/NbO trioxalate/. 2H sub 2 O. It loses one molecule of water at 100C, the other

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ACCESSION NR: AP3000479

at 140C, and decomposes at 220C with evolution of carbon dioxide. The solubility of the salt at 25C is 160 gm/1 and at 100C - 1000 gm/1. Dissolving the precipitate in water increases the pH to 3.5 - 4.0 as a result of slight hydrolysis of the oxalate complex. By varying the pH it was determined that the potassium oxalic niobate was stable in the region of pH - 2.5 to 4.5 and crystalized out of any such solution by evaporation. The authors were unable to prepare a previously described K sub 5 complex /Nb oxalate sub 5/. A tantalum oxalate complex obtained by a similar process had a molecular ratio Ta: oxalate:K of 1:1:1. This compound is thought to correspond to either KTa(OH) sub 4 oxalate or KTaO sub 2 oxalate. It hydrolyses in water, but readily dissolves in a solution of pH less than 3. Orig. art. has: 1 table.

ASSOCIATION: Kafedra khimii redkikh elementov, Kazakhskiy gosudarstvennyy universitet im. S. M. Kirova (Department of Rare Element Chemistry, Kazakh State University)

SUBMITTED: 31Jan62   DATE ACQD: 21Jun63   ENCL: 00

SUB CODE: CH   NO REF SOV: 002   OTHER: 003

Card 2/2

L 20357-65
ACCESSION NR: AP4049097

colloid particles; this increased the accuracy of the curves without interfering with the re-
action. The hydrogen peroxide apparently entered into the composition of ternary com-
plexes of hydrogen-organic acid-metal. Since a number of other elements, capable of
forming compounds of an anionic type with these organic acids, were also extracted to-
gether with the 2 metals, EDTA was introduced into the aqueous phase; it prevented the
entrance of many impurities, such as iron and titanium, into the organic layer. Titanium
will form solid complexes with EDTA only in the presence of H_2O_2. At pH 3-4 EDTA was
found to bind most impurities while niobium and tantalum in tartaric acid solution could be
extracted almost quantitatively by trioctylamine.

Card 2/2

ACCESSION NR: AT4033569   S/2922/63/009/000/0261/0268

AUTHOR: Nevzorov, A. N.

TITLE: An aircraft instrument for measurement of the dimensions and concentrations of large particles in clouds and precipitation

SOURCE: Vsesoyuznoye nauchnoye meteorologicheskoye soveshchaniye. 1st, Leningrad, 1961. Pribory* i metody* nablyudeniy (Instruments and methods of observation); trudy* soveshchaniya, v. 9. Leningrad, Gidrometeoizdat, 1963, 261-268

TOPIC TAGS: meteorology, meteorological instrument, cloud, precipitation, cloud physics

ABSTRACT: The study of large particles in clouds (with a radius of 50 microns or more) from an aircraft and an investigation of drop-size distribution in a wide range of concentrations is important, but no instrument yet described in the literature is said to be adequate for this purpose. Work along this line was begun at the Tsentral'naya aerologicheskaya observatoriya (Central Aerological Observatory) in 1957 and completed in 1959. The principle of operation is measurement of the amplitude of electric pulses. Fig. 1 of the enclosure shows the optical system of

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ACCESSION NR: AT4033569

the instrument for formation of a light field of the necessary configuration by
means of two optical slits.   On the path of a light flux formed by an incandescent
lamp 1, situated in the focus of the lens 2, there is a screen containing a long
narrow slit 4.   The light beam emerging from the slit is not parallel.   A second
slit 5 of the same width and length as slit 4 is situated at some distance from it
and parallel to it. The lens 3 focuses the light passing through the slit 5 onto
the diaphragm 6 in front of the photomultiplier 7.   All the light rays simultane-
ously passing through slits 4 and 5 and incident on the photomultiplier are con-
centrated in the space between the slits in a volume bounded by two parallel planes
and form a light field 8 whose thickness is equal to the width of the slits.   In
this method the thickness of the light beam is of the order of the minimum dimensions
of the measured particles.   The system makes it possible to: ensure an adequate
sensitivity in the entire range of measured drop sizes, obtain a dependence of
pulse amplitude on particle size in this range which is close to linear, and de-
crease the volume of the light field to a size virtually excludes the probability
of simultaneous crossing of several particles of small size capable of causing

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ACCESSION NR: AT4033569

false pulses. The instrument consists of two principal parts: a sensor, in the
air current itself, and a recorder inside the aircraft cabin. The sensory compo-
nents are mounted in rubber shock absorbers in a special frame(see Fig. 2 of the
Enclosure). A block diagram of the instrument is included and its calibration is
described. Maximum random error in drop-size measurement is about ±30% for r = 75
microns and ±15% for r = 1,200 microns. Systematic errors are not greater than
±10%. Operation of the instrument aboard the aircraft is described; it operates
reliably in all forms of precipitation outside clouds, in crystalline clouds and
in warm clouds with a relatively low liquid water content. Use in supercooled
drop clouds is possible until the sensor becomes iced. Orig. art. has: 2 formulas,
5 figures and 1 table.

ASSOCIATION: Tsentral'naya aerologicheskaya observatoriya (Central Aerological
Observatory)

SUBMITTED: 00   DATE ACQ: 16Apr64   ENCL: 02

SUB CODE: ES, AC   NR REF SOV: 005   OTHER: 002

Card 3/5

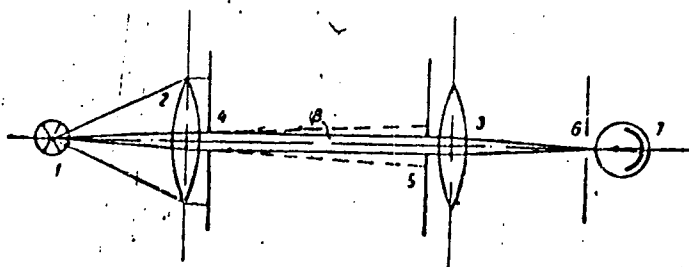ACCESSION NR: AT4033569   ENCLOSURE: 01

Figure 1. Optical system of the instrument

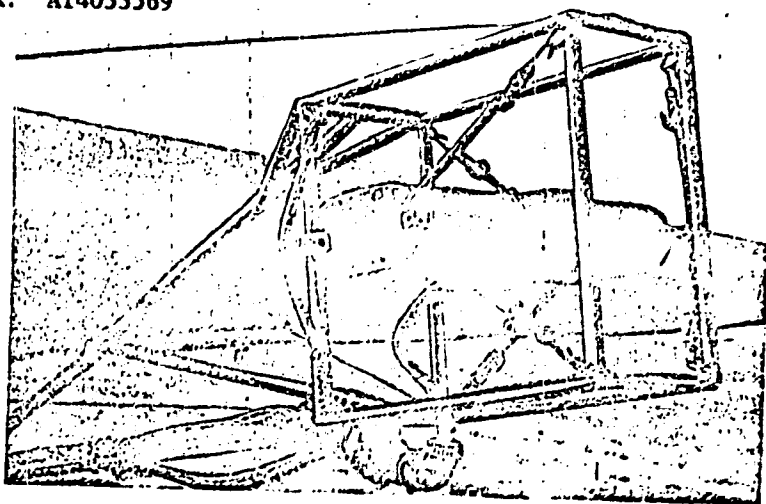Card 4/5

ACCESSION NR: AT4033569

ENCLOSURE: 02

Figure 2 Mounting for sensing unit

Card 5/5

AUTHOR: Nevzorov, A. N.

TITLE: Accuracy of large-particle measurements with an airborne instrument

SOURCE: Tsentral'naya aerologicheskaya observatoriya. Trudy, no. 57, 1964. Radio-loketsionnyye metody aerologichenkikh nablyudeniy (Radar methods of aerological observation), 55-56

TOPIC TAGS: aerology, cloud observation, cloud particle, airborne instrument, particle size measurement

ABSTRACT: During the past several years, the TsAO has performed cloud observations with an airborne instrument for the measurement of the dimensions and concentration of large particles in clouds, now patented by the author. This device is based on the conversion of light pulses to electrical pulses caused when particles pass through the plane of a beam of light, which are then used to register data. The present article describes various improvements in the original design and discusses various sources of error caused by calibration inaccuracies, light beam nonparallel-ism, particle transparency, light diffraction, light variations along the slit, and photomultiplier noise. Tests show that electrical calibration has several

L 54633-65
ACCESSION NR: AT5008981

advantages over standard particle calibration and leads to a simpler and more
accurate establishment of the amplitude analyzer thresholds. The systematic errors
of pulse amplitude calibration did not exceed 3-.4%, and the mean square random
error of particle radius measurements was 3% + 5 μ. Orig. art. has: 6 formulas,
5 figures, and 1 table.   [08]

ASSOCIATION: Tsentral'naya aerologicheskaya observatoriya (Central Aerological
Observatory)

SUBMITTED: 00   ENCL: 00   SUB CODE: ES

NO REF SOV: 006   OTHER: 000   ATD PRESS:3232

Card 2/2

L 48590-65   EWT(1)/FCC   GW

ACCESSION NR: AP5010226   UR/0362/65/001/003/0291/0301

AUTHORS: Borovikov, A. M.; Mazin, I. P.; Nevzorov, A. N.

TITLE: Some distributional patterns of large particles in clouds of various forms

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 1, no. 3, 1965, 291-301

TOPIC TAGS: cloud, rainfall, ice crystal / LI 2 airplane, IL 14 airplane

ABSTRACT: The authors have studied the size range and concentration of large particles in clouds of different types. The data were obtained from aerial flights of "flying laboratories" in LI-2 or IL-14 planes. The concentration and size distribution were measured by a device described by A. N. Nevzorov (Pribor dlya izmereniya razmerov i kontsentratsii krupnykh chastits v oblakakh i _____ s _____. Tr. Vsesoyuzn. nauchn. meteorol. soveshchaniya. 9.

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L 48590-65
ACCESSION NR: AP5010226

greater in altocumulus (101 μ) and altostratus (121 μ) clouds, and greatest in
nimbostratus clouds, in which some particles exceed 300 μ. The average size
for this type cloud is 245 μ, but some particles may be only 89 μ. This varia-
tion in size is due to the thickness of the zone of freezing temperatures within
the clouds. The thickness of stratocumulus clouds may be about the same as that
of altocumulus clouds, but the latter are colder. The authors found that par-
ticle distribution in ice-crystal clouds follows an exponential law, but in

L 27642-66   EWT(1)   IJP(c)

ACC NRAP6015755   (A, N)   SOURCE CODE: UR/0048/66/030/005/0742/0748

AUTHOR: Spivak, G.V.; Dyukov,V.G.; Sedov,N.N.: Nevzorov,A.N.

OBG: Physics Department, Moscow State University im. M.V.Lomonosov (Fizicheskiy
fakultet Moskovskogo gosudarstvennogo univesiteta)

TITLE: A stroboscopic secondary-emission electron microscope /Report, Fifth All-Union
Conference on Electron Microscopy held in Sumy 6-3 July 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 5, 1966, 742-748

TOPIC TAGS: electron microscope, electron microscopy, silicon diode

ABSTRACT: The purpose of a stroboscopic or gating electron microscope is to observe
the successive quasi-instantaneous stages of dynamic processes; if the frequency of
the investigated process is synchronized with the gating there will be obtained sta-
tionary images of the surface structure regardless of the frequency characteristics of
the screen. In the case of an emission system with a three-electrode objective a
stroboscopic regime can be realized in different ways: supply of the microscope with
high-voltage pulses, modulation of the potential on the focusing electrode, or deflec-
tion of the beam by means of appropriate deflecting plates. In the instrument employ-
ed in the present work pulse modulation was employed (V.G.Dukov, G.V.Spivak, N.N.Sedov,
and V.V.Evdokimov, Proc. III Europ. Reg. Conf. on Electron Microscopy, V.A., p. 283,
Prague, 1964). A block diagram of the microscope and associated electronic equipment

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L 27642-66
ACC NR: AP6015755
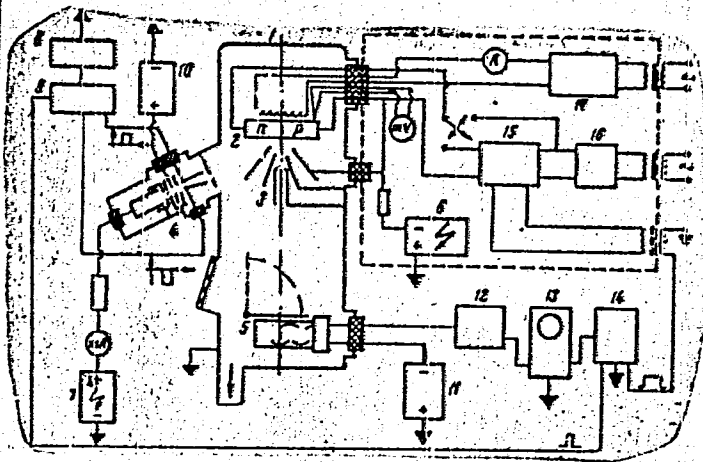
Block diagram of the stroboscopic secondary emission microscope with high time resolution: 1) microscope column, 2) specimen with thermocouple and heater, 3) optics of the apparatus, 4) pulsed ion gun, 5) screen and secondary-electron multiplier, 6) high-voltage rectifier (0 to 50 kV), 7) 5 kV rectifier for the ion source, 8) power supply for the pulse amplifier, 9) strobe pulse amplifier, 10) power supply for ion beam focusing, 11) 5 kV rectifier for the secondary-electron multiplier, 12) wide-band amplifier, 13) oscillograph, 14) generator of shifted pulses, 15) pulse shaping circuit, 16) rectifier supplying bias to the specimen and feeding the shaping circuit 15, 17) rectifier supplying the specimen heater. The section outlined by dashes operates at the high potential.

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ACC NR: AP6015755

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is shown in the figure. Some of the parameters of the equipment and particularly of the ion source used for inducing the secondary emission are described in the paper. The microscope was used for investigation of a number of transient processes on the surface of semiconductors, junctions, and the like. Static and stroboscopic micrographs of the surface of a diffused silicon diode are reproduced; in the stroboscopic regime there is revealed (as a dark band) the region of potential drop in the base of the diode. Orig. art. has: 6 figures.

[15]

SUB CODE: 09, 20/ SUBM DATE: none/ ORIG REF: 009/ OTH REF: 002/ ATD PRESS: 5001

Card 3/3