GROSSMAN, N.Ya.; KOVAL', V.A.; GUTMAN, L.M.; SEMENENKO, D.P.

Automatic lorry car in operation. Koks i khim. no.2 29-32 '63.
(MIRA 16:2)

1. Spetsial'noye konstruktorskoye byuro izmeritel'nykh mashin (for Grossman, Koval'). 2. Donetskiy koksokhimicheskiy zavod (for Gutman, Semenenko).
(Donetsk--Coke industry--Equipment and supplies)

GAYEVOY, T.V.; KUZIN, A.I.; ASNIS, A.Ye.; GUTMAN, L.M.

Welding up cracks in locomotive wheels by the electric slag method. Avtom. svar. 16 no.12:73-78 D '63.
(MIRA 17:1)

1. Poltavskiy parovozoremontnyy zavid (for Gayevoy, Kuzin).
2. Institut elektrosvarki imeni Patona AN UkrSSR (for Asnis, Gutman).

ASNIS, Arkadiy Yefimovich, doktor tekhn. nauk; GUTNIK, Liya Mironovna; SYTNIK, M.K., red.

[Reconditioning track links of crawler tractors] Vosstanovlenie zven'ev gusenichnykh mashin. Kiev, Naukova dumka, 1964. 65 p. (MIRA 18:1)

L 63462-65 EWT(1)/FCC GW

ACCESSION NR: AP5019149 UR/0362/65/001/007/0677/0687
551.553.12

AUTHOR: Konyakhina, A. A.; Shaposhnikova, M. I.; Gutman, L. N.

TITLE: Nonlinearity effects in the slope wind problem (numerical experiment)

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 1, no. 7, 1965, 677-687

TOPIC TAGS: slope wind mechanism, nonlinearity effect, slope wind calculation, slope wind

ABSTRACT: The paper investigates the role of nonlinear terms in the plane stationary slope wind problem on the basis of a numerical evaluation of the fundamental nonlinear system of equations. These equations are first transformed into a system of finite difference equations which are subsequently solved on an M-20 electronic computer by means of matrix and simple factorization coupled with the interaction approach. Flow patterns, characterizing various reliefs, are established on the basis of these calculations. Physical deductions concerning the role of nonlinear terms in slope wind mechanisms are also given. Orig. art. has: 30 formulas and 4 figures.

Card 1/2

L 63462-65

ACCESSION NR: AP5019149

ASSOCIATION: Vychislitel'nyy tsentr, Sibirskoye otdeleniye Akademii nauk SSSR (Computer Center, Siberian Section, Academy of Sciences SSSR)

SUBMITTED: 18Nov64 ENCL: 00 SUB CODE: ES

NO REF SOV: 008 OTHER: 001

Card 2/2

KONYAKHINA, A.A., SHAPOSHNIKOVA, M.I., GUTMAN, L.N.

Effect of nonlinearity in the slope wind problem (a numerical experiment). Izv. AN SSSR. Fiz. atm. i okean. 1 no.7:677-687 Jl '65. (MIRA 18:8)

1. Vychislitel'nyy tsentr Sibirskogo otdeleniya AN SSSR.

GUTMAN, I. N.; MONIN, A. S.

Monsoons

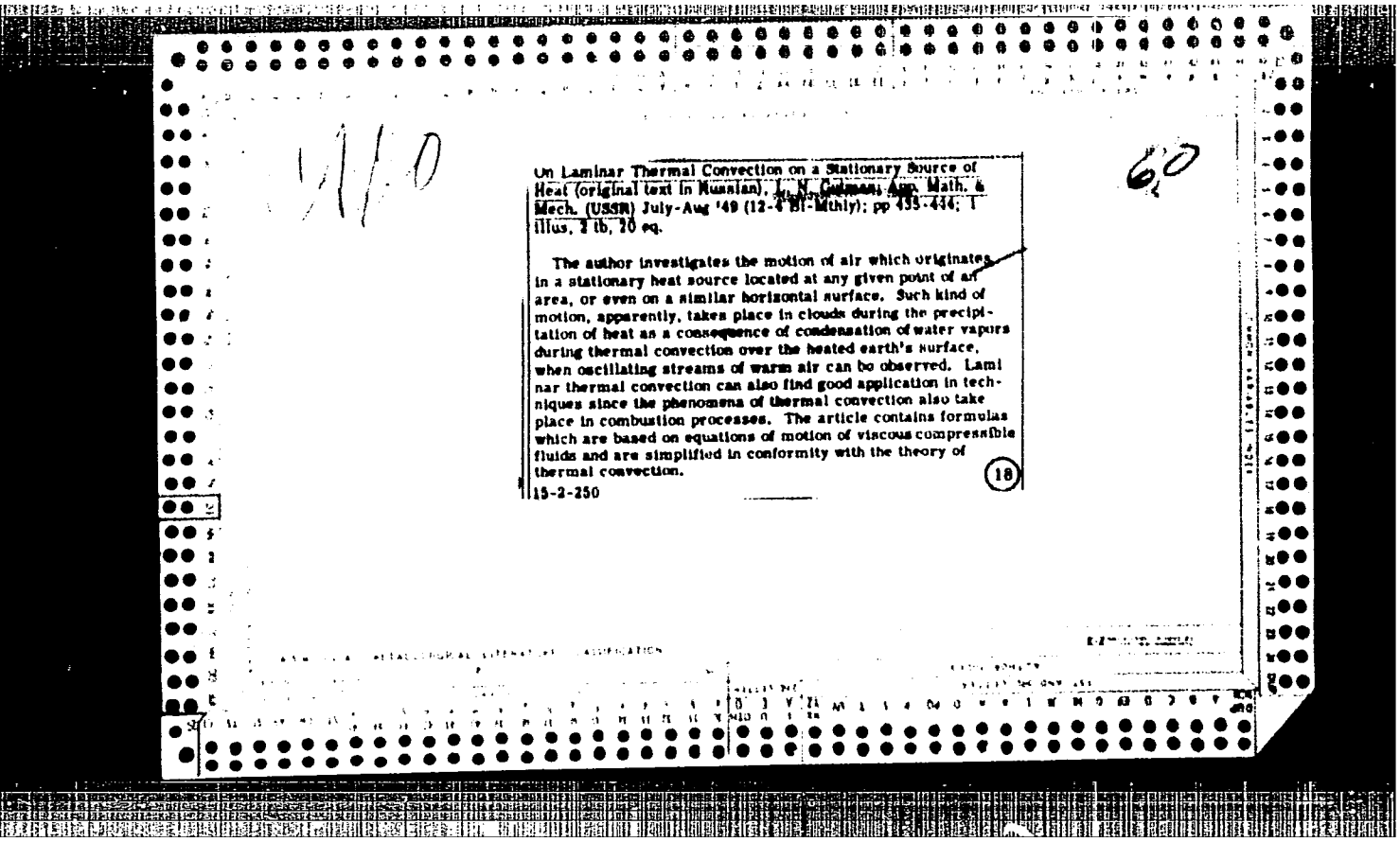
Vertical structure of monsoons. Met. i gidrol. no. 6, 1947.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

[redacted]

[redacted]," [redacted], [redacted]

Ltr: [redacted], 13 Mar 1953



On Laminar Thermal Convection on a Stationary Source of Heat (original text in Russian). L. N. Gutman. Appl. Math. & Mech. (USSR) July-Aug '49 (12-4 Bi-Mthly); pp 433-446; 1 illus, 2 tb, 20 eq.

The author investigates the motion of air which originates in a stationary heat source located at any given point of an area, or even on a similar horizontal surface. Such kind of motion, apparently, takes place in clouds during the precipitation of heat as a consequence of condensation of water vapors during thermal convection over the heated earth's surface, when oscillating streams of warm air can be observed. Laminar thermal convection can also find good application in techniques since the phenomena of thermal convection also take place in combustion processes. The article contains formulas which are based on equations of motion of viscous compressible fluids and are simplified in conformity with the theory of thermal convection.

(18)

15-2-250

Applied Mechanics Review

Geophysics, Meteorology, Oceanography

13

1968. L. N. Gutman. On the theory of mountain-valley winds (in Russian). Izvestiya Akad. Nauk SSSR 66, no. 2, 199-202 (May 1949).

Considering a special type of mountain in which the slope is constant along an arbitrary direction, the author uses a system of orthogonal curvilinear coordinates, where the x-axis is always directed along the slope. In such a system all elements then depend primarily upon the x-coordinate. To eliminate the effect of thermal turbulence, he assumes further that the temperature on the surface of the mountain is everywhere the same, and that the slope is sufficient for applying the theory of boundary layer. Under these assumptions the author obtains for the components of velocity and the deviation of the potential temperature from its undisturbed value (without any motion) a system of equations, derived from the equation for a compressible viscous fluid, applying the theory of boundary layer and the theory of convection, following the method of A. Landau and E. Lifshitz (*Mekhanika sploshnykh sred*, 1944). This system is then simplified by omitting small terms and introducing other restrictive assumptions (coefficient of viscosity and thermal conductivity constant, quasi-stationary motion, etc.). By means of some characteristic quantities the system is transformed to a nondimensional form with only numerical coefficients, which the author tries to solve by the method of separation of variables, expanding the solution in series in x, the coefficients in which are then given by a system of nonlinear ordinary differential equations. These equations can be solved successively and the author gives the solution for the first coefficients, representing the first approximation for the vertical velocity and the deviation of potential temperature. The vertical distribution of these quantities is plotted. No other conclusions about the characteristics of mountain-valley winds is given.

Z. Sekera, USA

Dynamic Meteorology

1950

GUTMAN, L. N.

Gutman, L. N. On thermal disturbances in horizontal air flow. Akad. Nauk SSSR. Prikl. Mat. Meh. 14, 277-286 (1950). (Russian)

A line source of heat located in a horizontal air flow gives rise to a pattern of vertical free convection superimposed on the forced convective wake from the heat source. This pattern is investigated first for laminar flow with the free convective distortion entering as a convection. The velocity and temperature distribution is obtained as a power series in a parameter proportional to the thermal expansion coefficient of the gas. Several terms in this series are obtained explicitly. The same problem is considered for turbulent flow assuming a Prandtl-Taylor mixing length proportional to the horizontal component of distance from the heat source. *N. A. Hall* (Minneapolis, Minn.).

Source: Mathematical Reviews, Vol 12 No. 4

M. M. I. M.

USSR/Geophysics -Sloping Surface

"'Slope Winds' Above an Underlying Surface of Slight Incline," L. N. Gutman

In Ak Nauk SSSR, Ser Geofiz, No 4, pp 370-377

Shows that, above slightly inclined thermal homogeneous underlying surface, a nonstationary slope wind can arise which is commensurable in force with other wind types. Studies the characteristics for establishing such winds.

GUTMAN, I. N. ep/Oct 53

USSR/Geophysics - Microclimate

"Calculating the Temperature of the Air Layer Near the Ground," L. N. Gutman

Iz Ak Nauk SSSR, Ser Geofiz, No 5, pp 451-459

Approx solves the problem of the temp variation in soil air layer near the ground under the influence of solar radiation. Presents an example of concrete calcns of the behavior of air temp according to data of actinometric observations.

267T78

GUTMAN, L. N.

I - F/E

Gutman, L. N. On the computation of the heat regime of rigid bodies. Inžen. Sb. 15, 99–136 (1953). (Russian)

The purpose of this paper is to put the solution of the one-dimensional Fourier heat equation into a form suitable for industrial applications such as metallurgy, production of ceramics, etc. The author considers a number of practical situations, among them: 1) the case when surface temperature is observed at certain equally spaced time intervals; 2) the case where surface temperature satisfies $-\lambda\partial\theta/\partial t=\alpha[T(t)-\theta]$; 3) the case where the body has an outside cover with a different heat constant; 4) the case where the surface temperature is to be determined to produce a desired internal state of temperature.

For most of these problems the classical solution in exponential and trigonometric functions is unsuitable. The author uses the solution

$$\theta=\sum_{n=0}^{m} f_n t^{n/2} L_n\left(\frac{3}{2\sqrt{(kt)}}\right)$$

in which the f_n are constants and the functions $L_n(x)$ are solutions of

$$L_n''(x)+2xL_n'(x)-2nL_n(x)=0$$

which satisfy $L_n(0)=1$, $L_n(\infty)=0$. Four-place tables of these functions are supplied for $n=0, 1, \cdots, 6$, at intervals of 0.01 in the argument x.

W. E. Milne.

FD 346

USSR/Geophysics - Soil temperature

Card 1/1

Author : Gutman, L. N.

Title : A contribution to the problem on the calculation of the temperature of the soil

Periodical : Izv. AN SSSR, Ser. geofiz. 2, 114-122, Mar/Apr 1954

Abstract : Considers the problem concerning the thermal interaction between the air and soil not covered by anything. Obtains formulas for the calculation mean-daily temperature of the soil according to data on the temperature of the air at the level of a meteorological stall. Presents an example of a concrete calculation. Eighteen references, all Soviet.

Institution : -

Submitted : May 8, 1953

USSR/Electronics - Condensers FD-533

Card 1/1 : Pub. 90-9/18

Author : Semenov, N. A., and Gutman, L. N., Active Members, VNORiE

Title : Calculating the plate shape for a continuously rotating condenser

Periodical : Radiotekhnika 9, 72-73, May/Jun 1954

Abstract : Gives formula for determining plate shape (based on number of condenser plates, space between plates, and internal radius of the stator plates) of a continuously rotating condenser for use in application such as sweep circuits.

Institution : All-Union Scientific and Technical Society of Radio Engineering and Electric Communications imeni A. S. Popov (VNORiE)

Submitted : November 27, 1953

Author : Leytes, R. D., and Gutman, L. N., Active Members, VNORiE

Title : A method of investigation of transient processes in linear systems

Periodical : Radiotekhnika, 10, 36-51, Jun 55

Abstract : Approximation method of calculation of transient processes, based on application of the theory of finite differences to an integral equation (Duhamal's), is discussed in the article. The introduction of special coefficients permits the derivation of simple expression for the relationship between input and output voltages. This relationship helps to solve a number of problems related to transient processes in amplifier circuits. As an example, a stage with plate corrective compensation is investigated. Approximation methods for calculating transient characteristics directly from a differential equation are also examined. Report delivered to All-Union Session of VNORiE in May 1953. Graphs. Nine references: 7 USSR.

Institution : All-Union Scientific and Technical Society of Radio Engineering and Electric Communications imeni A. Popov VNORiE

Submitted : March 22, 1954

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000617710005-4"

GUTMAN, L. ; DOROSHANEVSKAYA, M.A.

Calculating the temperature of soil covered by snow. Izv.AN SSSR. Ser.geofiz. no.10:1188-1199 O '56. (MLRA 10:1)

1. Akademiya nauk SSSR Institut fiziki atmosfery.
(Soil temperature)

GUTMAN, L.N. (Moskva); MUCHNIKOV, V.M. (Moskva)

An equilibrium equation of elastic bodies taking after effect into consideration. Inzh.sbor. 24:165-173 '56. (MLRA 10:5)
(Elastic solids)

GUTMAN, L.N.

60-37 -1/7

AUTHOR: Gutman, L. N.

TITLE: A Theory of Computing the Temperature of Soil (K teorii rascheta temperatury pochvy)

PERIODICAL: Trudy Geofizicheskogo instituta Akademii nauk SSSR, 1956, Nr 37(164), pp. 1-49 (USSR)

ABSTRACT: The author offers a theory of computing the temperature of soil at various depths on the basis of measurements of the temperature of the air. Solution of a system of equations, based on the distribution of heat in the soil, in snow (when there is a snow covering), and in the near-surface layer of air, provides a basis for computation. The author takes into account changes which occur with the passage of time, in the depth of the snow, in the coefficients of heat and temperature conductivities of snow and soil, and in the turbulence of the near-surface layer of air. The solution of algebraic linear infinite systems with an upper triangular matrix and the solution of Volterra's integral equations with an infinite lower limit of the integral (using the method of finite differences) are stated in general terms in the

Card 1/2

GUTMAN, L. N.

Gutman, L. N. Theoretical model of a tornado. Izv. Akad. Nauk SSSR Ser Geofiz. 1957, 79-93 (Russian)

On the basis of a solution of non-linear equations of thermohydrodynamics of the atmosphere an idealized model of a tornado is constructed as of a process conditioned by the presence in the atmosphere of large rotational moments and also a sharply pronounced moisture [illegible]

Author's summary

Gutman L.N.

AUTHORS: Gutman, L. N. and Koronatova, T. D. 49-10-4/10

TITLE: On the theory of slope winds. (K teorii vetra sklonov).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1957, No.10, pp.1238-1248 (USSR)

ABSTRACT: The author defines as slope winds, winds in mountains which occur owing to thermal conditions above an inclined ground surface which is uniformly heated or cooled. The theoretical model of a steady state slope wind was first expounded by Prandtl (Ref.1) on the assumption that the mountain slope represents an infinite thermally uniform surface and that the coefficients of turbulent exchange are constant values. In earlier work one of the authors (Ref.4) generalised the problem to adapt it to a more real relief shape, considering the slope winds in a shallow valley or above a shallow mountain ridge; such a formulation leads to non-linear equations and a method was proposed to simplify these equations, indicating the possibility of finding an accurate solution for the case of a relief which is symmetrical relative to the centre of the bottom of the valley (or the top of the mountain ridge) without obtaining concrete results. In this paper the solution of this problem is expounded in greater detail,

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On the theory of slope winds. 49-10-4/10

disregarding the humidity field; certain physical conclusions are drawn from the results and concrete calculation examples are included, stating that the conclusions are in agreement with experimental data published by Vul'fson, N. I. (Ref.8).
There are 2 figures, 1 table and 8 references, 7 of which are Slavic.

SUBMITTED: February 27, 1957.

ASSOCIATION: Ac.Sc., U.S.S.R. Institute of Physics of the Atmosphere. (Akademiya Nauk SSSR Institut Fiziki Atmosfery).

AVAILABLE: Library of Congress

Card 2/2

PA - 2887

AUTHOR: GUTMAN, L.N.

TITLE: Theoretical Model of the Cumulus. (Teoreticheskaya model' kuchevogo oblaka, Russian)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 6, pp 1033-1036 (U.S.S.R.)

Received: 4 / 1957 Reviewed: 7 / 1957

ABSTRACT: In the coordinate system (x,z) (x - horizontal coordinate, z - vertical coordinate) the author investigates the plane steady problem of the ordered thermal convection which is due to the vertical instability of the atmosphere. Neglecting the total motion of the air the complete system of the equations of the thermodynamics of the atmosphere is simplified while taking account of the smallness of the disturbances $\vartheta(x,z)$ and $p(x,z)$ of temperature and pressure respectively compared to the assumed functions $\Theta(z)$ and $P(z)$ (which satisfy the static equation). The equation system obtained while neglecting the horizontal modification of the relative humidity, the turbulence, and the coriolis force is written down. The boundary conditions result from the symmetry of the motion and from the local character of the disturbances. The (nonlinear) system of equations just mentioned has a trivial solution in the case of homogeneous boundary conditions which apparently corresponds to the equilibrium of the atmosphere. It is then shown that, besides the trivial solution, also a definite non-trivial solution ought to

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Theoretical Model of the Cumulus. PA - 2887

exist, even if only in a very thin layer of the atmosphere. This non-trivial solution apparently corresponds to an expansion of instability and on certain conditions such a process may lead to the forming of a cumulus. These ideas are then carried out mathematically. By means of the solution obtained also $V(x,z)$, the forming velocity of the liquid phase, may be determined. Also for the water content an equation is given. The hydrodynamic image corresponding to the solution found here reminds strongly of a massive powerful cumulus. For the purpose of illustrating this conclusion a concrete example is computed. (2 Illustrations).

ASSOCIATION: Institute for Atmospheric Physics of the Academy of Science of the U.S.S.R.

PRESENTED BY: A.A.DORODNYTSYN, member of the Academy, on 5.10.1956

SUBMITTED: 4.10.1956

AVAILABLE: Library of Congress

Card 2/2

GUTMAN, L.N.

20-3-21/59

AUTHOR: Gutman, L.N.

TITLE: The Application of the Method of Long Waves to the Problem of the Flow Passing Around Mountains (Primeneniye metoda dlinnykh voln v zadache obtekaniya gor)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 3, pp. 497-500 (USSR)

ABSTRACT: In the system of the coordinates x, z (x - horizontal coordinate, z - vertical coordinate oriented upwards) the author here examines the plane, stationary, nonlinear problem of the air flow above a mountain. The horizontal dimensions of this mountain shall be so much greater than the vertical ones, that the problem can be solved by the method of the long waves. The velocity of the approaching flow may change linearly with the height. Starting from the general system of equations of the thermodynamics of the atmosphere, the author simplifies the theorems of the convection and neglects the turbulence and the Coriolis force. The thus found equation is explicitly written down. The mathematical solution of this problem is followed step by step. On the occasion of this solution three diffe-

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[redacted], Lev Mikolayevich (Inst of Atmospheric Physics, AS, USSR) awarded sci degree of Doc Physico-Math Sci for 24 May defense of dissertation: "Thermal convection, as conditioned by the vertical instability of the atmosphere" at the United Council of the Institutes of Geophysics, Atmospheric Physics, and Applied Geophysics, AS, USSR; Prot No 7, 29 Mar 58.

(BMVO, 8-58,22)

AUTHORS: Tsvang, L.R. and Gutman, L.N. SOV/49-58-7-7/16

TITLE: The Measurement of the Light Atmospheric Ion Spectrum (Izmereniye spektra legkikh atmosfernykh ionov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, pp 891 - 902 (USSR)

ABSTRACT: A new impulse method of measuring the spectrum of light ions in the atmosphere has been worked out at the Akademiya nauk SSSR Institut prikladnoy geofiziki (Institute of Applied Geophysics) (Refs 1, 2). A cylindrical ion chamber takes a sample of air and then has a constant intensity applied to an external electrode. This produces an ionic current which dies away with time as the ions reach the electrode. Measurements at different times give the ionic spectrum from the current. As is shown in Ref 2, the current flowing through the central electrode is given by Eqs.(1) and (2), where $I_+(t)$ and $I_-(t)$ are the currents at the central electrode for positive and negative intensities on the external cylinder; $n_+(\omega)$ and $n_-(\omega)$ are the density distributions of the positive and negative ions; A, B, a_1, a_2, b_1, b_2 are constants

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determining the parameters of the chamber and the potential on the external cylinder; t is the time, calculated from the moment that the field appears. a_1, a_2, b_1, b_2, B, ω and t are connected by the relations:

$$B = \frac{a_1 b_1 - a_2 b_2}{a_1 + a_2}, \quad \omega t = B .$$

Eqs.(1) and (2) are two interdependent integral equations and the authors now wish to go over to two independent, integral equations. Eqs.(1) and (2) are added and dimensionless variables (4) are substituted (5) . The resultant equation cannot be solved exactly but since $M(\eta)$ is a monotonic bounded function it can be represented approximately by the sum of two exponentials (7). $f(\tau)$ is then obtained explicitly (8) differentiated twice and combined to give finally $\phi(\tau)$ (10). With a chamber having internal and external electrodes of radii 2 cm and 10 cm and length 70 cm (Ref 2), Eq.(11) is obtained

The Measurement of the Light Atmospheric Ion Spectrum

($f''(\tau)$ is of much less significance in these equations than $f(\tau)$ of $f'(\tau)$). Eq.(12) gives the final equations in terms of $n(t)$ and Eqs.(14) and (15) in terms of $n_+(t)$ and $n_-(t)$. The factors I , I' and I" in these equations are obtained from the oscillograph traces. Owing to fluctuations, all three (and especially the latter two) may be inaccurate, so it is necessary to smooth out the curves. Figure 1 shows the original and the smoothed curves.

In order to simplify the calculations, (14) and (15) are replaced by (18) and (19), which divide the ionic current up into positive and negative parts. The current derivatives are obtained from Eqs.(20) and (21). On making the necessary substitutions, Eq.(26) is obtained for calculating the density distribution of the positive ions and (27) for the negative ions. The coefficients in (26) and (27) are tabulated and the calculations are made by a method indicated in Figure 2 - a paper strip has the value for the current I_k at a time t_k printed on it; this is placed over the table and the corresponding coefficients read off.

The major error in the results occurs in working out the oscillogram traces: the apparatus errors for N, $\bar{\omega}$ and σ^2 (ion concentration, average mobility, dispersion of spectrum) are about 2% and in the graphical solution about 7%, 2% and 5.5%, respectively. The impulse method is restricted to light ions as the current for heavier ions becomes too small to be measureable.

This apparatus was used in 1955 in an aeroplane (type IL-12). An indication of the layout is given in Figure 5. Great efforts were made to cut down the effects of vibration since this has considerable influence on the oscillograph traces. (The oscillograph chosen was of type POB-12.) Samples of air were taken in through the opening 4 and along the pipes to the chamber 1. The chamber took 1-2 secs to fill with air and a similar length of time was required for measurement of the ion current.

On the Elbruz expedition, measurements were made at the Terskol observatory and station (stations round Terskol which gather meteorological data are shown in Figure 6). The aim was to find the dependence of cloud development on the light ion spectrum. During 1952-53, 500 measurements

The Measurement of the Light Atmospheric Ion Spectrum

were made at Terskol observatory and 38 on Mount Terskol. The results of September 9, 1953 are particularly interesting. All the meteorological conditions (temperature, humidity, pressure, speed and direction of wind, precipitation) were approximately constant. Figures 7a and b show the variation with time of the ion spectrum - as clouds started to cover the mountain the concentration of positive and negative ions started to fall and continued to do so while the clouds thickened; the clouds then began to clear away and the ion concentration correspondingly rose. It is characteristic that the decrease in ion concentration was accompanied by an increase in average mobility. Norinder and Siksna have suggested an explanation for this (Ref 4).
These data were confirmed by measurements made when the observatory lay under clouds in which the station itself was situated (Figures 8a and 8b and the table). The graphs indicate that clouds over the station produced a decrease in both positive and negative ions and an increase in the average mobility. It is characteristic that for $\omega_+ > 1.6$ $cm^2/v.sec$ and $\omega_- > 1.9$ $cm^2/v.sec$ the spectrum for both

The Measurement of the Light Atmospheric Ion Spectrum

cases practically coincides.
The concentration of negative ions changes less than the positive ion concentration after precipitation, whilst the opposite is true when the station is situated in the clouds. On days on which the cloud cover is small, the concentration of both kinds of ions increases. The average, absolute humidity on such days is 8.5 g/cm^3 (as compared with 10.1 g/cm^3 on cloudy days): this change may explain the increase in N_+ .

There are 8 figures and 4 references, 3 of which are Soviet and 1 English.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki atmosfery (Ac.Sc.USSR, Institute of Atmospheric Physics)

SUBMITTED: July 2, 1957

Card6/6

1. Ionic current--Measurement 2. Ionic current--Spectra 3. Ionization chambers--Applications 4. Mathematics--Applications

GUTMAN, L. N. and FRANKL, F. I. (Nal'chik)

"A Hydro-Thermodynamical model of the Bora."

report presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow 27 Jan - 3 Feb 1960.

S/003/60/000/009/001/001
B019/B054

AUTHOR: Frankl', F. I., Doctor of Physical and Mathematical Sciences, Professor

TITLE: Discussion of Problems of Hydroaerodynamics and Mathematical Physics

PERIODICAL: Vestnik vysshey shkoly, 1960, No. 9, pp. 47-48

TEXT: A Conference on Hydroaerodynamics and Mathematical Physics was held at Nal'chik in May 1960 on the initiative of the fiziko-matematicheskiy fakul'tet Kabardino-Balkarskogo universiteta (Department of Physics and Mathematics of the Kabardino-Balkarian University). Fourteen reports were delivered at the Conference by delegates of five higher institutes of learning and scientific institutes of the Northern Caucasus, as well as of three higher institutes of learning from other oblast' and Republics. The reports by Professor F. I. Frankl' and Senior Teacher [illegible] N. Lanin (Kabardino-Balkarian University) on "The Flow Around Profiles With a Local Supersonic Zone Ending in a Compression

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Shock", by Professor S. V. Fal'kovich of Saratovskiy universitet (Saratov University) on "The Integrals of the Chaplygin Equation With Singular Points on the Parabolic Line", and Senior Teacher [illegible] of Kirgizskiy universitet (Kirgiz University) on "The Application of the Straight-line Method to Certain Boundary-value Problems in the Theory of Transonic Currents" dealt with the theory of transonic currents. Problems of theoretical meteorology were dealt with in the report by L. N. Gutman, Doctor of Physical and Mathematical Sciences, of the Kabardino-Balkarskoye otdeleniye Instituta prikladnoy geofiziki AN SSSR (Kabardino-Balkarian Branch of the Institute of Applied Geophysics of the AS USSR) ("On the Theory of [illegible]"). Docent [illegible] of the Stavropol'skiy sel'skokhozyaystvennyy institut (Stavropol' Agricultural Institute) dealt with "Some Problems of Hydrodynamics Within the General Theory of Atmospheric Circulations". [illegible], Student of the Kabardino-Balkarian University, held a report on "The Vertical Structure of Monsoons". M. Zhekamukhov and N. Arkabayev, Post-graduate Students of the Kabardino-Balkarian University, offered "Examples of the Rotation of Cosmic Gas Masses" and "The Model of a Star

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as Steady Radial Flow of Gas Particles and Photon Gas". A. Abdyldayev, Post-graduate Student of the Kabardino-Balkarian University, in his report dealt with "Some Problems of the Plane-parallel Flow of Heavy Liquids in Channels". Senior Teacher V. I. Men'shikova of the Stavropol'skiy pedagogicheskiy institut (Stavropol' Pedagogical Institute) delivered a report on "Semi-inverse Methods in the Theory of Motion of Ground Water With a Free Surface". Problems of mathematical physics were dealt with in three reports by Senior Teacher I. M. Karasev of the Kabardino-Balkarian University, Docent F. G. Baranovskiy of the Severoosetinskiy pedagogicheskiy institut (North Osetian Pedagogical Institute), and Docent Ye. I. Kosia of the Stavropol' Pedagogical Institute. Docent V. [illegible] of the Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute) dealt with the theory of oscillations. Special attention was paid to a report by Professor S. V. Fal'kovich who suggested a greatly improved method of calculating transonic currents, to a report by Professor L. N. Gutman who suggested an interesting solution to one of the most important problems of local meteorological phenomena, and to a report by N. Arkabayev who gave an ingenious explanation of an important astrophysical

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phenomenon.

ASSOCIATION: Kabardino-Balkarskiy gosudarstvennyy universitet (Kabardino-Balkarian State University)

GUTMAN, L.N.

Theory of cumulus clouds. Izv. AN SSSR, Ser. geofiz. no.7:1040-1057 Jl '61. (MIRA 14:6)

1. Akademiya nauk SSSR, Vysokogornyy geofizicheskiy institut.
(Cloud physics)

GUTMAN, L.N.; TEBUYEV, D.I.

Theory of the foehn. Izv. AN SSSR. Ser. geofiz. no.8:1192-1198 Ag '61. (MIRA 14:7)

1. AN SSSR, Vysokogornyy geofizicheskiy institut.
(Foehn)

S/020/61/138/003/014/017
B104/B205

3,5110

AUTHORS: Gutman, L. N. and Mal'ko, L. N.

TITLE: Theory of fronts

PERIODICAL: Doklady Akademii nauk SSSR, v. 138, no. 3, 1961, 587 - 590

TEXT: The hydrodynamic equations for the atmosphere are simplified on the following assumptions: 1) Horizontal motion occurs between 100 and 1000 km. Thus, it is possible to use the Cartesian coordinate system (x and y indicate the horizontal plane) and static equations. 2) Fluctuations of temperature and pressure are insignificant. 3) Acceleration in the direction of motion are negligible. 4) All elements of motion are independent of y, and the front is, therefore, a cylindrical surface having an element directed along the y-axis. 5) The front is shifted in the positive x-direction at a constant velocity $c \neq 0$ without changing its form. Based on this assumption, the processes occurring in the coordinate system moving along with the front can be considered to be steady. Accordingly, the hydrodynamic equations for the atmosphere read:

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Theory of fronts

S/020/61/138/003/014/017
B104/B205

$$-R\theta\frac{\partial}{\partial x}\left(\frac{p_k'}{p}\right)+l\,(v_k-v_g)+\nu\frac{\partial^2 u_k}{\partial z^2}=0; \tag{1}$$

$$-l\,(u_k-u_g)+\nu\frac{\partial^2 v_k}{\partial z^2}=0; \tag{2}$$

$$\frac{\partial u_k e^{-\sigma z}}{\partial x}+\frac{\partial w_k e^{-\sigma z}}{\partial z}=0\quad\left(\sigma=\frac{g-K\gamma}{R\theta}\right); \tag{3}$$

$$R\theta\frac{\partial}{\partial z}\left(\frac{p_k'}{p}\right)=\lambda\vartheta_k\quad\left(\lambda=\frac{g}{\theta}\right). \tag{4}$$

u_k, v_k, and w_k are the components of velocity relative to the earth; ϑ_k and p_k' are the deviations of temperature and pressure, respectively, from their mean values θ and P; u_g and v_g are the given and the constant components, respectively, of the geostrophic wind; the subscripts 1 and 2 refer to cold and warm air masses; g is the gravitational constant; $l = 2\omega\sin\varphi$, where ω indicates the angular velocity of the earth's rotation; and φ is the geographic latitude. It is further assumed that the temperature fluctuations are known and are given by $\vartheta_1 = \Delta\theta - z\Delta\gamma$, $\vartheta_2 = 0$, where $\Delta\theta$ stands for the difference in temperature between cold and warm air

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masses on the earth's surface, and $\Delta\gamma$ denotes the difference between the vertical temperature gradients of these air masses; $\Delta\theta$ and $\Delta\gamma$ are considered to be constant. The boundary conditions for this problem read

$$u_1 = v_1 = w_1 = 0 \quad \text{при} \quad z = 0; \tag{5}$$

$$u_1 = u_2, \quad v_1 = v_2, \quad \frac{\partial u_1}{\partial z} = \frac{\partial u_2}{\partial z}, \quad \frac{\partial v_1}{\partial z} = \frac{\partial v_2}{\partial z} \quad \text{при } z = h(x); \tag{6}$$

$$w_1 = w_2 = (u_1 - c)\, h'(x), \quad p_1' = p_2' \quad \text{при } z = h(x); \tag{7}$$

$$u_2 = u_g, \quad v_2 = v_g, \quad p_2' = 0 \quad \text{при } z = \infty, \tag{8}$$

Taking account of (7) and (8),

$$\frac{p_1'}{P} = \frac{1}{RT}\left[\mu(h - z) + \frac{1}{2} m (h^2 - z^2)\right], \quad p_2' \equiv 0, \tag{9}$$

is obtained by integration of Eq. (4). Thus, Eq. (1) acquires the form

$$l(v_h - v_g) + \nu \frac{\partial^2 u_1}{\partial z^2} = \mu h'(x) + mhh'(x). \tag{10}$$

Integration of (3) over z from 0 to h leads to

$$\int_0^h (u_1 - c)\, e^{-\alpha z}\, dz = \frac{Q}{\rho_0}, \tag{11}$$

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Theory of fronts

This is the mass of air expressed in kg, which passes from the warm to the cold air mass in one second per unit length of the front. Next, the following expressions are obtained from (2) and (10):

$$u_1 = u_2 + B(\eta - \xi), \quad u_2 = u + e^{-\xi}[A(\eta)\sin\xi - B(\eta)\cos\xi],$$
$$v_1 = v_2 - A(\eta - \xi), \quad v_2 = v + e^{-\xi}[B(\eta)\sin\xi + A(\eta)\cos\xi]. \qquad (12)$$

where $\xi = x\sqrt{1/2\nu}$; $\eta = h\sqrt{1/2\nu}$; $A(\xi) = (\mathrm{ch}\xi\cos\xi - 1)u_g\,d\eta/d\xi$; $B(\xi) = \mathrm{sh}\xi \cdot \sin\xi u_g\,d\xi/d\xi$; $\xi = x\sqrt{1/2\nu}$; $u = u_g(1-e^{-\xi}\cos\xi) - v_g e^{-\xi}\sin\xi$; $v = u_g e^{-\xi} \cdot \sin\xi + v_g(1-e^{-\xi}\cos\xi)$. is determined by

$$\frac{d\eta}{d\xi} = -\frac{1 + V - 2(1-C)\eta - e^{-\eta}[(V+1)\cos\eta + (V-1)\sin\eta]}{3/2 - 2e^{-\eta}(\cos\eta + \sin\eta) + 1/2e^{-2\eta}(\cos 2\eta + \sin 2\eta)}, \qquad (13)$$

Here, $V = v_g/u_g$; $C = c/u_g$. The numerical integration of (13) is discussed in all detail. The results obtained are graphically represented in Figs. 3 and 4. Fig. 3 shows a section through the fronts ($\theta = -10^0$; $C = 0.25$; $V = -0.5$) in the coordinate system moving along with them. Fig. 4 shows a cold front ($\theta = -10$ C; $C = 1.5$; $V = 1.5$). Arrows indicate the wind

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direction.. A. F. Dyubyuk (Meteorologiya i gidrologiya, no. 4 - 5 (1937); Tr. Tsentr. inst. pogody, no. 26 (53) (1951); Isv. AN SSSP, ser. geofiz., no. 9 (1956)) is mentioned. There are 4 figures and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The reference to English-language publications reads as follows: F. K. Ball, Quart. J. Roy. Meteorolog. Soc., 86, no. 367 (1960).

ASSOCIATION: Kabardino-Balkarskoye otdeleniye Instituta prikladnoy geofiziki Akademii nauk SSSR (Kabardino-Balkarian Department of the Institute of Applied Geophysics of the Academy of Sciences USSR)

PRESENTED: January 11, 1961, by A. A. Dorodnitsyn, Academician

SUBMITTED: January 10, 1961

Card 5/6

[redacted], P.I. [deceased]; [redacted], L.T.

Stationary problem of the motion of a cold layer of air over rugged terrain. Dokl. AN SSSR 141 no.1:77-79 N '61. (MIRA 14:11)

1. Vysokogornyy geofizicheskiy institut AN SSSR. Predstavleno akademikom A.A.Dorodnitsynym.

(Boundary value problems)
(Atmosphere)

KHATUKAYEVA, Zh.M.; GUTMAN, L.N.

Problem of the crossing of a cold air mass over a mountain range, taking into account a decrease in the density of the air as the altitude becomes higher. Izv. AN SSSR. Ser. geofiz. no.9:1251-1260 S '62. (MIRA 15:8)

1. Kabardino-Balkarskiy gosudarstvennyy universitet.
(Winds) (Mountains)

GUTMAN, L.N.

Motion of air in valleys. Meteor. i gidrol. no.3:3-8 Mr '62.
(MIRA 15:3)
(Winds) (Valleys)

GUTMAN, L. N.,

"Stationary spatial model of cumulus,"

Report to be submitted for the 13th General Assembly, Intl. Union of Geodesy and Geophysics (IUGG), Berkeley Calif., 19-31 Aug 63

KHALKECHEV, V.A.; GUTMAN, L.N.

Spatial stationary nonlinear problem of the cold air-mass flow over a complex relief. Izv. AN SSSR. Ser.geofiz. no.2:349-361 F '63. (MIRA 16:3)

1. Kabardino-Balkarskiy gosudarstvennyy universitet.
(Air flow)

KHALKECHEV, V.A.; GUTMAN, L.N.

Movement of cold air masses along mountain ranges. Izv. AN SSSR. Ser. geofiz. no.9:1397-1409 S '63. (MIRA 16:10)

1. Kabardino-Balkarskiy gosudarstvennyy universitet.

GUTMAN, L.N.

Stationary axisymmetric model of a cumulus. Dokl. AN SSSR 150 no.1:81-84 My '63. (MIRA 16:6)

1. Vysokogornyy geofizicheskiy institut AN SSSR. Predstavleno akademikom Ye.K.Fedorovym.

(Clouds)

ACCESSION NR: AP4010573 S/0050/64/000/001/0023/0029

AUTHORS: Vul'fson, N. I.; Gutman, L. N.; Pavlova, I. S.

TITLE: Effects of gravitational waves on the formation of hail clouds in mountainous regions

SOURCE: Meteorologiya i gidrologiya, no. 1, 1964, 23-29

TOPIC TAGS: gravitational wave, hail cloud, cumulus cloud, wind velocity, temperature gradient, precipitation, hail

ABSTRACT: The authors' purpose is to examine the conditions under which the effects of gravitational waves may lead to the formation of vertical movements sufficiently intense to have a noticeable influence on the development of hail clouds. They consider the model of an infinitely long mountain range of arbitrary cross section and with transverse wind of constant velocity. They derive equations for air movement and compute values for different heights and breadths of the mountains. These computations show that wave forms developed by a mountainous zone may lead to the formation of strong, stationary, ascending movements of air. To test this, they investigated the relationship between development of hail in the Alazani valley and fields of temperature and wind favorable for producing atmospheric waves. For completeness and comparison they also examined temperature

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ACCESSION NR: AP4010573

and wind fields associated with cumulus rain clouds not producing hail as well as fields associated with cumulus clouds yielding no precipitation at all. The relationship of precipitation to wind and to temperature gradient is illustrated by Fig. 1 on the Enclosure. For winds blowing parallel to the range, regardless of temperature gradient, the weather was fair (for the four years represented by the data of Fig. 1). All kinds of clouds were observed for winds blowing at right angles to the trend of the range, but hail was more likely the nearer the wind direction was to this right-angle direction, and the higher the temperature gradient was. This means that hail is most probable under conditions most favorable for the development of gravitational waves. Orig. art. has: 3 figures and 15 formulas.

ASSOCIATION: Institut prikladnoy geofiziki (Institute of Applied Geophysics); Vy*sokogorny*y geofizicheskiy institut (High-Mountain Geophysical Institute)

SUBMITTED: 00	DATE ACQ: 14Feb64	ENCL: 02
SUB CODE: AS	NO REF SOV: 002	OTHER: 002

Card 2/2

ACCESSION NR: AP4014031 S/0049/64/000/001/0136/0149

AUTHORS: Kalazhokov, Kh. Kh.; Gutman, L. N.

TITLE: The dynamic structure of fronts

SOURCE: AN SSSR. Izv. Seriya geofizicheskaya, no. 1, 1964, 136-149

TOPIC TAGS: front, air front, cold front, air circulation, ascending air current, descending air current, convection

ABSTRACT: This work combines and develops the ideas of A. F. Gyubyuk and F. K. Ball (discussed in a number of articles) and attempts to find the form of the frontal surface separating two thermally different air masses. The present authors also investigate the movement of the air that may take place near and immediately next to the surface. For this purpose they have simplified the system of equations for hydrodynamics of the atmosphere on the basis of the following assumptions: 1) a horizontal scale on the order of 10^2-10^3 km, 2) a disturbance of temperature and pressure small in comparison with the average for the given height, 3) acceleration of equalizing movements may be neglected, 4) the frontal surface is cylindrical, elongated along the y direction, 5) the frontal surface is displaced

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ACCESSION NR: AP4014031

along x, at a constant velocity, without change in form. Equations are derived to define the different types of fronts: 1) with a closed line of flow in the cold air mass, 2) with a rising movement of warm air directly at the front and a weak circulation of cold air, 3) with a weak descending current beneath the frontal surface, 4) with the current of (3) and circulation of air in the forward part of the cold air mass, 5) with weak circulation of warm air at the front, and 6) with ascending warm air before the front. Vertical sections are plotted for each of these. The authors point out that their theory requires serious experimental verification. Such work is now being carried out, and preliminary results are rather encouraging. A section of a front moving through Rostov on 24 August 1961, plotted from radio-pilot data, corresponds rather well with the section obtained by theoretical considerations. Orig. art. has: 10 figures and 24 formulas.

ASSOCIATION: Kabardino-Balkarskiy gosudarstvennyy universitet (Kabardino-Balkarian State University)

SUBMITTED: 10Apr63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: AS NO REF SOV: 007 OTHER: 001

Card 2/2

L 18742-65 EWT(1)/FCC GW
ACCESSION NR: AP4045781 S/0050/64/000/009/0017/0021

AUTHOR: Gutman, L. N. (Doctor of physico-mathematical sciences, Professor); Morgachev, S. V.

TITLE: New method for the construction of vertical profiles of fronts

SOURCE: Meteorologiya i gidrologiya, no. 9, 1964, 17-21

TOPIC TAGS: atmospheric front, frontal vertical profile, vertical profile construction

ABSTRACT: An eleven-step method, supplementing the method used by the Gidrometeosluzhba SSSR (Hydrometeorological Service of the USSR), is proposed for the construction of the vertical profiles of atmospheric fronts. The principal difference between the two procedures is that the new method emphasizes dynamic rather than thermal factors. The basic procedure involves the construction, in a sliding system of coordinates, of a vertical profile of the flow field normal to and moving with the front, as follows: 1) the direction and average speed of a selected portion of the front is determined for a period of 12

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or 24 hours from successive weather charts; 2) a line is constructed normal to the front; 3) radiosonde data points are plotted on the line; 4) the horizontal scale to be used in plotting the profile is chosen; 5) the same is done for the vertical scale, and the radiosonde data are plotted; 6) actual wind data are computed for all elevations and verticals normal to the front for which the horizontal component of wind velocity (u) is known, using the formula $u=u\cos\alpha$, where α is the angle between the direction of frontal movement and the wind direction; 7) the differences u - c (c is the actual speed of the front) are computed for all verticals and altitudes and plotted as horizontal arrows drawn from the appropriate points; 8) the flow function (ψ) is computed for all verticals and altitudes according to the formula

$$\psi = \int_0^z (u - c)e^{-0.08z}\,dz,$$

where z is the vertical coordinate (in km) of the origin of coordinates on the front; 9) the (ψ) values are then noted at the appropriate profile points and connected by interpolation; 10) in the same manner,

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the projection of the frontal surface is plotted in the plane of the profile; 11) comparisons of the densities and deviations in the line of flow then give a qualitative derivation of the distribution in space of the vertical component of wind velocity. These procedures were tested by constructing 10 vertical profiles of fronts (7 cold, 2 warm, and 1 stationary), using radiosonde data collected over Riga, Velikiye Luki, Smolensk, Volgograd, and Moscow. Results of these tests were in agreement with theoretical computations, and the time required to perform the work was so short that the method was judged suitable for use in meteorological operations. Orig. art. has: 3 figures, 1 table, and 4 formulas.

ASSOCIATION: Vysokogornyky* geofizicheskiy institut (High-Mountain Geophysical Institute)

SUBMITTED: 25Jun63 ENCL: 00 SUB CODE: ES

NO REF SOV: 005 OTHER: 000

Card 3/3

ACCESSION NR: AP4045791 S/0049/64/000/009/1414/1428

AUTHOR: Gutman, L. N.

TITLE: A stationary, axially symmetrical model of a cumulus cloud with evaporation of water drops taken into account

SOURCE: AN SSSR. Izvestiya. Seriya geofizicheskaya, no. 9, 1964, 1414-1428

TOPIC TAGS: meteorology, cloud physics, cumulus cloud, cloud, atmospheric turbulence, cloud model

ABSTRACT: The author obtains the solution of the nonlinear, stationary, axially symmetrical problem of a cumulus cloud, considered as the process of resolution of a moist-unstable atmosphere, in closed form. An allowance is made for the influence of evaporation of water drops and the influence of turbulence is also taken into account. On the basis of this solution the author describes the spatial pattern of distribution of meteorological elements in a cloud model. The following is the author's interpretation of the physical processes occurring in a well-developed cumulus cloud. Moisture-saturated air enters a cloud through the lower and side boundaries and immediately begins to rise. At this time the water vapor which it contains is condensed, releasing latent heat of condensation and thus heating the central part of the lower part of the cloud

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ACCESSION NR: AP4045791

and saturating it with liquid moisture. The heated air, under the influence of the Archimedean force, rises into the central part of the cloud, entraining the water drops forming in it. Almost all the water vapor can apparently be condensed in the lower part of the cloud. The rising of the air in the central part generally follows the dry adiabatic law, and as a result the deviation in temperature, while remaining positive, begins to decrease, becoming equal to zero on the axis of the cloud at a point approximately one-third of the distance from the top of the cloud to its base. A further ascent of air together with water drops occurs due to inertia and the temperature deviation continues to decrease with height, now becoming negative. The Archimedean force developing at this time, directed downward, slows down the air flow, forcing the air to spread out in a horizontal direction. The further the ascending particles move away from the axis of the cloud the less they can be heated during the condensation of water vapor and the more rapid is their cooling with height. Therefore, in the central part of the cloud, a nucleus can be heated at a time when the periphery will be cooled in comparison with the air outside the cloud, situated at the same height. With respect to the neighborhood of the cloud top, where the vertical velocity becomes equal to zero, it will

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obviously be colder than the surrounding medium and extremely saturated with moisture. The air and the water drops, spreading out in a radial direction from the central and upper parts of the cloud, which are being cooled in comparison with the surrounding air, should begin immediate descent under the influence of the Archimedean force; the liquid moisture which it contains will evaporate, leading to still greater cooling. The latter fact, in turn, intensifies the descending flow, which therefore can attain considerable values. As a result, all the liquid moisture can evaporate and dry air will emanate. With respect to the air outside, but in contact with the cloud, as a result of turbulent friction and turbulent heat transfer it will be drawn into the descending movement and will be cooled somewhat in the direct vicinity of the cloud boundary. This cooling attenuates rapidly in a horizontal direction with increasing distance from the cloud and then experiences transition into a slight warming caused by the adiabatic character of the process. "It is noted in conclusion that this theory has been in the stage of development for some time under the direction of G. K. Sulakvelidze...". Orig. art. has: 75 formulas and 6 figures.

ASSOCIATION: Vy*sokogorny*y geofizicheskiy Institut (High-Mountain Geophysical Institute)

SUBMITTED: 18Oct63 ENCL: 00 SUB CODE: ES

Card 3/4

ACCESSION NR: AP4045791

NO REF SOV: 010 OTHER: 000

Card 4/4

GUTMAN, L.N., doktor fiz.-matem. nauk, prof.; MORGACHEV, S.V.

A new method of constructing vertical sections of fronts.
Meteor. i gidrol. no.9:17-21 S '64.

1. Vysokogornyy geofizicheskiy institut.

GUTMAN, L.N.; MAL'BAKHOV, V.M.

Theory of the gravity winds of Antarctica. Meteor. issl. no.9: 150-155 '65. (MIRA 19:1)

GUTMAN, M.; D'ALBON, G.; URSESCU, D.

Recent improvements in unipolar machines. p. 155.

STUDII SI CERCETARI STINTIFICE. FIZICA SI STINTE TEHNICE.
Iasi, Rumania. Vol. 8, no. 2, 1957

Monthly list of European Accessions (EEAI) LC, Vol. 8, no. 8, Aug. 1959

Uncl.

RUMANIA/Physical Chemistry - Electrochemistry. B

Abs Jour : Ref Zhur Khimiya, No 19, 1959, 67380

Author : D'Albon, Gerard; Ursescu, Dan; Gutman, Marcel

Inst : Polytechnical Institute Iasi

Title : A New Phenomenon Observed at a Mercury Chromium Contact (for a Thin Layer). Preliminary Report.

Orig Pub : Bul. Inst. politehn. Iasi, 1958, 4, No 1-2, 297-304

Abstract : When current was passed through a system: thin Cr layer on steel [Hg] Cr layer on steel, periodic variations of the resistance of the system were observed at constant voltage. The Cr layer was ~ 30 μ thick. The effect of the Cr layer on the phenomenon described and the effect on the layer of various chemical compounds, Hg purity, sublayer material, current magnitude, temperature, and other factors were studied. -- Yu. Pleskov

Card 1/1

GAIGINSCHI, R.; DUMITRESCU, T.; GUTMAN, M.

Aspect of the Akulov-Bitter figures in case of plastic deformations.
Studii fiz tehn Iasi 10 no.1:85-91 '59 (EEAI 9:3)

1. Filiala Iasi a Academiei Republicii Populare Romine.
(Plasticity) (Deformations(Mechanics)) (Colloids)
(Spectrum analysis) (Magnetic fields)

L 28382-66 EWP(c)/EWP(k)/EWT(d)/EWT(m)/EWP(h)/ETC(m)-6/T/EWP(1)/EWP(v)/EWP(t)/ETI

ACC NR: AP5023387 (A) IJP(c) DJ/JD SOURCE CODE: UR/0317/65/000/005/0062/0066

AUTHOR: Vovk, F. (Major general of engineering-technical service); Gayenko, A. (Engineer, Lieutenant Colonel); Gutman, M. (Engineer, Lieutenant Colonel); Gershteyn, S. (Engineer, Lieutenant Colonel)

ORG: None

TITLE: Prolongation of machine life

SOURCE: Tekhnika i vooruzheniye, no. 5, 1965, 62-66

TOPIC TAGS: ordnance engineering, military tank, internal combustion engine

ABSTRACT: The present paper, consisting of three separate articles, deals with the operation, maintenance and repair of armored tanks, engines and auxiliary equipment. The authors of the first article, F. Vovk and A. Gayenko, do not recommend overhauling new engines of the B-2 type until a general overhauling of the entire tank is required. However, meticulous checking of engine parts between general overhauls is strongly recommended. In connection with this subject, an example of the monthly discussions at the Ul'yanov Guard Armored Tank School was mentioned. Reducing-gear bearings of heavy tanks are to be checked after a run of 200 to 300 km. The level of liquid in the engine cooling system must be checked every 2 or 3 hours. A regular replacement of track

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chain pins can increase the run distance by 600 to 800 km. The caterpillars service life can be twice as long if they are kept well adjusted and maintained. A set of gages for caterpillars was proposed by Officer Lopatin. This set was shown in a figure, as well as a device for changing pins. In conclusion, further development of special commissions for inspection of tanks was strongly recommended. The second article, by M. Gutman, deals with the repair of engines and their parts at an automobile-repair plant. Mechanical cleaning of oil pipes and channels, use of diamond drills for honing, careful cleaning of parts (including ultrasonic method) and other improvements were recommended. Filters, oil radiators and fuel equipment were cleaned by using the UZG-10M device. Mass production methods were introduced for cleaning and polishing operations. A special automatic device was invented for honing operations of YaAZ engines. The advantages of diamond honing were stressed. The machining of crankshafts was organized in cooperation with the Khar'kov Automobile-Road Institute. Following the experience of the Khar'kov and Yaroslavl' engine plants, the tightening of bolts were checked by dynamometric wrenches. A table was presented showing the wrench types and tightening forces to be applied to different engine parts. The third article, by S. Gershteyn, contains some critical observations on various suggestions such as: keeping the heating system connected in summer or muffling the engine if the temperature of cooling liquid is 80 C. Ex-

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ACC NR: AP5023387

cessive inspection and duplication in control checking was also criticized. The successful maintenance and repair practice of Omsk Armored Tank Technical School was mentioned. Orig. art. has: 2 figures and 1 table.

SUB CODE: 19 / SUBM DATE: None / ORIG REF: 000 / OTH REF: 000

Card 3/3 vc

POPEA, Florica; GUTMAN, Madeleine

Determination of cadmium traces in polymethylic sulfides and in soils, in the presence of other cations. Studii cerc chim 9 no.4: 673-680 '61.

1. Laboratorul de geochimie al Intreprinderii de prospectiuni si laboratoare, Bucuresti.

RUBIN, G.K., inzhener; GUTMAN, M.B., inzhener.

New series of chamber-type electric furnaces for wide application.
Vest. elektroprom. 27 no.10:55-59 O '56. (MLRA 10:9)

1. Trest "Elektropech'."
(Electric furnaces)

RUBIN, G.K.; GUTMAN, M.B.; GLEBOV, S.V.

Use of very lightweight refractories in electric resistance furnaces. Ogneupory 22 no.1:6-9 '57. (MLRA 10:3)

1. Opytno-konstruktorskoye byuro tresta "Electripech'" i Leningradskiy institut ogneuporov.
(Refractory materials) (Electric furnaces)

GUTMAN, M.B.

15

Mater 1-42. Experience in the use of ultra-lightweight refractories in electric resistance furnaces. —G. K. Rubin, M. B. Gutman, and S. V. Gurevich (*Ogneupory*, 22, 6, 1957). In Russian. The only figures quoted are for bulk density (25 lb/ft³). The use of these bricks in a type of resistance furnace reduced power consumption by 18–20% and increased efficiency by 15–17%. It is suggested that the thermal conductivity of these bricks should be standardized. (2 figs., 3 tables.)

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RM MT

GUTMAN, M.B.

AUTHORS: Rubin, G.K. and Gutman, M.B. (Engineers) 110-7-4/30

TITLE: Method of modernising chamber-type electric furnaces. (Metody modernizatsii kamernykh elektropechey).

PERIODICAL: "Vestnik Elektropromyshlennosti" (Journal of the Electrical Industry), Vol.28, No.7, 1957, pp.11-13 (USSR).

ABSTRACT: There must be in service at least 10 000 chamber-type electric furnaces with a total installed power of not less than 200 MW. Most of these furnaces are of poor technical characteristics. A great many of the existing furnaces should be modernised, which will ensure considerable power economies. This article makes specific recommendations for the improvement of such furnaces. One of the main causes of low efficiency in furnaces is inward leakage of cold air through the doors. Methods of correcting this are described in detail and illustrated by sketches. Recommendations are then made about relining furnaces to cut down heat losses. In doing this difficulties are sometimes encountered in fixing the heaters because the lining materials are mechanically weak, and a method of installing the heaters in tubes is described and illustrated. Methods of increasing the size of the charge in furnaces are also described. The advantages that often result from increasing the power of

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FEL'DMAN, Iosif Aleksandrovich; GUTMAN, Mark Borisovich; RUBIN, Georgiy Kusiyelevich; SVENCHANSKIY, A.D., red.; SAPAROVA, A.L., red.; VORONIN, K.P., tekhn. red.

[Calculation of heating elements for electric resistance furnaces] Raschet nagrevatelei elektropechei soprotivleniia. Moskva, Gos. energ. izd-vo, 1961. 26 p. (Biblioteka elektrotermista, no.5) (MIRA 14:8)

(Electric furnaces)

GUTMAN, M.B., inzh.; MIKHAYLOV, L.A., inzh.; ROZHDESTVENSKIY, O.I., inzh.

Heating in a fluidized bed. Vest. elektroprom. 34 no.8:53-57 Ag '63. (MIRA 16:9)
(Furnaces, Heating) (Fluidization)

L 51976-65 EWT(m)/T/EWP(t)/EWP(b) JD

ACCESSION NR: AR5009006 S/0137/65/000/002/I115/I115

SOURCE: Ref. zh. Metallurgiya, Abs. 2I856

AUTHOR: Gutman, M. B.; Mikhaylov, L. K.; Kaufman, V. G.

TITLE: Research on deep salt vats

CITED SOURCE: Elektrotermiya. Nauchno-tekhn. sb., vyp. 38, 1964, 9-11

TOPIC TAGS: metallurgy, electrolytic heat treatment

TRANSLATION: Research has been done at the All-Union Scientific Research Institute for Thermo-Electrical Equipment for designing salt vats with a depth of 1700 mm and a surface area of 0.25 m^2 and more. At the Moscow Instrument Plant a salt vat with a depth of 1650 mm, a power of 75 kw and a molten salt temperature of 1260° was tested. At the Sverdlovsk Instrument Plant a salt bath with a depth of 1750 mm, power of 100 kw and molten salt temperature of 1250° was tested. The electrical processes for various designs of deep salt vats were simulated on a computer. It was found that a rather uniform temperature (within limits of ± 10°) is provided, in the deep salt vats tested, at a depth of ~1000-1200 mm (when salt contamination is insignificant). Uniformity of temperature distribution throughout the working space

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L 51976-65
ACCESSION NR: AR5009006

in deep salt vats is greatly affected by the presence of a layer of sludge formed at the bottom of the salt vat during use (with great sludge contamination, the temperature variation may reach ± 30°). The most even temperature distribution throughout the bath is observed in a design with multistage electrode arrangement. The overall length of the working sections of the electrodes should equal the depth of the vat.

SUB CODE: MM ENCL: 00

mc
Card 2/2

GUTMAN, M.B.; MIKHAYLOV, L.A.; KAUFMAN, V.G.

Temperature distribution in the working space of deep salt baths. Metalloved. i term. obr. met. no.9:14-17 S '64. (MIRA 17:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrotermicheskogo oborudovaniya.

L 40871-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AR6014925 SOURCE CODE: UR/0124/65/000/011/B0107/B0107

AUTHORS: Gutman, M. B.; Mikhaylov, L. A.; Rozhdestvenskiy, O. I.

TITLE: Investigation of heat exchange in a fluidized bed

SOURCE: Ref. zh. Mekhanika, Abs. 11B725

REF SOURCE: Elektrotermiya. Nauchno-tekhn. sb., vyp. 41, 1964, 10-11

TOPIC TAGS: heat transfer fluid, conductive heat transfer, heat transfer coefficient, heat treating furnace

ABSTRACT: The coefficient of heat transfer from a fluidized bed with a fixed temperature to a coppor or steel specimen located in the fluidized bed (which consists of sand particles with a fractional composition from 0.6 to 0.85 mm) was investigated. During the experiments the reduced velocity of the liquefying air varied from 0.55 to 1 m/sec. For the coppor specimen, values of the heat transfer coefficients were obtained from 160 to 350 kcal/m^2-hr-deg (with bed temperatures from 310 to 815C and for the steel specimen from 200 to 400 kcal/m^2-hr-deg (with the oven temperature from 835 to 960C). The experimental results are presented graphically in the form of the dependence of the heat transfer coefficient on the fluidized bed temperature and on the reduced velocity of the liquefying air. The temperature fields in the fluidized bed in the temperature interval from 300 to 800C were also investigated.

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Card 2/2 11b

GUTMAN, M.G., podpolkovnik meditsinskoy sluzhby

Course of acute pneumonia in the North. Voen.-med. zhur. no.3:86 Mr '56. (MLRA 9:9)
(RUSSIA, NORTHERN--PNEUMONIA)

ALEKSEYEV, N.I., inzhener; GUTMAN, M.M., inzhener.

Efficiency experts of one plant. Sudostroenie 22 no.11: 38-41 N '56. (MLRA 10:2)

(Shipbuilding--Equipment and supplies)

Gutman, M. M., Zatulovskiy, B. G., Ponomareva, G. YE., Zhetsina, L. V., and Kondarenko, V. I.

Further studies of sporadic cases of typhus in Kiev, City.

Materialy nauchnykh konferentsii, Kiev, 1959. 280pp
(Kievskiy Nauchno-issledovatel'skiy Institut Epidemiologii i Mikrobiologii)

GUTMAN, M.M., inzh.

New design of revolving joints and mouthpieces for intercommunication systems. Sudostroenie 27 no.6:24-26 Je '61. (MIRA 14:6)

(Intercommunication systems)

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 3, p 209 (USSR)

AUTHORS: Voronova, N. A., Gutman, M. R., Troskunov, Ya. L., Armen, B. D., Leppeta, B. G.

TITLE: Low Carbon Cast Iron Rolls (Prokatnyye valki iz nizkouglerodistogo chuguna)

PERIODICAL: Tr. In-ta chernoy metallurgii. AN UkrSSR, 1957, Vol II, pp 196-214

ABSTRACT: An account of the results of an investigation performed on rolls made of low-carbon cast iron (LCI). The LCI was obtained by blowing oxygen through Cr-Ni cast iron in a converter with a 2.5 t capacity. Rolls 515 mm, 480 mm, and 400 mm in diameter were cast into a lubricated metallic mold at temperatures between 1360°-1400°C. Two versions for the modification of LCI in the converter were investigated: Fe-Si of the SI-45 type and Si-Ca. After the Fe-Si processing of LCI containing 0.6-0.8 percent Si and 0.8-0.9 percent Cr, no carbon remained in free state, whereas after Si-Ca treatment most of the C was in the form of graphite. Compared with the LCI with Fe-Si, the LCI with Si-Ca exhibits better fluidity. In order to

Card 1/2

Low Carbon Cast Iron Rolls

attain an H_B of 380-400, it is recommended that the rolls be cast at temperatures of 1360°-1400° with cast iron of the following chemical composition: in the case of Fe-Si treatment: 2.4-2.6 percent $C_{tot.}$; 0.9-1.0 percent Si; 0.5-0.6 percent Mn; 0.8-0.9 percent Cr; and 1.2-1.3 percent Ni; in the case of Si-Ca treatment: 2.4-2.6 percent $C_{tot.}$; 0.6-0.7 percent Si; 0.5-0.6 percent Mn; 0.9-1.0 percent Cr; and 1.2-1.3 percent Ni. Rolls made of cast irons exhibit uniform hardness and uniform cross-sectional microstructure. The durability of LCI rolls is 2-2.5 times that of rolls made of cast irons of standard C content; their employment has resulted in a 3.5 percent increase in productivity of rolling mills.

E. Sh.

Card 2/2

VORONOVA, N.A., kand.tekhn.nauk; GUTMAN, M.P., inzh.; TROSKUNOV, Ya.Ya., inzh. ARMEN, V.D., inzh.; LEPETTA, B.G., inzh.

Rollers made of low-carbon cast iron. Biul.TSNIICHM no.17:27-36 '57. (MIRA 11:4)

1.Institut chernoy metallurgii AN USSR i Stalinskiy metallurgicheskiy zavod.

(Rolling mills)

GUTMAN, M. R.

USSR/Medicine- Virus Diseases Jan 53

"Effects of the Environment on the Modification of Properties of Influenza Virus," V. D. Solov'yev, S. S. Marenikova, M. R. Gutman, Div of Viruses, State Control Inst imeni L. A. Tarasevich

"Zhur Mikrobiol, Epidemiol i Immunobiol" No 1, pp 12-16

Adaptation of the fresh human influenza strain Em_1 to white mice increases pathogenicity of the strain to white mice, raises hemagglutinin titers towards chicken and guinea pig erythrocytes, and increases the toxicity. The antigenic characteristics, are also modified. Adaptation of this strain to allantoic tissue of chicken embryos increases to some extent toxicity as measured by introducing the virus into the anterior chamber of rabbits' eyes. The antigenic characteristics remain unchanged and the lack of pathogenicity towards white mice is retained.

PA 241T9

GUTMAN, N. R.

USSR/Medicine- Infectious Deseases Jan 53

" The Characteristics of Substances Which Produce Shwartzman's Phenomenon," Ye. N. Melikova, S. L. Stepanova, N. R. Gutman, State Control Inst imeni L. A. Tarasevich

"Zhur Mikrobiol, Epidemiol , i Immunobiol" No 1, pp 72-73

Shwartzman's phenomenon (I) is produced by agents which have not only a preparative, but also a releasing capacity on I similarly to filtrates of bouillon cultures of B. coli. Under use of the method described, diphtheria, tetanus, tuberculosis, and brucellosis bacilli do not produce I. I is most pronounced with bacteria of the intestinal group. S-forms of B. coli produce a more distinct and certain I than R-forms. When I is produced by Grigor'yev-Shiga dysentery bacilli preparations freed of exotoxin, the percentage of animals which die after exhibiting a positive I is 2.5.-3 times larger than with the use of Flexner dysentery or typhoid microbe prepns.

PA 241T20

USSR/Medicine - Influenza Vaccines Oct 53

"Modifiability of A_1 Influenza Virus in the Process of Adaptation to Chicken Embryos," V. D. Solev'yev, N. R. Gutman, Div of Viruses, State Control Inst of Sera and Vaccines im Tarasevich

Zhur Mikro Epid i Immun, No 10, pp 65-68

Prolonged passing (100 passages) of A_1 influenza virus strain Em_1 through the allantois of growing chicken embryos increased the infectiousness and pathogenicity of the virus to chicken embryos. Adaptation to chicken embryos increased somewhat

266T22

the toxicity of the virus to rabbits and raised the level of its hemoagglutinating activity towards chicken and guinea pig erythrocytes. The virus adapted to chicken embryos (Em_3) has the capacity of developing on the mucous membranes of the upper human respiratory tract (I), the property of creating leukopenia in the persons immunized (II), and that of producing antibodies (III). While indices of I and II are lower in Em_3 than in Em_1, Em_3 is more active than the variant ad[illegible] (Em_2).

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GUTMAN, N.R.; MENTKEVICH, L.

Significance of virus A_1 in the epidemic process in influenza. Zhur. mikrobiol. epid. i immun. no.9:38-43 S '54. (MLRA 7:12)

1. Iz otdela virusov Gosudarstvennogo kontrol'nogo instituta imeni Tarasevicha (dir. S.I.Didenko) i kafedry epidemiologii (zav. prof. V.D.Solov'yev) II Moskovskogo meditsinskogo instituta imeni I.V.Stalina.

(INFLUENZA, epidemiology,
role of influenza virus A_1 in increased hibernal morbidity)
(INFLUENZA VIRUSES,
A_1, significance in increased hibernal morbidity of influenza)

SOLOV'YEV, V.D.; GUTMAN, N.R.

Modification on the antigenic structure of influenza virus in experimental conditions. Zhur. mikrobiol. epid. i immun. no.10: 44-48 O '54. (MLRA 8:1)

1. Iz otdela virusov Gosudarstvennogo kontrol'nogo instituta vaktsin i syvorotok imeni L.A.Tarasevicha (dir. S.I.Didenko)
(INFLUENZA VIRUSES, immunology, antigenic changes)

MELIKOVA, Ye.N.; GUTMAN, N.R.; STEPANOVA, S.L.

Schwartzmann phenomenon in rabbits vaccinated with typhoid and Flexner's bacillus preparations. Zhur. mikrobiol. epid. i immun. no.10:98 O '54. (MLRA 8:1)

1. Iz Gosudarstvennogo kontrol'nogo instituta im. Tarasevicha.
(VACCINATION)

MELIKOVA, Ye.N.; STEPANOVA, S.L.; GUTMAN, N.R.

Comparative experimental study of the antigenic and immunogenic properties typhoid fever and dysentery (Flexner's) antigens. Zhur.mikrobiol.epid. i immun. no.8:104 Ag '55 (MLRA 8:11)
(ANTIGENS AND ANTIBODIES) (EBERTHELLA TYPHOSA)
(SHIGELLA PARADYSENTERIAE)

GUTMAN, N. R.

GUTMAN, N. R.: "Hereditary properties of the influenza virus and its variability under experimental conditions." Min Health USSR. Central Inst for the Advanced Training of Physicians. Moscow, 1956. (Dissertation for the Degree of Candidate in Medical Science.)

Knizhnaya Letopis'
No 32, 1956. Moscow.

GUTMAN, N.R.; KALYAYEV, A.V.

Strains of influenza virus A^1 isolated in 1956 [with summary in English]. Vop.virus. 2 no.3:148-151 My-Je '57. (MIRA 10:10)

1. Otdel virusov Moskovskogo nauchno-issledovatel'skogo instituta vaktsin i syvorotok imeni I.I.Mechnikova, Moskva.
(INFLUENZA VIRUSES,
A_1 strain (Rus))

USSR/Human and Animal Viruses. Grippe Virus E

Abs Jour : Ref Zhur - Biol., No 4, 1959, No 14608

Author : Gutman N.R.
Inst : The Moscow Institute of Vaccines and Sera.
Title : The Changes of the Antigonic Structure of the Virus of the Grippe in Exporiments on Mice.

Orig Pub : Tr. Mosk. n.-i. in-ta vaktsin i syvorotok, 1957, 9, 13-21

Abstract : Following 9-10 passages of the PR-8 strain (type A) in mice immunized with the strain PR-8 and Shkl, a variant PR-8-I-mice was obtained. (Type A'). The changed characteristics were preserved following passages in normal mice. The passages of the PR-8 strain in mice immunized with the homologous virus did not lead to changes in its antigenic structure. PR-8-I-mice proved to be

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USSR/Human and Animal Viruses. Grippe Virus E

Abs Jour : Ref Zhur - Biol., No 4, 1959, No 14608

identical in antigenic structure to the variant PR-8 in chicken embryos, in the presence of antibodies to the strains PR-8 and Shkl, even though the variants differed in their pathogenicity to mice. -- T.Ya., Luzyanina.

Card : 2/2

USSR / Virology. Human and Animal Viruses. Influenza Virus. E

Abs Jour: Ref Zhur-Biol., No 2, 1959, 5339.

Author : Gutman, N. R.; Kalyayev, A. V.
Inst : Moscow Scientific Research Institute of Vaccines and Sera.
Title : New Strains of Influenza A_1 Virus.

Orig Pub: Tr. Mosk. n.-i. in-ta vaktsin i syvorotok, 1957, 9, 29-31.

Abstract: No abstract.

Card 1/1

E

COUNTRY : USSR
CATEGORY

ABS. JOUR. : RZhBiol., No. 1959, No. 9962

AUTHOR : Gutman, N.R.
INST. : Moscow Scientific Research Institute of Vaccines and Sera
TITLE : Study of the Properties of the Natural Smallpox Virus

ORIG. PUB. : Tr. Moskovsk. n.-i. in-ta vaktsin i syvorotok, 1957, 9, 182-190

ABSTRACT : 2 strains of the virus of natural smallpox were isolated from the crusts of patients with smallpox on the 30th-40th day of the disease in the 3rd and 5th passages through chick embryos. The chorioallantoically infected 12-day chick embryos were incubated for 72-96 hours at 33°. 1 virus strain studied in 25 passages through chick embryos was pathogenic for chick embryos, infectious for rabbits after intradermal injection, and toxic for mice. The virus produced erythrocyte agglutination of 49,5% of the chickens out of 300 examined. In the

Card: 1/2

SOLOV'YEV, V.D.; GUTMAN, N.R.; MEYTKEVICH, L.M.; KROPOTOVA, N.I.

Virological investigations of Bornholm disease. Vop.virus. 4 no.3:301-305 My-Je '59. (MIRA 12:8)

1. Moskovskiy institut preparatov protiv poliomiyelita Ministerstva zdravookhraneniya SSSR.
(PLEURODYNIA, EPIDEMIC, epidemiol.
in Russia (R_{us}))

SOLOV'YEV, V.D.; GUTMAN, N.R.; MENTKEVICH, L.M.; KROPOTOVA, N.S.

Properties of strains of Coxsackie virus B isolated in the City of Friazino. Vop. virus. 5 no. 2:193-199 My-S '60. (MIRA 14:4)

1. Moskovskiy institut preparatov protiv poliomiyelita.
(COXSACKIE VIRUSES)

MENTKEVICH, L.M.; GUTMAN, N.R.

Biological importance of serum inhibitors in experimental influenza. Trudy Mosk. nauch.-issl. inst. virus. prep. 2: 37-44 '61. (MIRA 17:1)

SOLOV'YEV, V.D.; GUTMAN, N.R.; MENTKEVICH, L.M.

Study of the serological properties of the Coxsackie B-3 virus. Trudy Mosk. nauch.-issl. inst. virus. prep. 2:146-152 '61. (MIRA 17:1)