KOMAROV, N.M., prof.; KARELIN, A.I., kand.veterin.nauk

Pathogenesis and prophylaxis of anemia in young pigs. Veterinariia 41 no.8:68-70 Ag '64. (MIRA 18:4)

1. Vsesoyuznyy institut eksperimental'noy veterinarii.

KOMAROV, N.M., prof.; SEMENYUTA, A.T., kand. veter. nauk

Mastitis in the group method of machine milking. Veterinariia 41 no.7:74-76 Jl '64. (MIRA 18:11)

1. Vsesoyuznyy institut eksperimental'noy veterinarii.

KOMAROV, N.M.; BORSHCH, M.S.

Hygiene as a basis for the prophylaxis of animal diseases and for increasing their productivity. Veterinariia 42 no.7: 96 Jl '65. (MIRA 18:9)

L 29193-66 EWT(1) SCTB DD

ACC NR: AP6017294 (A) SOURCE CODE: UR/0321/66/027/003/0360/0366

AUTHOR: Komarov, N. M.; Semenyuta, A. T.

ORG: All-Union Institute of Experimental Veterinary Science, Moscow (Vsesoyuznyy institut eksperimental'noy veterinarii)

TITLE: Dynamics of thermal responses of the organism to the effects of low environmental temperatures

SOURCE: Zhurnal obshchey biologii, v. 27, no. 3, 1966, 360-366

TOPIC TAGS: animal physiology, thermoregulation, hypothermia, cardiovascular system, adaptation, climate chamber, pig, mammal

ABSTRACT: Changes in the temperature reaction of mammals during the early postnatal (first 10 days) period were studied in piglets exposed to cyclic low temperatures (to -5C and -12C). Piglets were exposed in a climate chamber for 6 hr daily to temperatures of -4C to -5C or -8C to -12C (relative humidity, 85% to 90%). Controls were separated from the mother but kept at room temperature (12C to 18C). A pattern was observed in the behavior of the newborn piglets as the temperature dropped: the animals at first lay quietly (at temperatures above 5C), then became restless and active for 2 to 3 hr (5C to 0C), then lay quietly once more (even as the temperature dropped to -5C). The controls, kept at room temperature, lay quietly throughout. As the piglets grew older (2 to 3 days) this pattern persisted; but the restless phase

Card 1/2 UDC: 591.128.4:599.731.1

began at a lower temperature (0C to -2C) and was briefer (10 to 15 min). In 4- to 5-day-old piglets, restlessness did not appear at -2C to -3C; at -4C to -5C they merely attempted to crawl beneath one another. After the fifth day the restlessness disappeared entirely at temperatures to -5C. The animals cooled to -12C were extremely restless throughout the experiment, and did not lie quietly at any time. A pattern was likewise observed in the behavior of skin and body temperatures, which rose sharply, leveled off, then dropped. As the animals became conditioned to the cold stimulus, the adaptive drop in skin and body temperatures became greater and occurred more readily. It is concluded that in the early postnatal period, vascular thermoregulatory responses to cold stimulus are reflexive in nature. With repeated exposure to this stimulus the vascular reaction takes on specific features, i.e., becomes conditioned. This means that training of the body's thermoreceptors and the physiological mechanisms for analysis and synthesis of the thermal environment by systematic exposure to a wide range of cold stimuli is essential to the development of a better reflex response to thermal stress and an adequate adaptive capacity. The organic response to cold of animals not so trained is inferior in many ways (overreaction of regulatory systems, poor blood distribution during stress, impaired fluid balance in major organs), which may go far to explain the connection between cold stress and increased susceptibility to respiratory and other diseases in mammals. [LS]

SUB CODE: 06/ SUBM DATE: 15Jul64/ ORIG REF: 011/ ATD PRESS: 500

Card 2/2

KOMAROV, N. N.
Moscow State U imeni M. V. Lomonosov

KOMAROV, N. N.- "The problem of the method of studying the ionization state of the ground layer of air." Moscow State U imeni M. V. Lomonosov. Physics Faculty. Moscow, 1956.
(Dissertation for the Degree of Candidate of Physicomathematical Science)

SO: Knizhnaya Letopis' No. 13, 1956.

KOMAROV, N.N.

109-3-2-2/26

AUTHORS: Braude, S.Ya., Komarov, N.N. and Ostrovskiy, I.Ye.

TITLE: On the Statistic Nature of the Scattering of Centimetre Radio Waves by a Rough Sea Surface (O statisticheskom kharaktere rasseyaniya santimetrovykh radiovoln vzvolnovannoy poverkhnost'yu morya)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, No.2, pp. 172 - 179 (USSR).

ABSTRACT: The problem can be analysed either by solving the Maxwell equations for a statistically non-uniform medium (Refs. 3, 4 and 5) or by assuming that the received signal is statistical (Refs. 6 and 7). The second approach is easier and it is adopted in this work. For the purpose of analysis, it is assumed that the propagation path is comparatively short so that the main cause of the amplitude fluctuation of the received signal is the scattering of the waves from the rough surface. The field intensity at the receiver is due to the super-position of a "direct" wave which propagates directly from the transmitter to the receiver, a reflected wave and a number of waves scattered by the sea. The field is expressed by:

$$E(t) = E_o \cos \omega_o t + E_{o\text{Tp}} \cos(\omega_o t + \varphi) + \Sigma E_s \cos(\omega_s t + \varphi_s) \quad (1)$$

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On the Statistic Nature of the Scattering of Centimetre Radio Waves by a Rough Sea Surface

where $E_o \cos\omega_o t$ is the direct wave, $E_{oTp} \cos(\omega_o t + \varphi)$ is the reflected wave and $\Sigma E_s \cos(\omega_s t + \varphi_s)$ is the sum of the scattered waves; these waves have random amplitudes E_s and phases $\omega_s t + \varphi_s$ which are distributed over an interval 0 to 2π. It is assumed that the amplitude distribution for $E(t)$ can be expressed by Eq.(3), where $I_o(z)$ is the modified Bessel function of the zero order. The average square deviation and the average deviation of the amplitude are expressed by Eqs.(6), where β is given by Eq.(5) and $I_1(z)$ is the modified Bessel function of the first order. The ratio of the average square value of the amplitude and its mean value is expressed by Eq.(6a). The roughness of the sea surface is defined by:

$$\alpha^2 = \frac{\Sigma \bar{E}_s^2}{E_o^2} \qquad (7)$$

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On the Statistic Nature of the Scattering of Centimetre Radio Waves by a Rough Sea Surface

so that it can be expressed by:

$$\alpha^2 = \frac{\overline{R^2}}{E_o^2} \frac{1}{1 + \beta^2} \qquad (8)$$

The magnitude of the reflected wave can be determined by finding an expression for f (see Eq.(4)). The phase distribution of E(t) is in the form of Eq.(12); it is impossible, however, to find the square deviation of the phase directly from this expression and therefore the dependence of the phase deviation on β is expressed indirectly by Eq.(15). The scattered waves undergo a frequency shift Ω_s which is due to the Doppler effect and is caused by the regular and random motion of the sea surface. Assuming that the regular motion has a velocity $v_=$ and the random motion has velocities v_s, Ω_s is expressed by:

$$\Omega_s = \frac{4\pi (v_= - v_s)}{\lambda} = \Omega - \Omega_{0s} \qquad (16)$$

On the Statistic Nature of the Scattering of Centimetre Radio Waves by a Rough Sea Surface

where

$$\Omega = \frac{4\pi v_{=}}{\lambda} \quad \text{and} \quad \Omega_{0s} = \frac{4\pi v_s}{\lambda} \qquad (17).$$

It is shown that the two velocities can be determined from the Eqs.(19) and (27). On the other hand, the low-frequency spectrum of the fluctuation envelope $F(\Phi)$ is expressed by Eq.(38), where $\bar{\Phi}_o$, $\bar{\Phi}_s$ and $2\sigma^2$ are given by Eqs.(36) and (37), while $\delta(\Phi)$ is the Dirac function. A curve of $F(\Phi)$ calculated from Eq.(1) for $\beta = 3$, $\lambda = 3$ cm, $v_o = 10$ cm/sec. and $v_{=} = 0$ is given in Fig.1. The theory was checked by some measurements which were carried out at a wavelength of 3.2 cm; the height of the transmitter was 6 m, while the heights of the receivers were 1, 7.5 and 16 m; the propagation path was 750 m. The amplitude fluctuations, as a function of time, were recorded and these are shown in Fig.2; the values of the amplitude of the received signal, as a function of the height of the receiver, are shown in Fig.3. Fig. 4 shows the overall probability of the amplitude distribution $\Phi(y)$;

On the Statistic Nature of the Scattering of Centimetre Radio Waves by a Rough Sea Surface

the circles denote the values obtained from the measurements, while the curve illustrates the calculated results. Fig.5 shows the sea roughness coefficient α as a function of $h_o\theta/\lambda$ where h_o is the average height of the surface non-uniformities, θ is the sliding angle and λ is the wavelength. From the above, it is concluded that the method of investigation adopted in this paper is suitable for determining a number of important physical parameters (β, α, φ, v_o, $v_=$ and $F(\Phi)$) which characterise the scattering processes. The method can also be used to study the propagation of radio waves in the troposphere and, in particular, the nature of the non-uniformities causing the tropospheric scattering. There are 5 figures and 9 references, 6 of which are Russian and 3 English.

ASSOCIATION: Institute of Radiophysics and Electronics AS of the Ukrainian SSR, Khar'kov (Institut radiofiziki i elektroniki AN USSR, g. Khar'kov)

SUBMITTED: January 18, 1957

AVAILABLE: Library of Congress

Card 5/5

1. Radio waves-Scattering 2. Oceans-Turbulence-Effects
3. Mathematical analysis

AUTHORS: Tsvang, L. R. and Komarov, N. N. SOV/49-59-8-9/27

TITLE: Investigation of the Spectrum of Simple Ions in the Free Atmosphere

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 8, pp 1167-1176 (USSR)

ABSTRACT: The results are given of a method of measurement of the spectrum of simple ions in the free atmosphere. The measurements were carried out from an aircraft flying at heights of 100 to 5000 m. Simultaneously the electric field, the air temperature and the atmospheric pressure were determined. The apparatus employed is shown in Fig 1, where 1 and 3 - high voltage electrodes, 2 and 4 - collectors, 5 - shell; the amplifiers and an oscillograph are shown on the right-hand side. The position of the apparatus on the aircraft is shown in Fig 2. The concentration of ions, N, the mean mobility $\bar{\omega}$ and the polar air conductivity $\lambda^{\pm}$ were calculated from the formulae on pp 1170-1171. The results are plotted in the graphs 3 to 8 which represent the following: Fig 3a and b and Fig 4 - mean spectra of simple ions on bright days, all days and at heights of 500 to 4500 m, respectively;

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SOV/49-59-8-9/27

Investigation of the Spectrum of Simple Ions in the Free Atmosphere

Fig 5 - variation of ion spectrum characteristics in relation to height;
Fig 6 - mean mobility $\bar{\omega}$ in relation to height (thin lines - experimental data, thick lines - theoretical data);
Fig 7 - relationship between $\bar{\omega}$ and N during climb (a), descent (b);
Fig 8 - spectrum characteristics on cloudy (dashed lines) and cloudless (continuous lines) days.
There are 8 figures and 12 references, 7 of which are Soviet, 1 German and 4 English.

ASSOCIATION: Akademiya nauk SSSR Institut prikladnoy geofiziki (Institute of Applied Geophysics, Ac.Sc., USSR)

SUBMITTED: October 28, 1958

Card 2/2

SOV/142-2-1-13/22

9(3)
AUTHORS: Braude, S.Ya., and Komarov, N.N.

TITLE: Generalized Curves of the Fresnel Reflection Coefficients for Horizontal and Vertical Polarizations (Obobshchenyye krivyye koeffitsiyentov otrazheniya Frenelya dlya gorizontal'noy i vertikal'noy polyarizatsiy)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - radiotekhnika, 1959, Vol 2, Nr 1, pp 100-106 (USSR)

ABSTRACT: For calculating some wave propagation problems it will be necessary to determine the Fresnel reflection coefficient f_h for the horizontal and f_v for the vertical polarization. This is done by known formulae [Ref 1,2]. However, determining the modulus and the phase of the Fresnel coefficients from these formulae is very time-consuming, especially when the permittivity ε is a complex number. For this reason various graphs have been produced which are used for engineering calculations, but they are not applicable in all cases. G.P. Ohman, IRE [Ref 3]

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Generalized Curves of the Fresnel Reflection Coefficients for Horizontal and Vertical Polarizations

$$F_h = -1 + \frac{2\sin\varphi}{1+\quad} \qquad F_v = 1 - \frac{2}{1+\quad\sin\varphi}$$

whereby φ is the angle of slide. Assuming that $F = C_1 + iC_2$, they determine C_1 and C_2 and present the following formulae for calculating the modulus $F = |F|$ and the phase ψ:

$$C_4 = \frac{4(C_3-1)}{1-F^2} - C_3^2 \; ; \; C_3 = 1 + 2C_4 \operatorname{ctg}\psi + 1 - C_4^2.$$

There are 6 graphs and 3 references, 1 of which is American and 2 Soviet.

Card 3/4

S/049/60/000/02/014/022
E131/E459

AUTHOR: Komarov, N.N.

TITLE: Problems in Calculating the Unstable Currents in Measuring Condensers of Ion Counters and Ion Spectrometers

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, Nr 2, pp 309-317 (USSR)

ABSTRACT: The calculation of unstable currents in suction condensers is described. Formulae are given for calculation of the ohmic and saturation currents. The parameters are introduced which determine the various types of inertia condensers. The measuring condenser of the ion counter, through which the air containing ions is sucked, is calculated where the air input W is taken into account. Fig 1 illustrates such a condenser, where the regions I, II and III are described by the coordinates $0 < x < x_1, x_1 \leqslant x \leqslant x_2, x_2 < x < x_3$. The formation of the ionized layer in the region I of the condenser is determined from Eq (1) to (3), where e - the ion charge, $\vec{w}^{\pm}$ - ion velocity, $k^{\pm}$ - ion mobility, $\vec{\varepsilon}$ - strength of the condenser field, V_o - voltage of

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S/049/60/000/02/014/022
E131/E459

Problems in Calculating the Unstable Currents in Measuring Condensers of Ion Counters and Ion Spectrometers

the electrode, $v = S_H \Delta x$; $n_o^{\pm}(t)$ - density of ions. The total current $I_{a-}(t)$ is defined as Eq (5) and (7). In the case of cylindrical condensers, the calculation of $f_{a-}^{\pm}(t)$ can be performed as shown in Eq (8) to (14) and in the case of plane condensers as Eq (8a) to (14a). The formulae (6) to (14) determined the unstable current in the measuring condenser at any moment after commencement of suction with the constant density of ions in the air $n_o^{\pm}$. The unit layer of ions at the moment of its entry into region I can be calculated from Eq (16) and (18), where v is the volume of the layer. If there is a succession of layers, the sum of individual pulsations produce a current $I_{1a-}^{+}(t)$ which can be determined from Eq (19). The ionized layer at the output of the condenser at the moment $t = T$ can be determined from Eq (20) and (21). Generally, the current $I_{Sa}(t)$ flowing to the collecting electrode can be determined from Eq (22) which becomes Eq (23) in the case of a cylindrical condenser. There are 1 figure and

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S/049/60/000/02/014/022
E131/E459

Problems in Calculating the Unstable Currents in Measuring Condensers of Ion Counters and Ion Spectrometers

14 references, 11 of which are Soviet, 1 German and 2 English.

ASSOCIATION: Akademiya nauk SSSR Institut prikladnoy geofiziki (Academy of Sciences USSR, Institute of Applied Geophysics)

SUBMITTED: May 8, 1957

Card 3/3

AUTHOR: Komarov, N.N.

S/049/60/000/03/011/019
E032/E614

TITLE: Some Results of an Investigation of Nonsteady Currents in Ion Counters

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, Nr 3, pp 459-466 (USSR)

ABSTRACT: The apparatus employed is illustrated in Fig 1, and consists of the measuring condenser 1, vibrating reed electrometer 2, loop oscillograph 3, control block 4 and stabilized supplies 5. The measuring condenser 1 (Fig 2) includes a device for preliminary ionization 2 and the ventilator 3. The measuring condenser consists of a high voltage electrode 5 and a collecting electrode 6. An electrostatic screen 7 is placed in front of the condenser. The ionizer 2 consists of a cylinder 9 in which a layer of radioactive material has been deposited, and an ion filter 10. The latter consists of three grids mounted on an ebonite ring which is inserted into the cylinder 8. By applying different potential differences to the grids of the ion filter it is possible to filter out the ions either partially or completely from the air entering the measuring condenser. An anemometer 12 is placed just before the entrance to the cylinder 8. The apparatus was used to study nonsteady currents in the measuring condenser, in the case when

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Some Results of an Investigation of Nonsteady Currents in Ion Counters

the ion density in the air blown through the device varies rapidly, e.g. when the air blown through the condenser contains a heavy ion space charge. Moreover, laboratory measurements of the ion spectrum have been carried out and estimates were made of the minimum time which is necessary in practice in order to determine the ion spectrum by the method involving the blowing of air through the apparatus. The results obtained are summarized in the table on p 463 in which the first column gives the number of the series of experiments, the second column gives the time from the switching on of the filter to the entry of the ions into the condenser (sec), T^+ is the collection time for positive ions (sec), k_{min} is the minimum mobility (cm^2/sec), and T is the ratio of the length of the working volume of the measuring condenser to the linear velocity of the air blown through (sec). The sixth column gives the voltage V_o across the condenser and the last column gives the quantity tg α which is proportional to the current.

69412

S/141/60/003/01/003/020
E192/E482

9,9000

AUTHORS: Komarov, N.N., Ostrovskiy, I.Ye., Zamarayev, B.D. and Rozenberg, A.D.

TITLE: Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts, When One of the Communicating Stations is Situated at a Great Height

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 1, pp 39-49 (USSR)

ABSTRACT: An expression for the attenuation factor $V_1(\xi, y)$ in the "illuminated" region, for the case of a hyperbolic M-curve, was derived in the work of V.A.Fok and others (Ref 2). The formula for $V_1(\xi, y)$ is given on p 40. It is seen that the formula is dependent on the parameter ν. By investigating the formula it is found that for $\nu > 1$, the expression for the attenuation factor is similar to the formula which is derived by using the methods of the geometric optics for a uniform atmosphere. The method is used to study the propagation of rays

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Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts, When One of the Communicating Stations is Situated at a Great Height

through a laminary medium. This is shown in Fig 2; a beam issues from the source O at an angle α; OA shows the direction of the beam in the case of the standard refraction, while OB illustrates the passage of a beam of rays in a laminary atmosphere. For this case (see Fig 2) it is possible to write the following equations:

$$\rho_{CA} = W/d\alpha\, R_{CA} dP_C, \rho_B = W/d\alpha\, R_b dP_b$$

where ρ_{CA} and ρ_B are energy densities at points A and B respectively (subscript C refers to the energy density in the standard atmosphere) and W is the energy in the beam which is determined by the angle $d\alpha$. First, the case of a medium consisting of 2 layers having thicknesses h_n and h_{n+1} and radii

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Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts, When One of the Communicating Stations is Situated at a Great Height

of curvature of the rays ρ_n and ρ_{n+1} is considered (see Fig 3). The case is described by Eq (1a). On the basis of this formula it is possible to derive a recurrence equation relating h_n, ρ_n, α_n, r_n and α_{n+1} (see Fig 3). The resulting formula for any n is

$$\frac{dP_B}{dP_{CA}} = \frac{\sin\alpha}{\sin\alpha_{CA}} \frac{dR_B}{dR_{CA}} = \frac{\sum_{n=k} \partial r_n / \partial\alpha_k}{\partial R_{CA}/\partial\alpha_k} \frac{\alpha_n + 1}{\alpha_{CA}}$$

The above results are employed to investigate a duct having a height of 54 m and $\Delta M = 54$. The wavelength of the propagated signal is 10 cm. The calculated results are illustrated in Fig 4. In this the function V_1 is plotted against $\xi = x - \sqrt{y}$ which represents

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Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts, When One of the Communicating Stations is Situated at a Great Height

the distance measured from the tangent point of the plane wave and the earth surface. The Curve 1 in Fig 4, refers to the standard refraction while Curve 2 is for the case of a near-water duct. From Fig 7, it is concluded that the wave duct has the following effect: (1) it increases the width of the first interference lobe and (2) the overall value of the field is slightly reduced due to the redistribution of the energy in space. Further results are shown in Fig 5 which illustrate the dependence of the distance G_0 and the parameter ΔS on ΔM, wavelength λ and the height of the duct h_1; G_0 represents the distance between the tangent point of the wave and the radio horizon. The formulae derived earlier are also used to investigate the influence of inversions on the wave propagation. The results are illustrated in

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Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts, When One of the Communicating Stations is Situated at a Great Height

Fig 6 (Curves 1 and 2) and are found to be in good agreement with the experimental results. There are 7 figures and 2 Soviet references.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR (Institute of Radio-Physics and Electronics of the Academy of Sciences UkrSSR)

4

SUBMITTED: May 11, 1959

Card 5/5

87977

S/049/60/000/010/012/014
E133/E414

3,5000
9,9822

AUTHORS: Komarov, N.N., Kuz'menko, M.D. and Seredkin, A.A.

TITLE: Measurements of the Ionized Constituents of the Atmosphere During Anti-Cyclonic Conditions

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, No.10, pp.1534-1540

TEXT: The ion spectrum of the atmosphere depends on a large number of factors, e.g. amount of convection, quantity of dust present etc. Hence, to separate out the effects of the different variables, it is best to use the simplest meteorological conditions possible, such, for example, as exist during a stable anti-cyclone. Methods previously described (Ref.2 and 3) were used to determine simultaneously the distribution spectra for both positive and negative ions using an aircraft flying at various heights. Pressure, temperature etc were recorded at the same time. In considering the results, only completely cloudless days during the anti-cyclone were taken. Curves are reproduced showing

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E133/E414

Measurements of the Ionized Constituents of the Atmosphere During Anti-Cyclonic Conditions

average distribution spectra for positive and negative ions at the heights where measurements were made (300 to 5000 m). The results obtained confirm those found in Ref.1. From these results correlations can be found between the characteristics of the ion spectra and some of the meteorological conditions. Thus, during an anti-cyclone, the number of light ions and the conductivity of the air both increase with height. When the relative humidity increases with height, the number of ions decreases or remains constant. There seems to be a slight tendency for the number of ions to vary with the vertical temperature gradient. In some cases, the number of ions does not increase monotonically with height but has a minimum at intermediate heights. It was found that, during the break-up of the anti-cyclone, the positive ion spectrum was different from the negative ion spectrum. The presence of two maxima in these curves is probably due to the presence of dust in the atmosphere. There are 10 figures and 4 Soviet references.

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29509
S/049/60/000/011/011/012
D247/D305

9.6150

AUTHOR: Komarov, N. N., and Seredkin, A. A.

TITLE: A counter of heavy ions

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya geofizicheskaya, no. 11, 1960, 1663-1670

TEXT: The authors consider the possibility of the method of characteristics for investigating spectrum heavy ions, give formulae for the design of the counter, describe its construction and report the results of its test. According to V. A. Gubichev, the sensitivity of a counter is determined by $\eta = \frac{\Delta\alpha}{n}$, where $\Delta\alpha$ —deflection of the indicator per time unit in scale units; n—density of ions in the examined air. A formula can be derived which indicates that the sensitivity of the counter depends on minimum mobility of ions. After an extremely detailed analysis of the conditions which are of importance for the counter, the authors develop a formula

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A counter of...

$$\frac{T_c}{\xi}\left(\frac{\bar{\eta}_0}{\eta_{0_{min}}}\right) = -\frac{1}{\varkappa \ln(1 - 1/r_0)} \qquad (19)$$

with limits of possible application on the left-hand side and the accuracy and the resolving power on the right-hand side. The parameters of the counter can be computed from experimental conditions. The counter consists of a block of measuring capacitors, a gas meter for measuring the air flow, an aspirator, an electrometer, a control panel recording equipment, a source of power. A galvanometer oscillograph ПОБ-12 (POB-12) was used for recording. The counter was tested on the earth's surface and on an airplane. Graphs are given showing the characteristic of the counter and the characteristics of ions at altitudes of 1000, 1500 and 2000 m. The character of the ions-spectrum changes with the altitude. Measurements in cloudy weather show that in a non-homogeneous medium--e.g. in cumuli--the method of characteristics is not applicable. The counter described can be used under almost any conditions; its possibilities are restricted

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A counter for...

only by the quality of the electrometers used. There are 6 figures and 6 Soviet-bloc references.

ASSOCIATION: Akademiya nauk SSSR. Institut prikladnoy geofiziki (Academy of Sciences, USSR. Institute of Applied Geophysics)

SUBMITTED: December 31, 1959

Card 3/3

VUL'FSON, N.I., doktor fiz.-matem. nauk, otv. red.; LEVIN, L.M., doktor fiz.-matem.nauk, otv. red.; Prinimali uchastiye: KOMAROV, N.N., red.; PSHENAY-SEVERIN, S.V., red.; UGAROVA, K.F., red.; NIKOLAYEVA, L.K., red. izd-va; BERKGAUT, V.G., red. izd-va; VOLKOVA, V.V., tekhn. red.

[Study of clouds, precipitation, and thunderstorm electricity; reports] Issledovaniia oblakov, osadkov i grozovogo elektrichestva; doklady. Otv. red. N.I.Vul'fson, L.M.Levin. Moskva, Izd-vo Akad.nauk SSSR. 1961. 327 p. (MIRA 15:1)

1. Mezhvedomstvennaya konferentsiya po voprosam issledovaniya oblakov, osadkov i atmosfernogo elektrichestva. 6th, 1959.
(Cloud physics--Congresses)

3,5131

S/169/62/000/011/026/077
D228/D307

AUTHOR: Komarov, N.N.

TITLE: Methods and some results of measuring the ionization state of the free atmosphere

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 11, 1962, 36, abstract 11B231 (In collection: Issled. oblakov, osadkov i grozovogo elektrichestva, M., AN SSSR, 1961, 259-265)

TEXT: Equipment for investigating the ionization state of the free atmosphere is described, and the results of ionic spectrum measurements in the free atmosphere and in clouds are given. An apparatus consisting of the following units was developed: a unit of low rate measurement capacitors, measuring the density and the spectrum of light, medium, and heavy ions by a suction method, with the use of a special cell for the preliminary intake of air samples; a unit of high rate suction capacitors for measuring air conduction and the spectrum of light ions; a unit of ion cells with stationary

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Methods and some results ... S/169/62/000/011/026/077
D228/D307

air for measuring the spectrum of light ions; and also two units for measuring the volumetric charge of air by the Obolenskiy filter and induction methods. The results of ionic spectrum measurements in the free atmosphere and in clouds are cited. It follows from them that ion density and air conduction magnitudes may be one to two orders higher in clouds than in the free atmosphere. These results need checking, since the question of the magnitude of errors due to drop fractionation about the sides of the aircraft and the air intake has not been solved.
[Abstracter's note: Complete translation]

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32704
S/049/61/000/012/008/009
D207/D303

3,5131

AUTHORS: Komarov, N.N. , Kuz'menko, M.D. and Seredkin, A.A.

TITLE: A counter for atmospheric ions

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya geofizicheskaya, no. 12, 1961, 1875 - 1881

TEXT: The authors give design calculations and describe the construction of a portable counter which can be used for field work on atmospheric ions or for laboratory work in physical, medical and biological applications. The design calculations followed the formulae derived earlier by N.N. Komarov and A.A. Seredkin (Ref. 7: IZV. AN SSSR, ser. geofiz., no. 11, 1960). The counter consisted of 4 main parts: A blower, two measuring capacitors, a dynamic electrometer and a loop oscillograph. The blower was the usual ventilating fan with airspeed controlled by an anemometer; if stabilized mains supply was used, no control of airspeed was necessary. The two capacitors had separate air supplies but a common electrical screen. One capacitor was designed for heavy ions: it had an

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A counter for ...

outer high-voltage cylindrical electrode, an inner cylindrical collector electrode connected to the electrometer, and a cylindrical guard ring, insulated from the collector electrode. The other capacitor was designed for light ions; it was similar to the heavy-ion capacitor but had a thinner collector electrode and no guard ring. The collector electrodes of the two capacitors were interchangeable. The heavy-ion capacitor could be used for heavy ions and for slow ions of medium mass; the light-ion capacitor was meant for light ions and for fast ions of medium mass. In this way the whole spectrum of ion masses and velocities could be covered by the counter. The electrometer, designed as ДЭ-3 (DE-3) was of the type described by H. Palevsky, R.K. Swank and R. Grenchik (Ref. 8: Rev. Sci. Instr., 18, 1947); its sensitivity was of the order of 10^4 scale divisions per volt. The complete counter could be used as (1) an ion spectrometer with collection of light ions by the guard ring in the heavy-ion capacitor, (2) an ion spectrometer of the type described by H. Israël (Ref. 2: Gerl. Beitr. Geophys., 31, 1931; Atmosphärische Elektrizität. 1, Leipzig, 1957) when air is passed consecutively through the heavy-

A counter for ...

-ion and light-ion capacitor, (3) an ion spectrometer using the method of characteristics, described earlier by N.N. Komarov and A.A. Seredkin (Ref. 7: Op. cit.) The counter was tried successfully in atmospheric measurements on the ground and in aircraft, as well as in laboratory measurements. There are 6 figures and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Palevsky, R.K. Swank and R. Grenchik, Rev. Sci. Instr., 18 (1947) [Abstractor's note: The initials in this reference were quoted wrongly in the Russian original]

ASSOCIATION: Institut prikladnoy geofiziki, Akademiya nauk SSSR (Institute of Applied Geophysics, Academy of Sciences, USSR)

SUBMITTED: July 14, 1960

Card 3/3

27198

S/056/61/041/002/020/028
B111/B212

26.2351

AUTHORS: Komarov, N. F., Fadeyev, V. M.

TITLE: Plasma in a self-consistent magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 2, 1961, 528-533

TEXT: Neglecting particle collisions, calculations are made for a longitudinal magnetic field H_z and an azimuthal current J_φ. Particle-density distribution, proper magnetic fields, and the currents of a multi-component plasma are calculated, and outer magnetic fields are determined for the case where the plasma is in a steady state. The results are compiled in $n_i = n_{0i}(1+\gamma)^{\alpha}\exp\{(1+\gamma)\lambda(r^2)\}[1+\gamma\exp\{(1+\gamma)\lambda(r^2)\}]^{-\alpha}$,

$$J_i = q_i v_{\varphi i} n_i,$$

$$H = \frac{2\pi}{c} I(1+\gamma)\frac{1-\gamma\exp\{(1+\gamma)\lambda(r^2)\}}{1+\gamma\exp\{(1+\gamma)\lambda(r^2)\}} - H^*,$$

$$\lambda(r^2) = r^2(4\pi I/c)^2/8\sum_i N_i m_i \overline{v_{ri}^2}, \qquad (6),$$

$$H^* = 2b/a = m_i\omega_i c/q_i.$$

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34201
S/057/62/032/002/001/022
B104/B102

24.7120

AUTHORS: Komarov, N. N., and Fadeyev, V. M.

TITLE: Study of stationary plasma states in kinetic approximation

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 2, 1962, 133-138

TEXT: The steady state of a completely ionized collision-free plasma with K components with cylindrical symmetry is studied on the basis of the kinetic equation. The distribution function $F_k(r,\vec{v})$ and the magnetic field configuration $H_j(r)$ are studied on the assumption that a current is applied along the symmetry axis and that a drift along the z-axis with the velocity β_k^0 is superposed to the Brownian movement of each component. Temperature and drift velocity are independent of the radius.

$\theta_k = kT_k$, $\beta_k^0 = V_k^0/c$, T_k and V_k^0 are temperature and drift velocity of the particles of the k-th component, c is the light velocity. The solutions of the system

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S/057/62/032/002/001/022
B104/B102

$$\left.\begin{aligned} &v_r\frac{\partial F_k}{\partial r}+\left\{-\frac{e_k}{m_k}\frac{\partial u}{\partial r}+\frac{e_k}{m_kc}v_z\frac{\partial A}{\partial r}+\frac{v_\varphi^2}{r}\right\}\frac{\partial F_k}{\partial v_r}-\\ &-\frac{v_rv_\varphi}{r}\frac{\partial F_k}{\partial v_\varphi}-\frac{e_k}{m_kc}v_r\frac{\partial A}{\partial r}\frac{\partial F_k}{\partial v_z}=0,\\ &-\frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial A}{\partial r}\right)=\frac{4\pi}{c}\sum e_k\int v_zF_k\,dv,\\ &-\frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial u}{\partial r}\right)=4\pi\sum e_k\int F_k\,dv, \end{aligned}\right\} \quad (1)$$

are

$$F_k(r,v_r,v_\varphi,v_z)=n_k^0\left(\frac{m_k}{2\pi\theta_k}\right)^{3/2}\exp\left\{-\frac{m_k}{2\theta_k}\left[v_r^2+v_\varphi^2+(v_z-c\beta_k^0)^2\right]+\right.$$
$$\left.+\frac{e_k}{\theta_k}\left[\varphi(r)-\beta_k^0c\mathcal{A}(r)\right]\right\}, \quad (2);$$
$$\varphi=u_0-u;\quad \mathcal{A}=A_0-A,$$

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Study of stationary plasma states in ...

u_o and A_o are the values of the potentials at the point $r = r_o$. The explicit representation of φ and A as functions of r is studied for the case where no volume charge is present. If the external current I is zero, the same results are obtained as by G. I. Budker (Atomnaya Energiya, 1, no. 5, 9, 1956). If the external current is directed against that of the plasma, then the plasma is displaced from the range $r = 0$ and the maximum of the distribution function of the current depends on the external current and the plasma parameters. The external current limits the temperature of the stationary plasma state: $I = 0$ is the temperature maximum, the temperature minimum is at $I \simeq -J/2$. J is the plasma current. If external and plasma current have the same direction, the plasma density rapidly increases as the radius decreases. The authors thank R. A. Demirkhanov, for his interest, A. I. Morozov, V. S. Tkalich and T. I. Gutkin for discussions. There are 2 figures and 6 references: 5 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: Willard, Bennet. Phys. Rev., 98, 1584, 1955.

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34201
S/057/62/032/002/001/022
B104/B102

Study of stationary plasma states in...

SUBMITTED: February 6, 1961 (initially), July 24, 1961 (after revision)

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L 45965-66 EWT(1) SCTB DD/RD/JKT/GD/JXT(CZ)

ACC NR: AT6030695 SOURCE CODE: UR/0000/66/000/000/0035/0051

AUTHOR: Nefedov, Yu. G.; Anisimov, B. V.; Veselova, A. A.; Zaloguyev, S. N.; Zhuravlev, V. V.; Iseyev, L. R.; Komarov, N. N.; Kartsev, A. N.; Ivanenko. G. T.; Levinshiy, S. V.

ORG: none

TITLE: The aeroion composition of the air of hermetic chambers and its influence on the human organism

SOURCE: Konferentsiya po kosmicheskoy biologii i meditsine, 1964. Materialy. Moscow, Inst. mediko-biol. problem, 1966, 35-51

TOPIC TAGS: aeroionization, human physiology, life support system, space physiology

ABSTRACT: A number of previous studies have indicated that while aeroions are of minor consequence, chronic exposure to them can lead to substantial changes in the functional condition of the organism. To further study this factor, five experiments of 20 days duration were conducted on 25 male volunteers from a laboratory (not named). The first experiment was for control purposes to obtain hygienic, chemical, and physiological data. The density of ions in this experiment ranged from 50—2000 pairs of ions/cm^3. The second, third, and fourth experiments entailed exposure to positive, negative, and bipolar ions generated by "Shteynbok" radioactive ionizers. Ion concentration in the respiratory zone was 700—900 thousand ions/cm^3

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L 45965-66

ACC NR: AT6030695

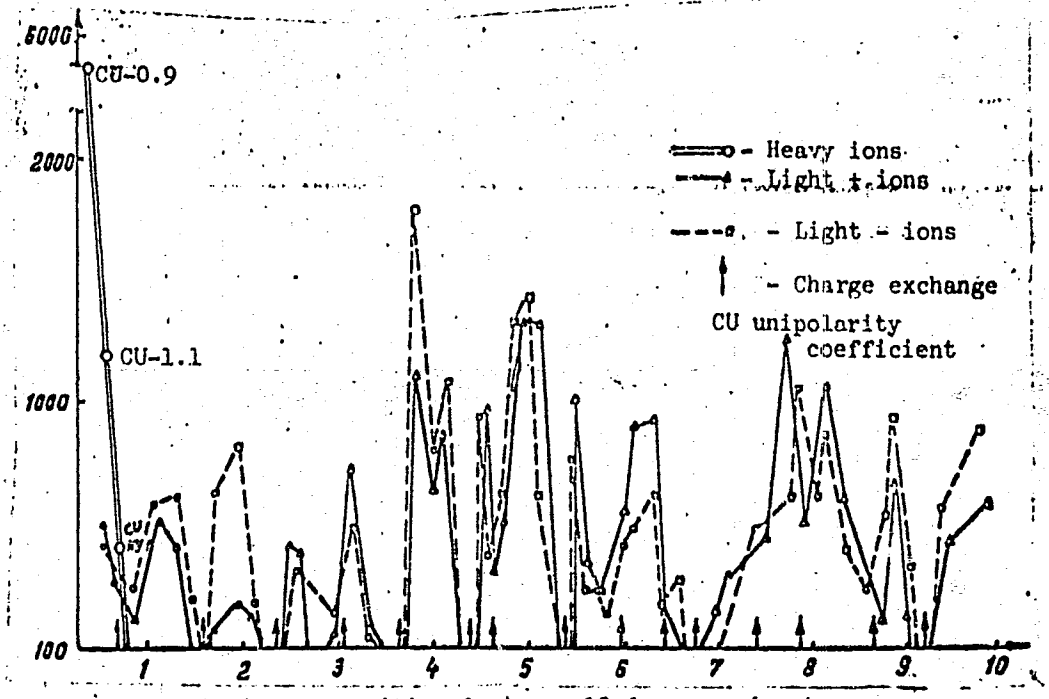

Fig. 1. Aerion composition during a 10-day experiment

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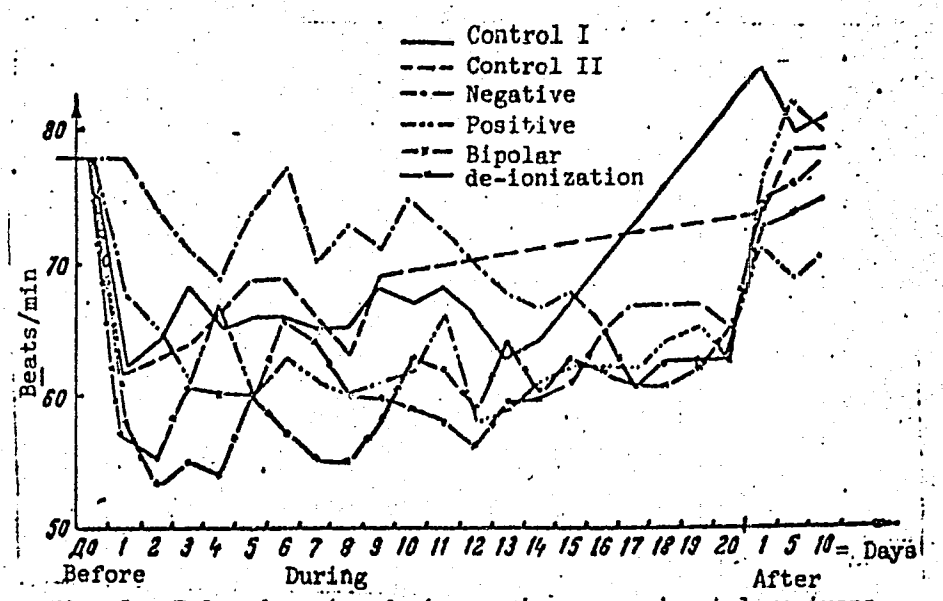

Fig. 2. Pulse dynamics during various experimental regimens.

L 45965-66

ACC NR: AT6030695

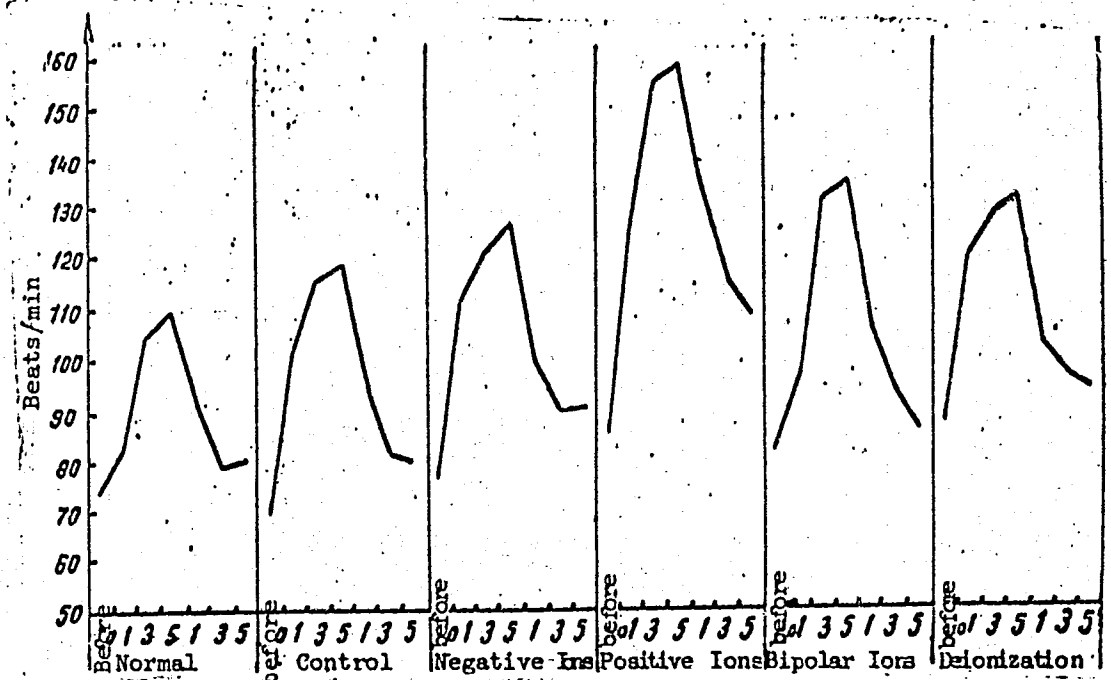

Fig. 3. Pulse variations during bicycle ergometer tests

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L 45965-66

ACC NR: AT6030695

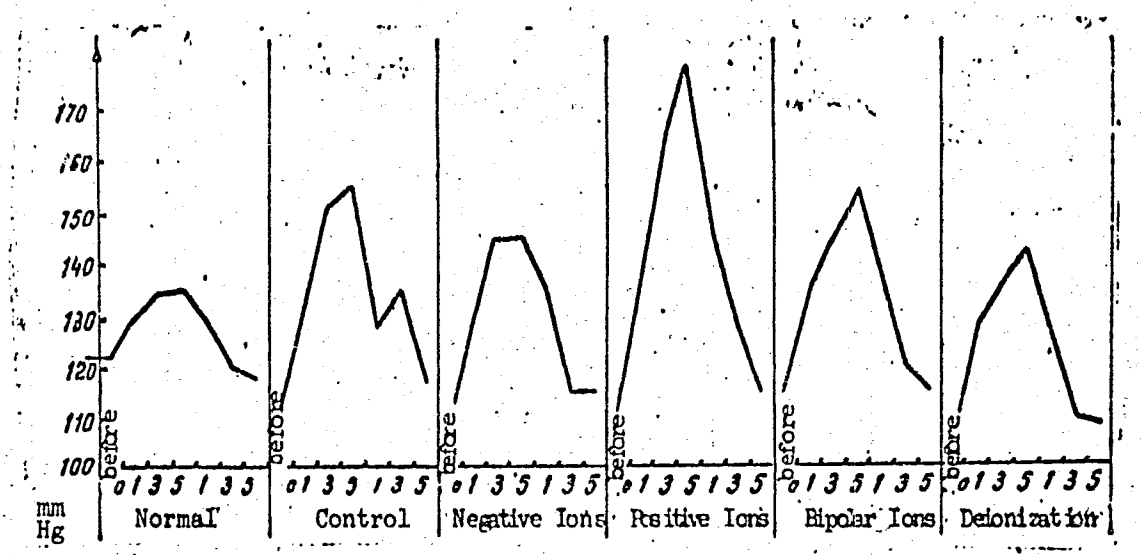

Fig 4. Changes in systolic pressure during exercise on a bicycle ergometer (mean values)

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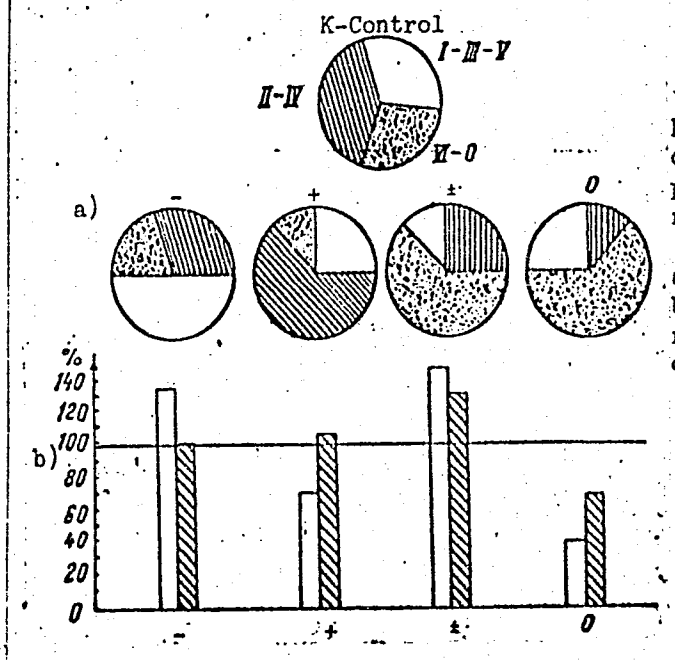

Fig. 5. Comparative characteristics of changes in the strength of neural processes in various experimental regimens (+, -, ±, control)

a - Character of reactivity curves;
b - changes in the coefficient of reactivity to light (white) and to opening the eyes (striped).

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ACC NR: AT6030695

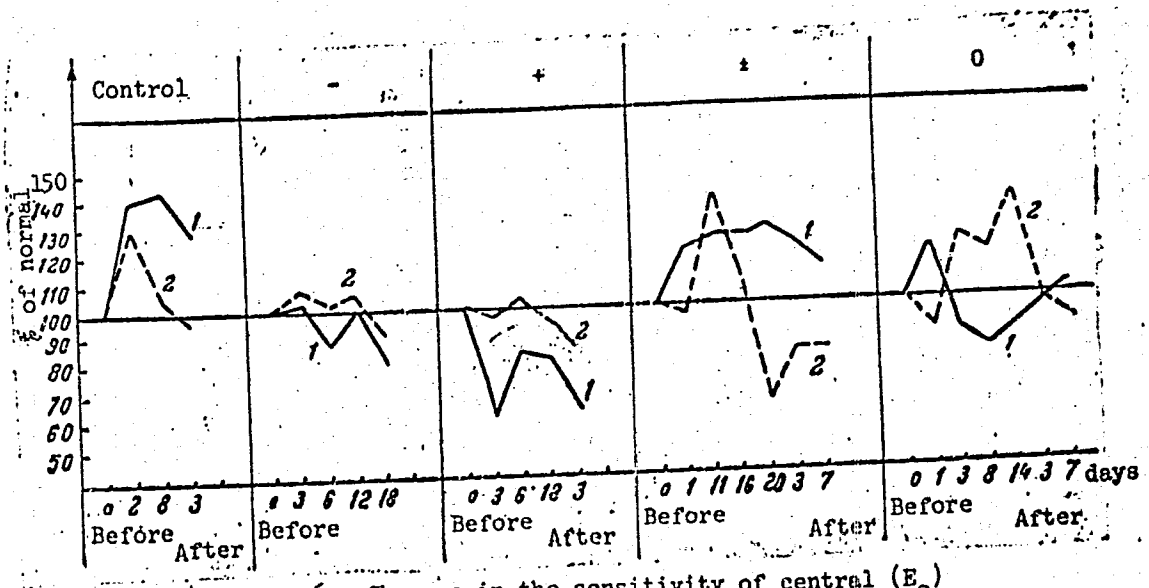

Fig. 6. Changes in the sensitivity of central (E_o) and peripheral (L_3) components of the visual analyzer (mean values): 1 - E_o; 2 - L_3

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ACC NR: AT6030695 0

during experimentation. Allowing that the natural exposure dose for the lungs is 12.87 mrem/week (Sivintsev, 1960), it was calculated that 1 g of lung receives $0.33 \cdot 10^{10}$ pairs of ions per day. If, in the respiratory medium, there were 500 pairs of light ions/cm^3 and 5000 pairs of heavy ions/cm^3, then $0.7 \cdot 10^{10}$ light and $7 \cdot 10^{10}$ heavy pairs of ions would reach the lungs of a man during a day. In these experiments, the average subject received approximately 10^{11} pairs of light ions per day. In the fifth experiment, the chamber was de-ionized using a system of filters and special ion traps. However, complete de-ionization could not be achieved and the density was 50—60 pairs of ions/cm^3. Some results of these experiments are shown in Figs. 1-6. The results of the experiment generally showed increased muscular working capacity, external respiration, and an increased level of gas exchange during exercise in the experiment with negative aeroionization. Partial normalization of some indices occurred during the respiration of negative aeroions. However, for a number of indices, a normalizing effect was also noted in response to the respiration of positive and bipolar ions. Nonetheless, the general trend of the majority of shifts noted during experimentation lends credence to the proposition that prolonged exposure to positive ions or a de-ionized air leads to some changes deleterious to human health. It is possible that an effective approach to this problem would be to combine negative ions with positive or bipolar ions. The establishment of optimum aeroion regimens requires additional research. Orig. art. has: 7 figures. [CD]

SUB CODE: 06/ SUBM DATE: 14Apr66/ ORIG REF: 011/ ATD PRESS: 5086

Card 8/8 hs

ACC NR: AT6036473 SOURCE CODE: UR/0000/66/000/000/0020/0021

AUTHOR: Aleksandryuk, S. P.; Anisimov, B. V.; Komarov, N. N.; Nefedov, Yu. G.; Potapov, A. N.; Sorova, L. V.; Tikhonova, G. P.

ORG: none

TITLE: Air ionization as a spaceflight factor [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, 20-21

TOPIC TAGS: aeroionization, closed ecological system, life support system, human physiology, aeroion biologic effect, cosmic radiation biologic effect

ABSTRACT:

The physical and chemical properties of space cabin atmospheres may be changed by cosmic radiation, which produces ions and dissociated molecules with high (10 to 15 ev) potential energies. The latter have considerable chemical activity. A study was therefore made of the ionization of space cabin air. Radiation equivalent in intensity to average galactic radiation (0.3 ber) produces an atmospheric ion concentration of 10^5 mol/cm^3, which is easily reproduced under laboratory conditions.

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ACC NR: AT6036473

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000824030002-2

Data from the literature and our own experiments show that air ionization is an active factor causing definite changes in the state of the organism, particularly during stress or injury. Twenty-day experiments have shown that an appropriate air-ion regime can reduce the adverse effects on man of prolonged sojourns in sealed cabins. Single exposures of animals to ionized air caused changes in the resistance of peripheral blood erythrocytes to osmotic hemolysis and in the vital stain sorption properties, shifts in the metabolism of a number of physiologically active substances, changes in the ion permeability of the skin, and increased mitotic activity in the tissues. All these data confirm that even brief exposure to air ions in doses approaching those possible in a space cabin (1 to 5 10^5 ion/cm^3) has a definite effect on the organism.

Because air ionization is an unavoidable spaceflight factor having definite biological effects, its mechanisms of action must be studied further and ways found to realize energy recombination of ions in the living organism. [W. A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUB CODE: 00May66

Card 2/2

KOMAROV, N. S. and CHERNOV, G. G.

Vzaimozameniaemost' v sel'skokhoziaistvennom mashinostroenii. Moskva, Mashgiz, 1949. 166 p. illus.

DLC: TJ1480.K6

Interchangeability in agricultural machine building.

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

MANDEL', O.Ye.; KOMAROV, N.S.

WZ Aquarii. Per.zvezdy 13 no.5:372-375 Je '61. (MIRA 15:8)

1. "Mayaki" - Odesskaya astronomicheskaya observatoriya.
(Stars, Variable)

KOMAROV, N.S.; ALIYEV, A.A.

Observations of the nova Herculis (1963). Astron. tsir. no. 251:1 Jl '63. (MIRA 17:5)

1. Odesskaya astronomicheskaya observatoriya.

RAYEVSKIY, N.P.; VLADIMIROV, B.V.; KOMAROV, N.S., red.; SHCHUCHKIN, N.V., red.; SOLOV'YEV, D.I., red.; RABINOVICH, I.P., red.; VASILENKO, I.F., red.; MODEL', B.I., tekhn. red.

[Theory, design, and manufacture of agricultural machinery] Teoriia, konstruktsiia i proizvodstvo sel'skokhoziaistvennykh mashin. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry. Vol.7. [Atlas of general agricultural machinery parts] Atlas obshchikh detalei sel'khoziaistvennykh mashin. 1945. 335 p. (MIRA 14:6)
(Agricultural machinery)

KOMAROV, N. S.

PA 27T44

USSR/Geology Jul/Aug 1947
Soil Science

"Slides and Dips in Sand-loam Deposits," N. S. Komarov, 4 pp

"Razvedka Nedr" No 4

In 1941, on the right bank of the Volga, a little below the city of Stalingrad, a severe and unexpected displacement of a large area of ground occurred. The author discusses the general topography and make-up of the soil around this area. Presents a cross-sectional view of the stratification of the soil. The area affected was approximately 500 - 600 meters deep, more than 200 meters wide and had a vertical depth of some 15 meters.

LC 27T44

KOMAROV, N.S.

Electrotensiometric measurement of the deformation of parts of agricultural machines under field conditions. Sel'khozmashina no.12:11-14 D '53. (MLRA 6:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyaystvennogo mashinostroyeniya. (Agricultural machinery--Testing)

KOMAROV, N.S.

Testing the strength of plows under field conditions. Sel'khoz-mashina no.7:21-23 Jl '54. (MLRA 7:7)
(Plows)

KOMAROV, N. S.

USSR/ Engineering - Boring

Card 1/1 : Pub. 86 - 15/36

Authors : Gumanskiy, B. M., Prof.; and Komarov, N. S., Cand. Geo.-Min. Sci.

Title : Vibration boring of terrain

Periodical : Priroda 43/8, 96-99, Aug 1954

Abstract : The author finds that the amount of shallow boring in preliminary work in testing the terrain, which is done by hand, amounts to such proportions as to warrant mechanization. The advantages of the vibration method in shallow boring are pointed out and a description is given of the equipment for this work, including the method of power-[illegible] drawing; illustrations; table.

Institution : ...

Submitted : ...

KOMAROV, N.S.

ANDREYEV, A.B.; ANTONOV, A.I.; ARAPOV, P.P., BARMASH, A.I., BEDNYAKOVA, A.B.; BENIN, G.S.; BERESNEVICH, V.V.; BERNSHTEYN, S.A.; BITYUTSKOV, V.I.; BLYUMENBERG, V.V.; BONCH-BRUYEVICH, M.D.; BORMOTOV, A.D.; BULGAKOV, N.I.; VEKSLER, B.A.; GAVRILENKO, I.V.; GENDLER, Ye.S., [deceased]; GERLIVANOV, N.A., [deceased]; GIBSHMAN, Ye.Ye.; GOLDOVSKIY, Ye.M.; GORBUNOV, P.P.; GORYAINOV, F.A.; GRINBERG, B.G.; GRYUNER, V.S.; DANOVSKIY, N.F.; DZEVUL'SKIY, V.M., [deceased]; DREMAYLO, P.G.; DYBETS, S.G.; D'YACHENKO, P.F.; DYURNBAUM, N.S., [deceased]; YEGORCHENKO, B.F. [deceased]; YEL'YASHKEVICH, S.A.; ZHEREBOV, L.P.; ZAVEL'SKIY, A.S.; ZAVEL'SKIY, F.S.; IVANOVSKIY, S.R.; ITKIN, I.M.; KAZHDAN, A.Ya.; KAZHINSKIY, B.B.; KAPLINSKIY, S.V.; KASATKIN, F.S.; KATSAUROV, I.N.; KITAYGORODSKIY, I.I.; KOLESHNIKOV, I.F.; KOLOSOV, V.A.; KOMAROV, N.S.; KOTOV, B.I.; LINDE, V.V.; LEBEDEV, N.V.; LEVITSKIY, N.I.; LOKSHIN, Ya.Yu; LUTTSAU, V.K.; MANNERBERGER, A.A.; MIKHAYLOV, V.A.; MIKHAYLOV, N.M.; MURAV'YEV, I.M.; NYDEL'MAN, G.E.; PAVLYSHKOV, L.S.; POLUYANOV, V.A.; POLYAKOV, Ye.S.; POPOV, V.V.; POPOV, N.I.; RAKHLIN, I.Ye., RZHEVSKIY, V.V.; ROZENBERG, G.V.; ROZENTRETER, B.A.; ROKOTYAN, Ye.S.; RUKAVISHNIKOV, V.I.; RUTOVSKIY, B.N. [deceased]; RYVKIN, P.M.; SMIRNOV, A.P.; STEPANOV, G.Yu, STEPANOV, Yu.A.; TARASOV, L.Ya.; TOKAREV, L.I.; USPASSKIY, P.P.; FEDOROV, A.V.; FERG, M.E.; FRENKEL', M.Z.; KHEYFETS, S.Ya.; KHLOPIN, M.I.; KHODOT, V.V.; SHAMSHUR, V.I.; SHAPIRO, A.Ye.; SHATSOV, N.I.; SHISHKINA, N.N.; SHOR, E.R.; SHPICHENETSKIY, Ye.S.; SHPRINK, B.E.; SHTERLING, S.Z.; SHUTYY, L.R.; SHUKHGAL'TER, L. Ya.; ERVAYS, A.V.;

(Continued on next card)

ANDREYEV, A.B. (continued) .... Card 2.

YAKOVLEV, A.V.; ANDREYEV, Ye.S., retsenzent, redaktor; BERKEN-GEYM,B.M., retsenzent, redaktor; BERMAN, L.D., retsenzent, redaktor; BOLTINSKIY, V.N., retsenzent, redaktor; BONCH-BRUYEVICH, V.L., retsenzent, redaktor; VELLER, M.A., retsenzent, redaktor; VINOGRADOV, A.V., retsenzent, redaktor; GUDTSOV, N.T., retsenzent, redaktor; DEGTYAREV, I.L., retsenzent, redaktor; DEM'YANYUK, F.S., retsenzent; redaktor; DOBROSMYSLOV, I.N., retsenzent, redaktor; YELANCHIK, G.M. retsenzent, redaktor;ZHEMOCHKIN, D.N., retsenzent, redaktor; SHURAVCHENKO, A.N., retsenzent, redaktor; ZLODEYEV, G.A., retsenzent, redaktor; KAPLUNOV, R.P., retsenzent, redaktor; KUSAKOV, M.M., retsenzent, redaktor; LEVINSON, L.Ye., [deceased] retsenzent, redaktor; MALOV, N.N., retsenzent, redaktor; MARKUS, V.A. retsenzent, redaktor; METELITSYN, I.I., retsenzent, redaktor; MIKHAYLOV, S.M., retsenzent; redaktor; OLIVETSKIY, B.A., retsenzent, redaktor; PAVLOV, B.A., retsenzent, redaktor; PANYUKOV, M.P.,retsenzent, redaktor; PLAKSIN, I.N., retsenzent, redaktor; RAKOV, K.A. retsenzent, redaktor; RZHAVINSKIY, V.V., retsenzent, redaktor; RINBERG, A.M., retsenzent; redaktor; ROGOVIN, M. Ye., retsenzent, redaktor; RUDENKO, K.G., retsenzent, redaktor; RUTOVSKIY, B.N., [deceased] retsenzent, redaktor; RYZHOV, P.A., retsenzent, redaktor; SAMONIRSKIY, V.B., retsenzent, redaktor; SKRAMTAYEV, B.G., retsenzent, redaktor; SOKOV, V.S., retsenzent, redaktor; SOKOLOV, N.S., retsenzent, redaktor; SPIVAKOVSKIY, A.O., retsenzent, redaktor; STRAMENTOV, A.Ye., retsenzent, redaktor; STRELETSKIY, N.S., retsenzent, redaktor;

(Continued on next card)

ANDREYEV, A.V.,(continued) .... Card 3.

THET'YAKOV, A.P., retsenzent, redaktor; FAYERMAN, Ye.M., retsenzent, redaktor; KHACHATYROV, T.S., retsenzent, redaktor; CHERNOV, M.V., retsenzent, redaktor; SHERGIN, A.P., retsenzent, redaktor; SHESTOPAL, V.M., retsenzent, redaktor; SHESHKO, Ye.F., retsenzent, redaktor; SHCHAPOV, N.M., retsenzent, redaktor; YAKOBSON, M.O., retsenzent, redaktor; STEPANOV, Yu.A., Professor, redaktor; DEM'YANYUK, F.S., professor, redaktor; ZNAMENSKIY, A.A., inshener, redaktor; PLAKSIN, I.N., redaktor; RUTOVSKIY, B.N. [deceased] doktor khimicheskikh nauk, professor, redaktor; SHUKHGAL'TER, L. Ya, kandidat tekhnicheskikh nauk, dotsent, redaktor; BRESTINA, B.S., redaktor; ZNAMENSKIY, A.A., redaktor.

(Continued on next card)

ANDREYEV, A.V. (continued) .... Card 4.

[Concise polytechnical dictionary] Kratkii politekhnicheskii slovar'. Redaktsionnyi sovet; IU.A.Stepanov i dr. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1955. 1136 p. (MLRA 8:12)

1. Chlen-korrespondent AN SSSR (for Plaksin)
(Technology--Dictionaries)

15-57-10-13471

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 10, p 1 (USSR)

AUTHORS: Gumenskiy, B. M., Komarov, N. S., Voronin, M. I.

TITLE: History of Geological Investigations Related to the Construction of Roads in Russia from 1817 to 1870. (K istorii geologicheskikh issledovaniy dlya stroitel'stva dorog v Rossii v 1817-1870 gg)

PERIODICAL: Tr. In-ta istorii yestestvozn. i tekhn. AN SSSR, 1956, Nr 7, pp 3-22

ABSTRACT: The origin of that branch of Russian engineering geology which serves in the construction of roads can be traced to the very beginning of the nineteenth century. First efforts of the engineering-geological nature in this realm were made by the builders of highways and railroads -- the students and professors of the St. Petersburg Institute of Means of Communication of the

Card 1/3

GUMENSKIY, Boris Mikhaylovich, prof., doktor geologo-mineral.nauk;
KOMAROV, Nikolay Stepanovich, dotsent, kand.geologo-mineral.
nauk; POPOV, V.V., prof., doktor geologo-mineralog.nauk, red.;
SHNEYEROV, S.A., red.izd-va; SHLIKHT, A.A., tekhn.red.

[Vibrational drilling of soils] Vibroburenie gruntov. Moskva,
Izd-vo M-va kommun.khoz.RSFSR, 1959. 129 p. (MIRA 12:12)
(Boring)

GUBKINSKIY, B.N., doktor geol.-mineral.nauk, prof.; KOLESOV, N.S., kand.geol.-mineral.nauk, dots.

Geological mapping of landslide areas and general evaluation of their stability in surveying and planning railroad lines. Shor. LIIZHT no. 157:142-148 '58. (MIRA 12:11)
(Landslides) (Geology--Maps) (Railroads--Surveying)

GUMANSKIY, B.M., prof.; KOMAROV, N.S., dots.; NIKOLAYEV, B.A., kand. tekhn. nauk; SHAROBAYKO, T.N., red.

[Concise manual on geological field work] Kratkoe rukovodstvo po provedeniiu uchebnoi geologicheskoi praktiki; uchebnoe posobie. Leningrad, Leningr.in-t inzhenerov zheldro.transp., 1961. 61 p. (MIRA 15:5)
(Engineering geology--Study and teaching)

SHNAYDER, Shika Markovich. Prinimali uchastiye: GAL'PERIN, S.V.; KOMAROV, N.S., dots.; SIDOROV, N.N., nauchnyy red.; RUSAKOVA, L.Ya., ved. red.; SAFRONOVA, I.M., tekhn. red.

[Manual for geological engineers on linear studies] Spravochnik inzhenera-geologa lineinykh izyzkanii. Leningrad, Gostoptekh-izdat, 1962. 284 p. (MIRA 16:1)
(Engineering geology)

KOMAROV, N.S., kand.geologo-mineral. nauk, dotsent

Compaction of waterlogged clayey soil by loading combined with the brief effect of an electric current. Sbor. trud. LIIZHT no.196:35-39 '62. (MIRA 16:9)

GUMENSKIY, B.M.; KOMAROV, N.S.

Training students of construction specialities in railroad institutes from the viewpoint of engineering engineering geology. Izv.vys.ucheb.zav.; geol. i razv. 6 no.10:142-148 O '63. (MIRA 18:4)

1. Leningradskiy institut inzhenerov zheleznodorozhnogo transporta.

ACC NR: AR4045188 S/0269/64/000/007/0063/0063

SOURCE: Ref zh. Astronomiya. Otd. vyp., Abs. 7.51.506

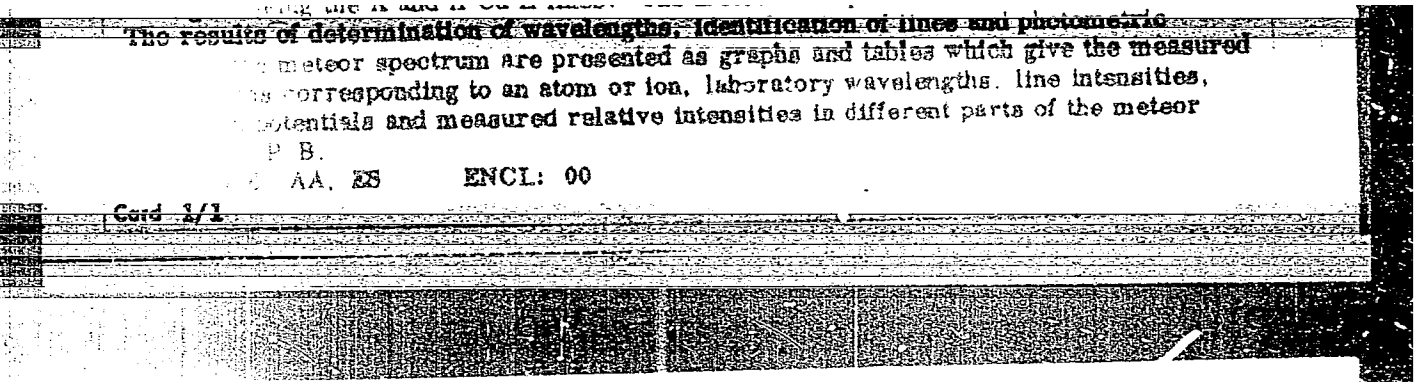
AUTHOR: [illegible]ROV, N.S.

TITLE: Investigation of the spectrum of the meteor of 12 August 1958

CITED SOURCE: Tr. Odessk. un-ta. Izv. Astron. observ. v. 152 no. 2. 1963. 83-88

TOPIC TAGS: meteor, meteor spectrum, upper atmosphere, meteor stream, Perseids

TRANSLATION: The spectrum was obtained using a F-24 camera (D:F = 1:4.5, F=5"), a prism with a refracting angle of 17°. The spectrum contains 16 lines, the strongest the K and H Ca II lines. The meteor was part of the Perseids stream. The determination of wavelengths, identification of lines and photometric [illegible] are presented as graphs and tables which give the measured



The results of determination of wavelengths, identification of lines and photometric
meteor spectrum are presented as graphs and tables which give the measured
corresponding to an atom or ion, laboratory wavelengths, line intensities,
potentials and measured relative intensities in different parts of the meteor
P B.
AA, ES ENCL: 00

Card 2/2

KOMAROV, N. S. DECEASED 1963/4

Refrigeration 1963

KOMAROV, N. S.

On 31 May 1946, at the Power Engineering Institute imeni Molotov, defended his dissertation on "Theoretical and Experimental Investigations of Extended Grounding". Official opponents - Doctor of Technical Sciences Professor K. M. Polivanov, and Candidate of Technical Sciences A. I. Dolginov.

So: Elektrichestvo, No 4, April 1947, pp 90-94 (U-5577, 18 February 1954)

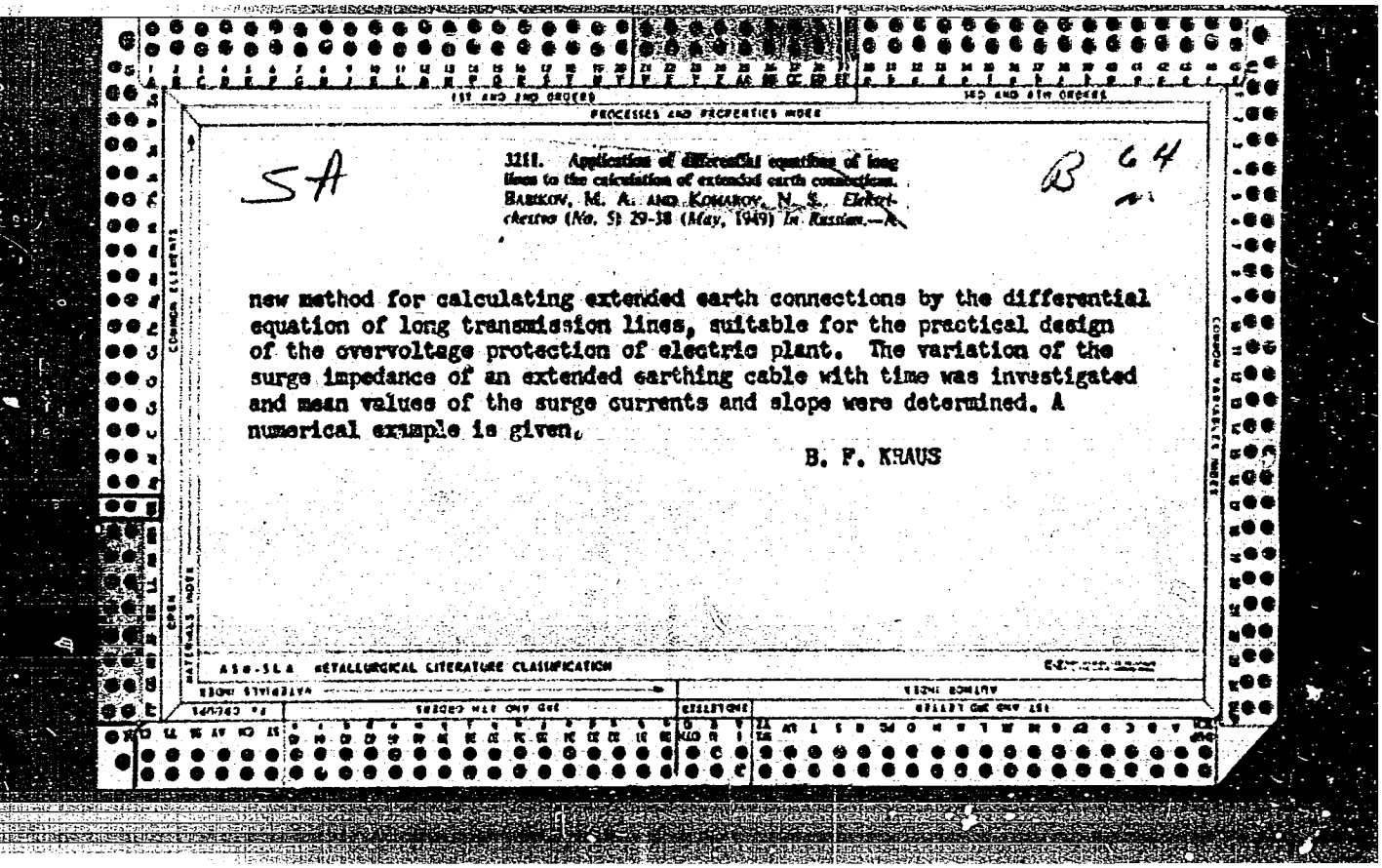
A new method was presented of calculating extended grounding which was suitable for practical use and development, based on differential equations of long lines. The method is based on experimental data. The foundation of the calculation of extended grounding employs the following neutralized parameters: self-induction, capacitance, active resistance, and conductance of the leakage factor of extended grounding. The neutralized parameters may be determined both experimentally and by calculations. The capacitance with a specific ground resistance of less than 105 ohms per centimeter may be disregarded. The small disparities between the computed data and the experimental results confirm the correctness of the proposed method.

So: IBID

BABIKOV, M.A., professor; KOMAROV, N.S.; SERGEYEV, A.S.; AKOPYAN, A.A., retsenzent; DOLGINOV, A.I., retsenzent; BAPTIDANOV, L.N., redaktor.

[Textbook on high voltage technology] Tekhnika vysokikh napriazhenii. Pod. red. M.A.Babikova. Moskva, Gos. energ. izd-vo, 1947. 312 p. (MLRA 7:4)

(Electric engineering)



5A

1211. Application of differential equations of long lines to the calculation of extended earth connections. BARKOV, M. A. AND KOMAROV, N. S. *Elektrichestvo* (*No.* 5) 29-38 (*May*, 1949) *In Russian.*—A

B 64

new method for calculating extended earth connections by the differential equation of long transmission lines, suitable for the practical design of the overvoltage protection of electric plant. The variation of the surge impedance of an extended earthing cable with time was investigated and mean values of the surge currents and slope were determined. A numerical example is given.

B. F. KRAUS

KOMAROV, N.S.

DROZDOV, N.O., professor, doktor tekhnicheskikh nauk; PRIVEZENTSEV, V.A., professor, doktor tekhnicheskikh nauk; KOMAROV, N.S., dotsent, kandidat tekhnicheskikh nauk; NIKULIN, N.V., dotsent, kandidat tekhnicheskikh nauk; SHUMYAKIY, I.I., dotsent, kandidat tekhnicheskikh nauk; KREMLEVSKIY, P.A., kandidat tekhnicheskikh nauk; GEPPE, A.P., inzhener; ALEKSANDROV, N.V., professor, doktor tekhnicheskikh nauk; TARNYEV, B.M., professor, doktor tekhnicheskikh nauk; EYGENSON, L.S., professor, doktor tekhnicheskikh nauk; STEPANOV, V.S., dotsent, kandidat tekhnicheskikh nauk; MAGIDSON, A.O., inzhener.

"Science of electrical materials." M.M.Mikhailov. Reviewed by N.O. Drozdov, and others. Elektrichestvo no.3:93-94 Mr '54. (MLRA 7:4)

1. Moskovskiy energeticheskiy institut im. Molotova. 2. Vsesoyuznyy zaochnyy energeticheskiy institut.
(Electric insulators and insulation) (Electric conductors)

KOMAROV, N.S.

BABIKOV, Maksim Alekseyevich, professor, redaktor; KOMAROV, Nikita Semenovich; SEROMYEV, Aleksandr Sergeyevich; DOLGINOV, A.I., redaktor; VORONIN, K.P., tekhnicheskiy redaktor.

[High tension engineering] Tekhnika vysokikh napriazhenii Pod red. M.A.Batikova, Izd. 2-e, perer. Moskva, Gos. energet. izd-vo 1955. 287 p. (MLRA 8:12)
(Electric power distribution--High tension)

BABIKOV, Maksim Alekseyevich, prof.; KOMAROV, Nikita Semenovich; SERGEYEV, Aleksandr Sergeyevich; KUKHARKIN, Ye.P., dots., retsenzent; KOGEN-DALIN, V.V., dots., kand. tekhn.nauk, red.; LARIONOV, G.Ye., tekhn. red.

[High-voltage engineering] Tekhnika vysokikh napriazhenii. Izd.3., perer. Moskva, Gosenergoizdat, 1963. 670 p. (MIRA 17:2)

GUMENSKIY, Boris Mikhaylovich, doktor geol.-miner. nauk, prof.; KOMAROV, N.S., kand. geol.-miner. nauk, dots., nauchn. red.

[Principles of the physical chemistry of clay soils and their utilization in construction] Osnovy fiziko-khimii glinistykh gruntov i ikh ispol'zovanie v stroitel'stve. Leningrad, Stroiizdat, 1965. 254 p. (MIRA 18:7)

OA

13

Microfertilizers for flax. N. V. Komarov. *Len i Konoplya* 1939, No. 6, 40; *Khim. Referat. Zhur.* 1939, No. 11, 81.—Deficiency of B in soils causes bacteriosis in flax. The disease is characterized by a smaller growth, a reduction of the root system and a decrease of the amt. of seeds. The effects of Mn, Cu, Zn and Al on the life of the plants are described. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SHOSTAKOVSKIY, M.F.; SHIKHIYEV, I.A.; KOMAROV, N.V.

Research in the field of synthesis and conversion of silicon organic compounds containing oxygen. Dokl.AN Azerb.SSR 11 no.11; 757-763 '55. (MLRA 9:5)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo AN SSSR. Predstavleno deystvitel'nym chlenom AN Azerbaydzhanskoy SSR Yu.G. Mamedaliyevym.

(Silicon organic compounds)

Synthesis and transformations of unsaturated organosilicon compounds. I. Synthesis and transformations of tertiary organosilicon acetylenic alcohols. M. F. Shostakovskii, I. A. Shikhiev, and N. V. Komarov (N. D. Zelinskii Inst. Org. Chem., ...). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 1271-4. ... EtBr 82 g. $Me_2C(OH)C:CH$ was added with cooling, the mixt. stirred 4 hrs., left overnight, 0.5 g. Cu_2Cl_2 and 1 g. $HgCl_2$ added, the mixt. cooled and treated with 54 g. Me_3SiCl, stirred 3 hrs., heated 2 hrs. ...

3

[illegible], gamma-hydroxypropyl-trimethylsilane and corresponding organic acid (glacial CH_3COOH, propionic, isobutyric) and subsequent fractionation in vacuum, were obtained the following partial organosilicon acetals $CH_3CH(OCOR)O(CH_2)_3Si(CH_3)_3$ (listing consecutively R, yield in %, BP in °C/mm, $n^{20}D$, d_4^{20}): CH_3, 59.5, 92-93/8, 1.4218, 0.9027; C_2H_5, 73.15, 99-100/7, 1.4242, 0.8979; $(CH_3)_2CH$, 64.0, 110-111/7, 1.4262, 0.8935.

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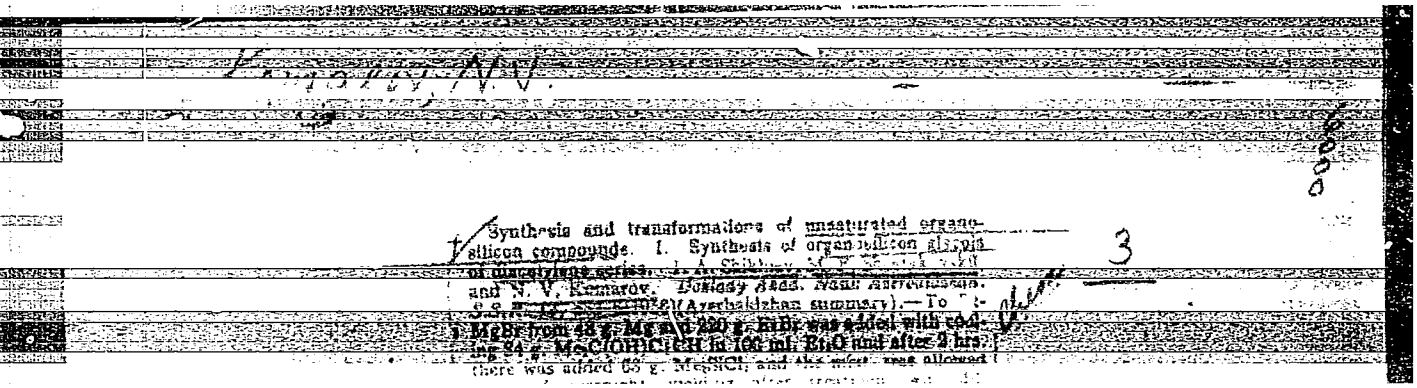
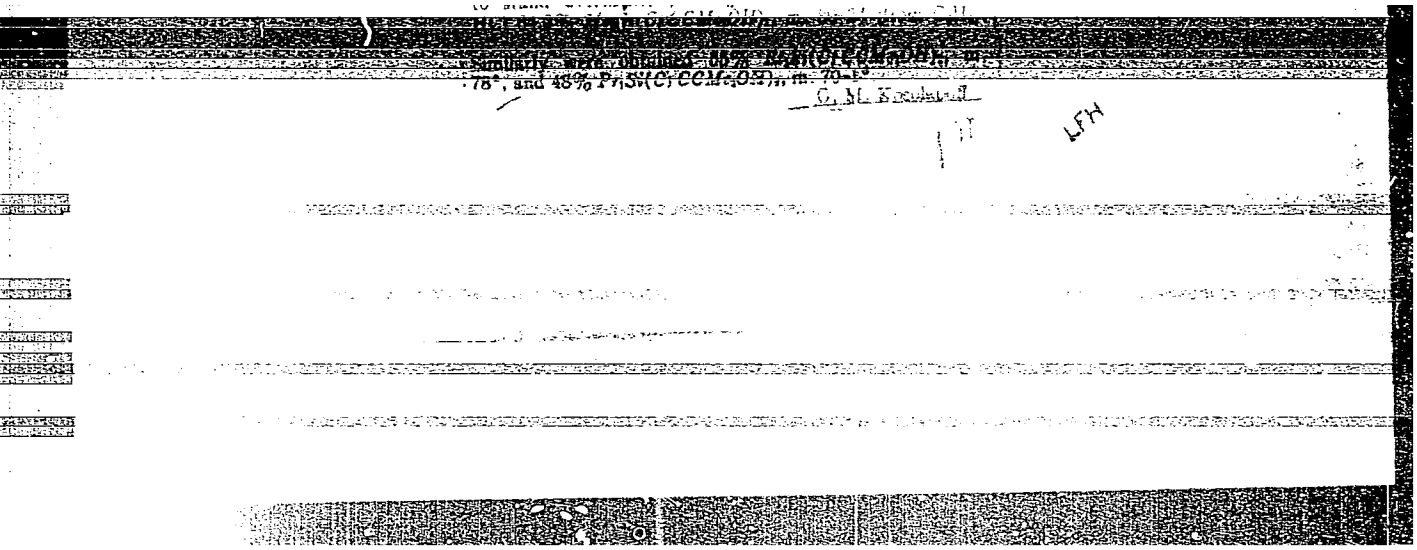


Synthesis and transformations of unsaturated organo-
silicon compounds. I. Synthesis of organosilicon alcohols
of nonaliphatic series. [illegible]
and N. V. Komarov. *Doklady Akad. Nauk Azerbaidzhan.*
[illegible] (Azerbaidzhan summary).—To [illegible]
MgBr from 48 g. Mg and 220 g. RBr was added with cool-
ing 84 g. $Me_2(OMe)SiH$ in 100 ml. Et_2O and after 2 hrs.
there was added 60 g. $MeSiCl_3$ and the mixt. was allowed



KOMAROV, N.V.

SHOSTAKOVSKIY, M.F.; SHIKHIYEV, I.A.; KOMAROV, N.V.

Investigations in the field of the synthesis and conversion of oxygen-containing silicon organic compounds. Report no.3: Synthesis and conversion of some vinyl esters of γ-hydroxipropyltrimethyl- and methyldiethylsilanes. Izv. AN SSSR, Otd. khim. nauk no.12:1493-1499 D '56. (MLRA 10:4)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo Akademii nauk SSSR.

(Silane)

KOMAROV, N.V.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000824030002-2"

USSR/Organic Chemistry - Synthetic Organic Chemistry E-2

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4468

Author : Shikhiyev, I.A., Komarov, N.V.
Inst : Academy of Sciences USSR
Title : Investigations of the Synthesis and Conversions of Oxygen-Containing Organosilicon Compounds. Synthesis of Organosilicon Acetals on the Basis of Vinyl Ether of Gamma-Hydroxypropyl-Trimethylenesilane, Organosilicon Alcohols and Silanol.

Orig Pub : Dokl. AN SSSR, 1956, 108, No 2, 279-281

Abstract : By heating equimolecular amounts of $CH_2{=}CHO(CH_2)_3Si(CH_3)_3$ and an organosilicon alcohol $(C_2H_5)_3SiOH$, $(CH_3)_3SiCH_2OH$ or $(CH_3)_3Si(CH_2)_3OH$ with an addition of 30% solution of HCl, at 65° for 30 minutes, there have been synthesized

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KOMAROV, N. V.

USSR/Organic Chemistry. Synthetic Organic Chemistry. E-2

Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19257

Author : Shostakovskiy M. F., Shikhiyev I. A., Komarov N. V.
Inst :
Title : Investigations in the Field of Synthesis and Conversion of Unsaturated Silicoorganic Compounds. Synthesis of Silicoorganic Clucoles of Diacetylene Series.

Orig Pub: Dokl. AN SSSR, 1956, 109, No 2, 344-346.

Abstract: Described is the synthesis of diacetylene silicoorganic glucoles $HOC(CH_3)_2C-CSi(R)_2C-CC(CH_3)_2OH$ (Ia-c) (a R=CH_3; b R=C_2H_5; c R=C_3H_7). To C_2H_5MgBr, prepared from 48 g. Mg and 220 g C_2H_5Br, are added under cooling 1 mole of dimethylacetylenylcarbinole in 100cc abs. ether and 0.5 mole $(CH_3)_2SiCl_2$, after 12 hours is added 10-15% HCl, from the ether layer is isolated Ia, yield 64.3%, m.p. 80-82° (from benzene). Analogically were obtained Ib, yield 55%, m.p. 76-78°, and Ic, yield 48%, m.p. 70-71°. The presence

Card : 1/2

KOMAROV, N. V. Cand Chem Sci -- (diss) "Study in the field of the synthesis and conversion of unsaturated oxygen-containing silicoorganic compounds." Mos, 1957. 16 pp 22 cm. (Acad Sci USSR. Inst of Organic Chemistry im N.D. Zelinskiy), 130 copies (KL, 7-57, 104)

//

KOMAROV, N.V.

SHIKHIYEV, I.A.; SHOSTAKOVSKIY, M.F.; KOMAROV, N.V.

Synthesis and transformation of silicon organic compounds containing oxygen. Report No.8: Interaction of vinyl ethers with silanes and β-alcohols containing silicon. Izv. AN SSSR. Otd. khim. nauk no.9:1132-1133 S '57. (MIRA 10:12)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.
(Vinyl ether) (Silane) (Alcohols)

Distr: 4E4j/4E3d/4E2c( )

Synthesis and transformations of [illegible] organic silicon compounds. I. Synthesis of [illegible] silicon-bearing alcohols of the acetylenic series. [illegible] Shikhiev, M. F. Shostakovskii, N. V. [illegible] and [illegible] D. Zelinskii [illegible] U.S.S.R., Moscow). [illegible] Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk 1957, 1120-41; cf. C.A. 51, [illegible] 10 g. Mg was added at [illegible] MgBr [illegible] stirred 3 hrs. [illegible] 6 g. HC:C-(OH)C:CH and the mixt. stirred [illegible] with 1 g. CuCl2 and [illegible] refluxed 12 stirred 2-3 hrs. [illegible] with [illegible] yielding treated with strong cooling [illegible] 16 hrs., treated with aq. HCl [illegible] 53.1% [illegible] CCMe2OH [illegible] Me2C(OH)C [illegible] 93% [illegible] resulted in [illegible] CHSiCl3 similarly [illegible] Me2OH, m. 172.5-73° (dioxane). V. Synthesis of mixed diacetylenic organosilicon glycols. [illegible] A. Shikhiev and I. A. Kayutenko. Ibid. [illegible] of 0.5 mole Me2C(OH)C:CH with [illegible] treatment of the cooled mixt. with [illegible] HCl gave after refluxing 4 hrs. and [illegible] 17.1% (HOCMe2C [illegible] genated over Raney Ni in EtOH [illegible] heated with Ac2O gave the [illegible] n_D^{20} 1.5112. Similarly were [illegible] Me2C:CSiMePh, m. 98.3° [illegible] m. 123-4°, 83.8% (HOCMe2 [illegible] (HOCMe2C:C)2SiMeC6H5, m. [illegible]

[illegible]

Inst Org Chem, AS USSR

5(3)

AUTHORS: Shikhiyev, I. A., ~~Komarov, N. V.,~~ Aslanov, I. (Baku)

SOV/74-27-12-4/4

TITLE: Synthesis and Some Transformations of Organic and Organosilicon Acetals (Sintez i nekotoryye prevrashcheniya organicheskikh i kremniyorganicheskikh atsetaley)

PERIODICAL: Uspekhi khimii, 1958, Vol 27, Nr 12, pp 1504 - 1517 (USSR)

ABSTRACT: In the present paper the authors carried out a comparative estimation of organic and organosilicon acetals by comparing their properties, conditions of synthesis and some transformations based upon acetylene, aldehydes, organic and organosilicon alcohols and silanols. Comparing the methods of synthesis of organic acetals with those of organosilicon acetals the former are stated to show a greater variety. Investigations in the field of synthesis of acetals were started on the basis of acetylene as well as of alcohols containing 1, 2, and 3 carbon atoms in the presence of various catalysts. On the strength of comprehensive investigations it was found that vinyl ethers are valuable initial substances for various syntheses. It was found that apart from acetylene alcohols, also acetylene glycols are good

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initial substances for the synthesis of acetylene acetals. As far as the saturated glycols are concerned it is known (Refs 24 and 25) that some ethylene glycol derivatives have been widely applied to the field of preparative organic chemistry and various industries. The investigations of the synthesis of cyclic acetals and their application are of great theoretical and practical importance. Silicon containing acetals take a special position (Refs 38 - 41). Organic acetals are colorless, transparent liquids smelling like ether. It is possible to explain the formation of organic acetals in their synthesis from vinyl ether and alcohols on the basis of Shostakovskiy's oxonium theory (Refs 13, 42 - 45). It was shown (Refs 74 and 23) that on heating vinyl ether with alcohol in the autoclave corresponding acetals are formed also without a catalyst. Organic acetals have particular properties which are due to their structure. They are easily formed and are inclined to decompose. It is a well-known fact that (Refs 13, 15, 16) mixed alkyl acetals disproportionate on heating and that they form corresponding symmetric acetals. When heated under atmospheric pressure

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alkyl aryl acetals are split off and phenol is separated (Ref 60). Thus a new method of indirect synthesis of different vinyl ethers by means of distillation of alkyl aryl acetals under atmospheric pressure was discovered. This method is the basis of the indirect synthesis of vinyl ethers of a series of unsaturated tertiary and aliphatic alcohols the synthesis of which can hardly be carried out in a different way. In 1953 the chemistry of organosilicon acetals was introduced for the first time on the basis of vinyl alkyl ether and trialkylsilanols (Refs 61, 62). Later on this reaction was also applied to other representatives of trialkylsilanols (Refs 62 - 65), alkyl aryl silanols (Refs 38, 40, 66 - 68), dialkyl silandiols (Ref 69) and organosilicon alcohols (Refs 38, 70 - 72). According to their structure, organosilicon acetals are divided into symmetric and asymmetric ones. In 1954 the authors of the present paper obtained acetals from α-silicon containing alcohols and vinyl ethers (Refs 38, 40). In 1955 the authors obtained organosilicon acetals on the basis of organosilicon vinyl ethers and alcohols as well as silanols; the mentioned acetals contained

silicon atoms in both alcohol radicals (Refs 74, 76). Organosilicon acetals are colorless, transparent and oily liquids smelling like ether. They are easily soluble in organic solvents and not soluble at all in water, compared to organic acetals their freezing point is much lower and they are most resistant. Based upon Shostakovskiy's oxonium theory (Refs 13, 42, 43) it may be assumed that the formation of organosilicon acetals is due to an ion mechanism. Their chemical properties remind us of organic acetals. Nevertheless, new peculiar properties are found in those compounds due to an interaction of silicon and other atoms forming the molecule. It is worth while to carry out further investigation of organosilicon acetals. With respect to their reactivity they are related with their organic analogs and they could, therefore, easily be used as valuable initial substances for numerous transformations which have been well investigated in the case of corresponding organic acetals but are unknown in the case of organosilicon acetals.

SOV/62-59-1-23/38

5(3)
AUTHORS: Khomutov, A. M., Shikhiyev, I. A., Komarov, N. V., Alimov, A. P.

TITLE: Investigations in the Field of Chemical Transformations of Unsaturated and High-Molecular Compounds (Issledovaniya v oblasti khimicheskikh prevrashcheniy nepredel'nykh i vysokomolekulyarnykh soyedineniy) Communication 8. Copolymerization of γ-Silicon—Containing Vinyl Ethers and Methyl Methacrylate (Soobshcheniye 8. Sopolimerizatsiya γ-kremnesoderzhashchikh prostykh vinilovykh efirov i metilmetakrilata)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 1, pp 140 - 143 (USSR)

ABSTRACT: In the present paper the authors investigated the copolymerization of methyl methacrylate and vinyl ether which contain the silicon atom in γ-position with respect to ethereal oxygen. Ether of γ-hydroxy-propyl-trimethyl silane (Ref 1) and γ-hydroxy-propyl-methyl-diethyl silane (Ref 2) were used. These compounds were copolymerized in the presence of benzoyl peroxide and dinitrile of azoisobutyric acid. According to the experimental data obtained the following regularities were found: on the increase of γ-silicon-containing vinyl ether in the reaction medium the yield of copolymers is decreased while the number of the members of vinyl ether in them is increased (Fig). Similar rules have been already observed in the copolymerization of vinyl ether and vinyl ester (Ref 3). As may be seen from it, the content of γ-silicon-containing vinyl ether in the copolymer does not exceed 50 mol-%. The polymerization according to radical mechanism was not observed with γ-silicon-containing vinyl ether. As already mentioned in reference 4, it may be assumed that in this case reaction is started by a complex radical. The latter is produced by the addition of the more active monomer of methyl methacrylate to the radical which was formed in the decomposition of the initiator. A comparison between γ-silicon-containing vinyl ether and the vinyl alkyl ethers demonstrated that the reactivity of vinyl ether is reduced by the presence of silicon in γ-position (Table 1). The results of investiga-

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Card 2/3

tion mentioned in table 2 permit the conclusion that the substitution of ethyl groups for methyl groups reduces somewhat the yield of copolymers in the case of γ-silicon-containing ether. However, the composition of the copolymers is hardly affected by that. In the investigation of the copolymerization of γ-silicon-containing vinyl ether and methyl methacrylate it was stated that their copolymers receive new properties in the presence of silicon. There are 1 figure, 3 tables, and 4 Soviet references.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: May 22, 1957

5 (3)

AUTHORS: Shostakovskiy, M. F., Komarov, N. V. Shikhiyev, I. A.

SOV/74-28-6-4/5

TITLE: Silanols (Silanoly)

PERIODICAL: Uspekhi khimii, 1959, Vol 28, Nr 6, pp 741 - 771 (USSR)

ABSTRACT: The present paper describes the methods of synthesis and the properties of silanols. Silanols are compounds containing hydroxyl groups directly bound to the silicon atom. Owing to particular affinity of the silicon atom to oxygen, there are silicon-organic compounds with one, two and three hydroxyl groups with the silicon atom. In this connection, they are classified into alkyl (aryl) silanols with the common formula R_3SiOH, silandiols $R_2Si(OH)_2$, and silantriols $RSi(OH)_3$. Of the mentioned compounds, the trialkyl (aryl) silanols are best investigated. They are highly reactive compounds and have great practical and theoretical importance. In contrast to silicon-organic alcohols, there are a number of common methods of synthesis for silanols. For some representatives of this class, there are quite special methods of synthesis peculiar to them. Of the methods of synthesis, the following were described:

the hydrolysis of halogen silanes (Refs 8, 10-63), of alcoxysilanes (Refs 25,35,64-75), of acetoxysilanes (Refs 10,76-81), of aminosilanes (Refs 10,21,82-90), the magnesium-organic synthesis (Refs 91-95), the cleavage of siloxanes (Refs 95-103), the cleavage of tetrasubstituted silanes (Refs 102,104-124), and the hydrolysis of hydride silanes (Refs 35,60,84,128-132). Besides the mentioned general methods of obtaining silanols, special publications describe many other methods which are suitable for the synthesis of compounds with a certain structure (Refs 5,24,31,102,103,111,124,133-147). The physical properties of many silanols have not yet been fully characterized (Table). For some representatives, the physical constants are contradictory. In spite of this, certain rules referring to their physico-chemical properties can be determined from the data indicated in the table of the compounds of this class (Refs 32,148-155). Trialkyl (aryl) silanols remind of tertiary alcohols as to their structure. Silandiols and silantriols have no analoga among organic compounds. Silanols are, in general, similar to the corresponding organic alcohols, but by the presence of the silicon atom their properties attain a character peculiar to them. This brings about that in many ca-

Silanols

ses they react differently from alcohols. Some of these reactions were considered closely and compared with the corresponding reactions of organic analoga: action of metals and lyes (Refs 8,12,31,43,60,68,81,96-103,203,205-222), dehydration of silanols (Refs 4,24,26,33,35,37,46,47,60,63,68,190,224-226), interaction with halogen silanes (Refs 11,21,128,227,230,231), action of mineral acids (Refs 31,62,228,232,233), interaction with acid anhydrides and halogen anhydrides (Refs 22,31,41,61, 223,227,324,235), interaction with alcoxysilanes (Refs 21,230, 236-239), reaction with vinyl ether (Refs 52,80,87-90,226,240-244), action of Fischer's reagent (Refs 169,245), interaction with isocyanates (Refs 37,51,183,246), hydration of silanols (Refs 37,247). As mentioned before, silanols are highly reactive substances which are capable of undergoing various reactions. Some of these reactions were described (Refs 37,21,49,53, 81,102,139,167,169,172,206-209,223,249-264).Silanols are used in industry for the production of various resins (Refs 257-265), heat-resisting coats (Refs 203,209), bactericide substances (Ref 265), adhesives (Refs 267,268), water-repellent agents (Refs 210,268), for impregnating paper (Ref 270), as diffusion

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liquids (Ref 237), for lubricating oils (Ref 237) and for many other substances. There are 1 table and 270 references, 65 of which are Soviet.

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ABSTRACT: Contrarily to vinyl ethers (Ref 1) the synthesis and the properties of organosilicon vinyl ethers are not mentioned in publications at all. The present paper describes the vinyl ethers of γ-silicon-containing alcohols according to Favorskiy-Shostakovskiy. At the same time it must be observed that the synthesis of the silanol ethers of the α- and β-silicon-containing alcohols did not succeed in this way. The common vinylating method, using caustic potash as well as Na and potassium silanolates, proved inadequate for the purpose. The use of alcoholates of the same reacting alcohols favors vinylation. According to the method worked out, the synthesis of the γ-silicon-containing vinyl ethers was carried out:

$2R_3SiCH_2OH + CH \equiv CH \rightarrow R_3SiCH_2-O-CH_2SiR_3 + H_2O$, where R≡ alkyl.

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Synthesis and Transformations of Organosilicon Vinyl Ethers

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The affiliation of alcohols, silanols, and organic acids to the γ-silicon-containing vinyl ethers takes place under the influence of acid catalysts according to the ion mechanism, in agreement with Markovnikov's rule. On their reaction with organosilicon alcohols and silanols, hitherto unknown acetals were obtained, containing silicon atoms in both alcohol radicals. The reaction of these ethers with organic acids can serve as a basis for the synthesis of a new class of organosilicon compounds, i.e. organosilicon acylates. Hydrogenation, chlorination, and hydrochlorination of the γ-silicon-containing vinyl ethers were investigated. There are 3 tables and 12 Soviet references.

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