LIST OF SYMBOLS

(The section defining the quantity or the defining formula is indicated in parentheses)

A — Relative adsorption (24.10).
C — Effective capacitance (§4).
C — Capacitance of edge effect (§14).
C_p — Parasitic capacitance.
C_0 — Total capacitance of the insulated system.
D — Coefficient of diffusion.
E — Electric field strength.
G — Kernel of the integral equation of an aspiration counter (§3).
I — Current intensity.*
K — Boltzmann constant.
L — Maximum value $\lambda_{\pm}\,\Phi/k_0 I(k_0)$ (§32).
N — Electric flux.*
P — See Greek Ρ.
Q — Charge.*
R — Resistance.
R_p — Leakage resistance (§26). R_p
$\tilde{R}$ — Relative effective scale of turbulence (§20). $\bar{R}$
Re — Reynold's number (15.1), (21.7), (§34).
S — Surface area.
T — Absolute temperature.
U — Voltage between the collector and repulsive plate.*
U — Equilibrium voltage of the collector plate (§16).*
V — Volume.
a and b — Constants of the measuring capacitor (16.6), (16.7), (16.8), (16.18).
d — Differential; distance between the plates of a parallel-plate measuring capacitor.
e — Elementary charge.
g — Acceleration due to gravity.
h — Mesh width of grid.
h_{ψ} — Operator $1-\psi\frac{\partial}{\partial\psi}$ (5.1).
j — Current density.
$\underset{.}{k}$ — Mobility (1.1).*
$\underset{.}{k}_0$ — Limiting mobility (4.3).*
$\underset{.}{k}'$ — Characteristic mobility (16.14), (16.21).*
l — Length of measuring capacitor.
ln — Natural logarithm.
lg — Logarithm to the base 10.
m — Mass of air-ion; subscript, taking on integral numbers.
n — Subscript, taking on integral numbers.
q — Charge of air-ion.*
r — Distance from the axis of the capacitor.
r_0 — Wire radius.
r_2 and r_1 — Radii of the outer and the inner plate of a cylindrical capacitor.
s — Relative standard deviation.

* For footnote, see p.160.

$s_{\Delta UC}$ and $s_{\tau UC}$ — Relative standard deviation, characterizing the stability of the voltage supply and the effective capacitance of the measuring capacitor, respectively (§28).
s_{Δ} and $s_{\Delta\Delta}$ — Standard deviations characterizing the stability of the conditional charge density (§30).
t — Time.
t_0 — Filling time of the measuring capacitor (13.1), (13.2).
u — Velocity of air flow.
u_0 — Velocity of the potential flux at a distance from the surface: mean velocity of the turbulent flow.
v — Velocity of air-ion.
x — Distance along the axis from the beginning of the measuring capacitor; arbitrary quantity.
y — Distance from the surface of the plate.
Δ — Difference, absolute errors.
Λ — Conditional conductivity (5.21).
P — Conditional charge density (5.14).
Φ — Flow rate (throughput rate).*
α and β — Voltage ratios (§29).
δ — δ-Function; relative deviation of some quantity; limiting relative error.
ε — Turbulent intensity (20.3).
ϑ — Dimensionless time (19.22), (27.12).
λ — Conductivity (§1).
$\lambda_{\pm}$ — Polar conductivity (§1).
$\lambda(\underset{.}{k}_1, \underset{.}{k}_2)$ — Partial conductivity (1.7).*
μ and μ_t — Constants of the measuring capacitor (§19); (§20).
ν — Kinematic viscosity.
$\underset{.}{\varrho}$ — Charge density.*
$\varrho(\underset{.}{k})$ — Charge density spectrum (§1).*
$\varrho(\underset{.}{k}_1, \underset{.}{k}_2)$ — Partial charge density (1.5).*
σ — Standard deviation.
σ_{QK} — Standard deviation of the charge, generated the moment the switch is opened (§28).
σ_{UE} — Mean-square error in measuring the voltage with the aid of an electrometer.
σ_{UR} — Mean-square value of the emf of the insulator (§28).
τ — Time constant.
ψ — Arbitrary parameter of the measuring capacitor C, U, or Φ.
$\omega = 1/\underset{.}{k}_0$.*

In the figures a square with the letter U denotes a voltage source, a circle with the letter I an ammeter, a circle with the letter E an electrometer.

* The symbol without a dot denotes the absolute value of the considered quantity: $x = |\underset{.}{x}|$ (§1).

APPENDIX I

Special Factors in Measurement at High Altitudes

The measurement of the air-ion spectrum at high altitudes differs from ground-level measurement primarily in that the former is carried out under conditions of low pressure and correspondingly high mobility. The mobility of light ions is inversely proportional to the air density /Loeb, 1960/ over a large range and is calculated via the formula

$$k = \frac{p_n T}{p T_n} k_n, \quad (A.1)$$

where k, p, T are respectively the mobility, pressure, and absolute temperature, and k_n, p_n, T_n are respectively the values of the same quantities under normal conditions. The first column of the summary Table A lists data on the standard model of the atmosphere CIRA 1961 and correspondingly calculated mobilities of O_2^+ ions. The initial value for the mobility of O_2^+ ions was taken from the paper /Maushart, 1968/.

We shall consider briefly some problems which specifically apply to measurements at high altitudes:

1. **The uncertainty in the mobility.** The mobility is in principle determined in a system, the dimensions of which are considerably larger than that of the free mean path of the particles. Therefore, particles of normal dimensions are not suitable for measuring the mobility of molecular ions at altitudes higher than 90 kilometers, where the mean free path is of the order of 1 cm or more. Values for the mean free path length l_0 at different altitudes are listed in Table A.

2. **Permissible field strengths.** If the energy transferred to the air-ions by the electric field is of the same order of magnitude as the mean energy of thermal motion, then the law describing the proportionality of velocity to field strength is no longer valid.

An estimate on the basis of the formula $KT \approx m(kE)^2$ and experimental data /Mitchell, Riedler, 1934; Balog, 1944/ indicate that under normal conditions a field strength exceeding 10 kV/cm is inadmissible. Results of the calculation of E_{max} at different altitudes are shown in Table A.

3. **Permissible air velocity.** At high altitudes the kinematic viscosity of air increases. Quantitative data are given in Table A. It is easier, therefore, to maintain a laminar flow. Table A gives the velocity u_{cr}, at which $Re = ur/v$ in a tube with diameter d cm reaches the value 100 d. At an altitude of 50 km u_{cr} exceeds the speed of sound. The operation of aspiration counters under ultrasonic conditions has not been studied. Using conventional instruments and computation methods, a velocity of 200 m/sec should not be exceeded (the sound speed at an altitude of 80 km equals 270 m/sec).

4. Measurement of the air flow rate. No convenient methods are known for the direct measurement of the air flow rate through a measuring capacitor at high altitudes. In practice, the flow rate is determined by calculation from the velocity at which the instrument moves. This imposes additional limiting demands on the counter design and introduces an element of uncertainty into the measurement results. To increase the accuracy the instrument must be calibrated with the aid of a complex device /Oster, Dolezalek, 1966/.

5. **Air-ion distribution.** In the range of high mobilities the linear dispersion dx/dk (x is the settling coordinate of an ion entering the measuring capacitor at the edge of the repulsive plates) of air ions in a measuring capacitor is small, which distorts the distribution of air ions over the mobilities in the differential measuring capacitor /Dolezalek, 1962b; Dolezalek, Oster, 1965, 1965b/.

The dispersion depends on the angle between the air-ion trajectories and the flow lines of the air flow. Table A lists values of the field strength E_{cr}, at which the slope of the trajectories of O_2^+ ions in a flow of velocity u_{cr} or 200 m/sec (if $u_{cr} > 200$ m/sec) equals 45°. A comparison of the values listed under E_{max} and E_{cr} shows that at $H \geq 50$ km, $E = E_{max}$ and $u = 200$ m/sec the slope of the trajectories of the O_2^+ ions is close to 45°

6. **Volta effect.** The induced decrease in the working voltage of the measuring capacitor increases the relative value of the contact potentials between the plates of the measuring capacitor as well as the corresponding error in the determination of the limiting mobility. The contact potential between the plates of a standard measuring capacitor is of the order of 0.1 V, which at a height of 80 km causes a serious error. The contact potential is very unstable, and, consequently, it is difficult to make allowance for it. For this it would be necessary to plot the characteristics in the mobility range /Bordeau, Whipple, Clark, 1959/. In order to suppress the Volta effects the plates of the measuring capacitor are covered with a homogeneous, chemically stable substance. From experience in the manufacture of oscillating capacitors for electrometers it is known that the best results are obtained by gold plating. This is considered in the design of special measuring capacitors for operation at low pressures /Dolezalek, Oster, 1965, 1966a/.

7. **Diffusion of air ions.** The limiting resolving power of the spectroscopic instrument (Formula (34.21)) depends primarily on the voltage of the measuring capacitor. A decrease in the voltage limits the resolving power. Table A gives values of the maximum possible resolving power for an ideal capacitor geometry ($\mu = 1$) and the condition $U = E_{cr}$ 5 cm. The limiting resolving power R_d and the dispersion dx/dk are inversely proportional to each other. The maximum obtainable resolving power is achieved for a compromise of the operating conditions.

8. **Electrode effect.** An increase in the mobility with altitude causes an increase in the electrode effect inside the measuring capacitor. Data on the conductivity /Coroniti, Nazarek, Stergis, Kotas, Seymour, Werme, 1954; Bordeau, Whipple, Clark, 1959/ are given in Table A. An adjacent column lists values of the relative error δ, calculated from formula (18.6), assuming $l = 10$ cm, $u = u_{cr}$ or 200 m/sec.

The electrode effect causes a decrease in the current in the measuring capacitor. The assumption that under the limiting operating conditions $I_{max} = (n_+ + n_-) e \phi$/Bragin, 1965, 1966/ is unfounded.

9. **Free electrons.** From results of direct measurements /Bragin, 1966/ the negative charge carriers are ions at heights up to 70 km and electrons at heights exceeding 80 km. The aspiration method is not suitable for the study of free electrons. The presence of free electrons complicates the evaluation of the electrode effect.

10. **Possibility of using a magnetic field.** The magnetic force $\frac{v}{c}qB$ (c is the light speed, B is the magnetic induction) equals the electric field E when

$$B = B_{cr} = \frac{c}{k}. \qquad (A.2)$$

If c and k are expressed in cgs units, then B_{cr} is given in G (gauss). The values of B_{cr} are listed in the last column of Table A.

In practice, we can readily achieve a magnetic induction of the order of 10^4 G. Consequently, starting at an altitude of approximately 50 km magnetic forces can be used to deflect air ions.

The above-mentioned factors (1—9) render the measurements difficult. Positive factors are only the possibility of increasing the flow rate and the high polar charge density in the mesosphere and the ionosphere. This enables us to relax the demands on the sensitivity of the electrometer and to shorten the time required for the counts.

The simplest instruments are those which are intended to measure only the mobility or the polar charge density /Hok, Spencer, Dow, 1953; Bordeau, Whipple, Clark, 1959; Pedarsen, 1964; Bragin, 1965/. In these instruments supersonic operating conditions are possible. Notwithstanding the simplicity of the instrument, the accuracy of measurement results requires additional analysis. One must consider the ratio of the mean free path length of the ions to the dimensions of the measuring capacitor and the ratio of the employed field strength to E_{max} (Table A). In the ionosphere certain phenomena leading to distortions are encountered /Kagan, Perel', 1956/.

More complicated are the measurements for determining the spectrum. To increase the spectral dispersion of the measuring capacitor a new method was proposed and developed /Dolezalek, 1962b; Dolezalek, Oster, 1965, 1966a, b/, which uses an alternating field. The essence of the method of Dolezalek is explained in Figure A, taken from the paper /Dolezalek, Oster, 1965b/. The lower arrangement corresponds to the new method. The ions enter the measuring capacitor via a narrow slit only during a defined phase of the alternating voltage; the remaining air is de-ionized. The instrument is a differential counter of the second order. To obtain an increasing amplitude of the alternating field along the axis the repulsive plate is divided. The manufactured measuring capacitors /Dolezalek, Oster, 1965, 1966a, b/ are cylindrical.

The method of Dolezalek is also used for integral measurement /Oster, Coroniti, 1968/.

Starting at a height of 50 km most spectrographic measurements seem to be possible /Narcisi, Bailey, 1965/. At the same height the method of grid stops is also effective /Bragin, 1962, 1963/.

Above 80 km the aspiration method is no longer applicable for spectrum measurements. A review of the results obtained in a study of the ionization in the higher atmospheric layers can be found in the paper /Sagalyn, 1965/.

TABLE A. Air-ion trajectories in a differential measuring capacitor with a constant and alternating field

H	p	T	l_0	$k(O_2^+)$	E_{max}	ν	u_{cr}	E_{cr}	R_d	λ_+	δ	B_{cr}
0	1020	289	$6.6\cdot10^{-6}$	2.3	10000	0.15	0.3	13	18	0.0001	0.02	$4\cdot10^{7}$
10	270	222	$1.9\cdot10^{-5}$	6.8	3400	0.35	0.7	10	18	0.0022	0.2	$1.5\cdot10^{7}$
20	55	217	$9.1\cdot10^{-5}$	32	740	1.6	3.2	10	18	0.014	0.3	$3\cdot10^{6}$
30	12	228	$4.4\cdot10^{-4}$	160	150	8.1	16	10	18	0.06	0.2	600000
40	2.9	248	$2.0\cdot10^{-3}$	700	33	39	78	11	18	0.55	0.4	140000
50	0.79	270	$7.9\cdot10^{-3}$	2800	8.3	170	330	7	14	1.8	0.6	35000
60	0.23	258	0.027	9400	2.5	540	—	2.1	8	5.4	1.7	11000
70	0.055	217	0.092	32000	0.72	1600	—	0.6	4.5	23	7	3000
80	0.010	185	0.42	150000	0.16	6400	—	0.14	2.4	—	—	700
90	0.0016	181	2.61	920000	0.025	39000	—	0.02	1	—	—	110
km	mb	°K	cm	$cm^2V^{-1}s^{-1}$	Vcm^{-1}	cm^2s^{-1}	ms^{-1}	Vcm^{-1}	1	CGSE	%	G

APPENDIX II

Systems of Units

According to the recommendation of the IAMAP/IAGA the preferred system of units for atmospheric electricity is the SI(MKSA) system. In the present work the CGSE system is used, whereby not only units but also many formulas appear in a different form. In order to convert the formulas to the SI system, the following rules are useful:

1. The number 4π, related to the dependence of the charge on the electric field, should be replaced by $1/\varepsilon_0 \cdot \varepsilon_0 = 8.854\,\mathrm{pF/m}$.
2. The expression $\ln(r_2/r_1)$, derived from the formula for the capacitance of the coaxial capacitor, must be changed to $\ln\frac{r_2}{r_1}/4\pi\varepsilon_0$.

Examples:

Formula No.	Formula in SI system
4.3	$k = \frac{\varepsilon_0 \phi}{CU}$
4.4	$G = \begin{cases} CUk/\varepsilon_0 & \text{for } k \leq k_0 \\ \phi & \text{for } k_0 \leq k \end{cases}$
33.1	$C = 2\pi\varepsilon_0 l/\ln\frac{r_2}{r_1}$

Conversion table for units and constants

Quantity	SI	CGSE	Conversion factor
I	1 A	$= 3\cdot10^9$ ESU_I	$= 6.24\cdot10^{18}$ e sec^{-1}
U	1 V	$= 3.33\cdot10^{-3}$ ESU_U	
R	1Ω	$= 1.11\cdot10^{-12}$ ESU_R	
C	1 F	$= 9\cdot10^{11}$ cm	$= 6.24\cdot10^{18}$ eV^{-1}
ρ, P	1 cm^{-3}	$= 3\cdot10^3$ ESU_S ρ	$= 6.24\cdot10^{12}$ e cm^{-3}
ρ(k)	1 kgm^{-3} sec^{-1}	$= 10^3$ g cm^{-3} sec^{-1}	$= 6.24\cdot10^8$ eV cm^{-5} sec
k	1 $m^2V^{-1}sec^{-1}$	$= 3\cdot10^6$ ESU_k	$= 10^4$ cm^2V^{-1} sec^{-1}
λ	1 sec m^{-1} = 1$\Omega^{-1}m^{-1}$	$= 9\cdot10^9$ ESU_λ	$= 10^{-2}\Omega^{-1}cm^{-1}$
e	$= 1.602\cdot10^{-19}$ C	$= 4.803\cdot10^{-10}$ ESU_Q	= 1 e
K	$= 1.38\cdot10^{-23}$ J deg^{-1}	$= 1.38\cdot10^{-16}$ erg deg^{-1}	$= 8.62\cdot10^{-5}$ eV deg^{-1}

Bibliography

Publications in Russian

Al'tberg, V. Molekulyarnye iony v gazakh i novyi metod izmereniya razmerov molekul (Molecular Ions in Gases and a New Method for Measuring the Sizes of Molecules).— ZhRFKhO, fiz., 44(8):41—458. 1912. (7)*

Al'tberg, V. See Altberg, W.

Arabadzhi, V.I. and I.K. Rudik. Ob elektrizatsii pyli v atmosfere (On the Electrification of Dust in the Atmosphere).— Izvestiya Vyssh. Uch. Zav., Fizika, No. 1:85—88. 1963. (26, 35).

Balog, I.I. Podvizhnost' otritsa tel'nykh ionov pri vysokikh napryazhennostyakh elektricheskogo polya (Mobility of Negative Ions at High Electric Field Intensities).— Uch. Zap. MGU, Vol. 74:123—134. 1944. (1)

Baranov, V.I. Vliyanie medlennykh ionov na izmerenie elementov atmosfernogo elektrichestva (Influence of Intermediate Ions on the Measurement of the Elements of Atmospheric Electricity).— Zh. Russk. fiz.-khim. obshchestva, ch. fiz., 57(1/2):151—170. 1925. (25—29)

Baranov, V.I. See Baranov, W.J.

Baranov, V.I. and M.D. Kravchenko. O bystrykh izmeneniyakh ionizatsii vozdukha (On the Rapid Measurement of Air Ionization).— Geofiz., 4(3):379—385. 1934. (30)

Berezina, I.I. See Milin, V.B.

Bragin, Yu.A. O vozmozhnosti izmereniya podvizhnostei i kontsentratsii zaryazhennykh chastits v atmosfere metodom zatvorov (On the Possibility of Measuring the Mobility and Concentration of Charged Particles in the Atmosphere by Means of the Screening Method).— Trudy Tsentr. Aerol. Observ., Vol. 42:109—115. 1962. (0)

Bragin, Yu.A. O metode izmereniya kontsentratsii zaryazhennykh chastits vozdukha (On the Method of Measuring the Concentration of Charger Air-particles).— Trudy Tsentr. Aerol. Observ., Vol. 46:96—100. 1963. (0)

* The numbers in brackets indicate the paragraph of the text in which the work is cited; (0) indicates the Introduction.

Chernyavskii, E.A. Novaya konstruktsiya pribora dlya opredeleniya chisla i unipolyarnosti ionov (New Design of Instrument for the Determination of the Number and Unipolarity of Ions). — Inf. Sbornik po zemn. magn. i elektrichestvu, Vol. 4:96—98. Leningrad-Moskva. 1937.
(35)

Chernyavskii, E.A. Elektricheskoe pole Srednei Azii. Ionizatsionnye kharakteristiki atmosfery (The Electric Field of Soviet Central Asia. Ionization Characteristics of the Atmosphere). — Trudy Tashkentskoi Geofiz. Observatorii, Vol. 13:162—203. 1957.
(35)

Chernyavskii, E.A. Metod i pribor dlya opredeleniya ob"emnogo zaryada pri gidroaeroionizatsii (A Method and Instrument for the Determination of the Space Charge in Hydroair Ionization). — In Sbornik: "Aeroionizatsiya i gidroaeroionizatsiya v meditsine," pp. 226—228, Tashkent, Gosmedizdat UzSSR. 1962.
(0)

Dunskii, V.F. and A.V.Kitaev. Osazhdenie unipolyarno zaryazhennogo aerozolya v zakrytom pomeshchenii (Precipitation of Unipolar Charged Aerosols in a Closed Room). — Kolloidnyi Zhurnal, 22(2): 159—167. 1960.
(2)

Fedorov, E.K. Novyi metod issledovaniya ionnogo spektra v atmosfere (A New Method for the Investigation of the Ionic Spectrum in the Atmosphere). — Doklady AN SSSR, 82(5):717—718. 1952.
(0)

Fuks, N.A. Mekhanika aerozolei (Mechanics of Aerosols). — Moskva, Izd. AN SSSR. 1955.
(0, 24, 29)

Furman, A.M. Raspredelenie po podvizhnosti i kontsentratsii legkikh i srednikh ionov v atmosfere (The Distribution According to Mobility and Concentration of Small and Intermediate Ions in the Atmosphere). — Trudy Glavnoi Geofiz. Observ., Vol. 97:106—116. 1960.
(15)

Gerasimova, M.N. Proekt pribora dlya izmereniya chisla ionov v atmosfere (Project of an Instrument for Measuring the Number of Ions in the Atmosphere). — Inf. sbornik po zemn. magn. i elektr., Vol. 3:50—51. 1937.
(35)

Gerasimova, M.N. K metodike izmereniya soderzheniya ionov v atmosfere i o novom schetchike ionov (On Methods of Measuring the Ion Content in the Atmosphere and on a New Ion Counter). — Trudy Glav. Geofiz. Observ., Vol. 30:86—112. 1939.
(5, 29, 34, 35)

Gerasimova, M.M. Soderzhanie malykh i bol'shikh ionov v atmosfernom vozdukhe po nablyudeniyam v Slutske (The Small- and Large-Ion Contents in Atmospheric Air According to Observations in Slutsk). — Trudy NIU GMS SSSR, Ser. 1, 5, pp. 3—23. 1941a.
(35)

Gerasimova, M.N. K metodike izmereniya soderzhaniya malykh i srednikh ionov (On Methods for Measuring the Small- and Intermediate-Ion Concentrations). — Trudy NIU GMS SSSR, Ser. 1, 5, pp. 24—40. 1941b.
(10, 24)

Grachev, V.I. Opredelenie kontsentratsii legkikh ionov u gornykh rek i vodopadov v raione El'brusa (The Determination of the Concentration of Light Ions on Mountains at Rivers and near Waterfalls in the Elbrus Area). — Vopr. Kurortol., Vol. 5, pp. 87—96, Riga. 1959.
(35)

Grachev, V.I. Portativnyi schetchik ionov dlya proverki raboty ionizatorov (A Portable Ion Counter for Checking the Operation of Ion Generators). — In Sbornik: "Aeroionizatsiya i gidroaeroionizatsiya v meditsine," pp. 236—237, Tashkent, Gosmedizdat UzSSR. 1962.
(35).

Grinberg, G.A. Izbrannye voprosy matematicheskoi teorii elektricheskikh i magnitnykh yavlenii (Selected Problems from the Mathematical Theory of Electric and Magnetic Phenomena). — Moskva-Leningrad, Izd. AN SSSR. 1948.
(32)

Gubichev, V.A. Izmerenie ionnogo spektra v vozdukhe g. Rostov-na-Donu (Measurements of the Ion Spectrum in the Air of Rostov-on-Don). — Uchenye Zapiski Rostovskogo Universiteta, 32(4):183—189. 1955.
(25)

Gubichev, V.A. Ob izmerenii ionizatsii atmosfery (On the Measurement of Atmospheric Ionization). — Izvestiya Vysshikh Uchebnykh Zavedenii, Fizika, No. 1:57—59. 1960.
(0, 34)

Gutman, L.N. See Tsvang, L.R.

Imyanitov, I.M. Dinamicheskie metody izmereniya malykh tokov (Dynamic Methods for the Measurement of Weak Currents). — Trudy Glav. Geofiz. Observ., Vol. 35:42—57. 1952.
(9)

Imyanitov, I.M. Sposob izmereniya ob"emnykh zaryadov (A Method for Measuring Space Charges). — Byulleten' Izobret. No. 7, Patent No. 91089. 1957.
(11)

Imyanitov, I.M. Pribory i metody dlya izucheniya elektrichestva atmosfery (Instruments and Methods for Studying the Electricity of the Atmosphere). — Moskva, Gostekhteoretizdat. 1957.
(5, 29, 35).

Imyanitov, I.M. Konstruktsiya schetchikov ionov i vozmozhnosti ikh primeneniya v meditsine (Designs of Ion Counters and Possibilities to Apply them in Medicine). — In Sbornik: "Materialy nauchn. konf. po prob. "Aeroionizatsiya v gigiene truda," 11—15 noyabrya 1963, pp. 19—20, Leningrad. 1963.
(9)

Imyanitov, I.M., S.I. Zachek, B.K. In'kov, and K.A. Semenov. Pribor dlya izmereniya elektricheskoi provodimosti vozdukha u poverkhnosti zemli (An Instrument for Measuring the Electric Conductivity of Air at the Earth's Surface). — Trudy Glav. Geofiz. Observ., Vol. 110:53—66. 1960.
(14, 15)

In'kov, V.K. Izmerenie plotnosti ob"emnykh zaryadov elektrostaticheskim flyuksmetrom (Measurement of the Density of Space Charges with the Aid of an Electrostatic Fluxmeter). — Uchenye Zapiski Kirovskogo Gosudar. Pedagog. Instituta, Vol. 15:73—80. 1958.
(11)

In'kov, V.K. See Imyanitov, I.M., Milin, V.B.

Istomin, K.G. Mass-spektrometricheskie izmereniya ionnogo sostava verkhnei atmosfery na tret'em iskusstvennom sputnike zemli (Mass Spectrometric Measurement of the Ionic Composition of the Upper Atmosphere on the Third Satellite of the Earth). — Doklady AN SSSR, 129(1):81—84. 1959.
(0)

Ivanov, N.M., G.M.Kuklina, and Yu.G.Sedunov. Metodika izmerenii ionnogo spektra s vysotnoi machty (The Method of Ion-Spectrum Measurement from a High Mast). — In Sbornik: "Issledovaniya nizh. 300 metr. sloya atmosf.," pp. 92—101, Moskva, Izd. AN SSSR. 1963.
(13)

Izergin, A.M. Issledovanie ekraniruyushchikh svoistv setki (Investigation of the Screening Properties of a Grid). — Uchenye Zapiski Kirovskogo Gosudarstvennogo Ped. Instituta, Vol. 15:45—56. 1958.
(6)

Kagan, R.L. K uchetu inertsii pribora pri meteorologicheskikh izmereniyakh (Calculation of the Inertia of Instruments for Meteorological Measurements). — Izv. AN SSSR, Ser. Geofiz., No. 2:302—308. 1964.
(30)

Kitaev, A.V. K primeneniyu ionizirovannogo vozdukha i unipolyarnykh aerozolei (Application of Ionized Air and the Unipolar Aerosols). — Zhurnal Fiz. Khim., 36(6):1136—1139. 1962.
(2, 11)

Kitaev, A.V. and L.N.Kloiz. Spektrometr ionov i elektroaerozolei (Spectrometer of Ions and Electroaerosols). — Trudy Vsesoyuznogo Nauchno-Issledov. Instituta Med. Instr. i Oborud., Vol. 1:131—134. 1963.
(35)

Kitaev, A.V. See Dunskii, V.F.

Kloiz, L.N. See Kitaev, A.V.

Kochin, N.E., I.A.Kibel', and N.V.Roze. Teoriticheskaya gidromekhanika (Theoretical Hydromechanics). Part 2. — Moskva, Fizmatgiz. 1963.
(23)

Komarov, N.N. Voprosy rascheta neustanovivshikhsya tokov v izmeritel'nykh kondensatorakh schetchikov ionov i ionnykh spektrometrov (Problems of Calculating the Nonsteady Currents in Measuring Capacitors of Ion Counters and Ionic Spectrometers). — Izv. AN SSSR, Ser. Geofiz., No. 2:309—317. 1960a.
(0, 13, 16)

Komarov, N.N. Nekotorye rezul'taty issledovanii neustanovivshikhsya tokov v schetchikakh ionov (Some Investigation Results on Nonsteady Currents in Ion Counters). — Izv. AN SSSR, Ser. Geofiz., No. 3: 459—466. 1960b.
(0, 13, 16, 17).

Komarov, N.N. Metody i nekotorye rezul'taty izmereniya ionizatsionnogo sostoyaniya svobodnoi atmosfery (Methods and Some Results in Measuring the Ionization State of the Free Atmosphere). — In Sbornik: "Issledovanie oblakov osadkov i grozovogo elektrichestva," pp. 295—265 [sic], Moskva, Izd. AN SSSR. 1961.
(32)

Komarov, N.N. and M.D.Kuz'menko. Schetchik atmosfernykh ionov (A Counter of Atmospheric Ions). — Byulleten' Izobret., No. 4, Patent No. 126287. 1960.
(31, 35)

Komarov, N.N., M.D.Kuz'menko, and A.A.Seredkin. Izmereniya ionizatsionnogo sostoyaniya svobodnoi atmosfery v usloviyakh antitsiklona (Measurements of the Ionization State of the Free Atmosphere under Conditions of an Anticyclone). — Izv. AN SSSR, Ser. Geofiz., No. 10:1534—1540. 1960.
(0)

Komarov, N.N., M.D.Kuz'menko, and A.A.Seredkin. Schetchik atmosfernykh ionov (Counter of Atmospheric Ions). — Izv. AN SSSR, Ser. Geofiz., No. 12:1875—1881. 1961.
(31, 32, 34, 35)

Komarov, N.N. and A.A.Seredkin. Schetchik tyazhelykh ionov (A Counter of Heavy Ions). — Izv. AN SSSR, Ser. Geofiz., No. 11:1663—1670. 1960.
(0, 4, 34, 35)

Komarov, N.N. See Tsvang, L.R.

Korsunskii, M.M., M.V.Reznik, and R.M.Truten'. O metode scheta ionov generiruemykh gidroionizatorom (On the Method of Counting Ions Generated by a Hydroionizator). — In Sbornik: "Aeroionizatsiya i gidroaeroionizatsiya v meditsine," pp. 295—301, Tashkent, Gosmedizdat UzSSR. 1962a.
(0)

Korsunskii, M.M., M.V.Reznik, and R.M.Truten'. O vozmozhnom metode izmereniya kontsentratsii ionov generiruemykh gidroionizatorami (On a Possible Method for Measuring the Concentration of Ions Generated by Hydroionizators). — Izvestiya Vysshikh Uchebnykh Zavedenii, Fizika, No. 6:152—156. 1962b.
(0)

Krasnogorskaya, N.V. and A.A.Serekin. Ob ob"emnom zaryade nizhnikh sloev atmosfery (On the Space Charge of the Lower Atmospheric Air Layer). — Izv. AN SSSR, Ser. Geofiz., No. 4: 587—595. 1964.
(11)

Kravchenko, M.D. See Baranov, V.I.

Kuklina, G.M. See Ivanova, N.M.

Kuz'menko, M.D. See Komarov, N.N.

Landau, L.D. and E.M.Lifshits. Mekhanika sploshnykh sred (Mechanics of Continuous Media). — Moskva, Gostekhteoretizdat. 1954.
(34)

Landau, L.D. and E.M.Lifshits. Elektrodinamika sploshnykh sred (Electrodynamics of Continuous Media). — Moskva, Gostekhteoretizdat. 1957.
(23)

Lëb, L. See Loeb, L. B.
Lebedev, V. L. Sluchainye protsessy v elektricheskikh i mekhanicheskikh sistemakh (Random Processes in Electrical and Mechanical Systems). — Moskva, Fizmatgiz. 1958.
(26)
Lesgaft, E. E. K izucheniyu ionizatsii vozdukha (A Contribution to the Study of Air Ionization). — In: Sbornik rabot Nauchno-issled. lab. kommunal'noi gigieny Lengorzdravotdela, Vol. 2:66—73. 1938.
(35)
Levin, L. M. O zabore prob aerozolya (On Taking Aerosol Samples). — Izv. AN SSSR, Ser. Geofiz., No. 7:914—925. 1957.
(2)
Levin, L. M. Elektrostaticheskoe osazhdenie chastits aerozolya iz potoka na bol'shie tela (Electrostatic Precipitation of Particles of an Aerosol from a Flux on Large Bodies). — Izv. AN SSSR, Ser. Geofiz., No. 7:1073—1075. 1959.
(2, 4)
Litvinov, V. F. Pribor dlya izmereniya tyazhelykh ionov v atmosfere (An Instrument for Measuring Heavy Ions in the Atmosphere). — Uchenye Zapiski Kazakhskogo Gos. Universiteta, Vol. 2:73—80. 1938.
(35)
Litvinov, V. F. Ionnoe sostoyanie nizhnikh sloev atmosfery po nablyudeniyam v gor. Alma-Ata i ego gornykh okrestnostyakh (Ionic State of the Lower Layer of the Atmosphere According to Observations in the City Alma-Ata and its Mountainous Surroundings). — Uchenye Zapiski Kazakhskogo Gos. Universiteta, Vol. 6:21—89. 1941.
(35)
Litvinov, V. F. and N. N. Litvinova. Elektrofiltr dlya polucheniya prob atmosfernoi pyli (An Electrostatic Filter for Obtaining Samples of Atmospheric Gases). — Gigiena i sanitariya, No. 9: 16—18. 1955.
(0)
Litvinova, N. N. See Litvitov, V. F.
Livshits, M. N. and V. N. Moiseev. Elektricheskie yavleniya v aerozolyakh i ikh primenenie (Electrical Phenomena in Aerosols and their Application). — Moskva-Leningrad, "Energiya." 1965.
(35)
Loìtsyanskii, L. G. Mekhanika zhidkosti i gaza (Mechanics of Fluids and Gases). — Moskva, Fizmatgiz. 1959.
(18, 21, 34)
Makhotkin, L. G. and B. L. Sushchinskii. Plotnost' ob"emnogo zaryada v Sestroretske (The Space Charge Density in Sestroretsk). — Trudy Glavnoi Geofiz. Observatorii, Vol. 110:33—39. 1960.
(35)
Matulyavichene, V. K voprosu opredeleniya spektra mass radioaktivnogo aerozolya v atmosfere (The Problem of Determining the Mass Spectrum of Radioactive Aerosol in the Atmosphere). — Nauchnye Trudy Vysshikh Uchebnykh Zavedenii Lit. SSR, Geografiya i Geologiya, Vol. 1:145—153. 1962.
(0, 20)
Mikheev, M. A. Osnovy teploperedachi (Foundations of Heat Transfer). — Moskva-Leningrad, Gosenergoizdat. 1956.
(24)

Milin, V. B., I. I. Berezina, and B. K. In'kov. Avtomat-indikator anomalii ionizatsii atmosfery (An Automatic Indicating Device for Anomalies of Atmospheric Ionization). — Uchenye Zapiski Kirovskogo Gos. Ped. Instituta, 1(8):55—60. 1954.
(35)
Minkh, A. A. Ionizatsiya vozdukha i ee gigienicheskoe znachenie (Ionization of Air and its Hygienic Significance). — Moskva, Medgiz. 1963.
(0, 35)
Moiseev, V. N. See Livshits, M. N.
Monin, A. S. and A. M. Yaglom. Statisticheskaya gidromekhanika (Statistical Hydromechanics), Part 1. — Moskva, "Nauka." 1965.
(20)
Nichkevich, O. N. See Polovko, I. K.
Otto, A. N. See Tverskoi, P. N.
Pavlyuchenkov, G. See Imyanitov, I. M.
Polonnikov, D. E. Elektronnye usiliteli avtomaticheskikh kompensatorov (Electronic Amplifiers of Automatic Compensators). — Moskva, Fizmatgiz. 1960.
(26)
Polovko, I. K. and O. N. Nichkevich. K metodike izmereniya chisla srednikh ionov (On Methods of Measuring the Number of Intermediate Ions). — Trudy Nauchno-Issledov. Gidrometeorol. Instituta, Vol. 1:42—44, Kiev. 1937.
(6)
Portnov, F. G. Aeroionoterapiya bol'nykh gipertonicheskoi bolezn'yu (Air-Ion Therapy of Patients Suffering from a Hypertonic Illness). — Riga, Izd. AN. Latv. SSR. 1960.
(0)
Reinet, Ya. Yu. Kombinirovannyi schetchik atmosfernykh ionov (A Combined Counter of Atmospheric Ions). — Trudy Glavnoi Geofiz. Observatorii, Vol. 58:23—30. 1956.
(29, 35)
Reinet, Ya. Yu. Novaya apparatura i metodika dlya opredeleniya kontsentratsii aero- i gidroionov v atmosfere (A New Apparatus and Method for the Determination of the Density of Air and Water Ions in the Atmosphere). — Uchenye Zapiski Tartuskogo Gos. Universiteta, Vol. 59:41—70. 1958.
(9, 25)
Reinet, Ya. Yu. Novaya apparatura i metodika dlya opredeleniya kontsentratsii aero- i gidroionov v atmosfere (A New Apparatus and Method for the Determination of the Concentration of Air and Water Ions in the Atmosphere). — Voprosy Kurortol., Vol. 5:45—52, Riga. 1959a.
(9, 25)
Reinet, Ya. Yu. Schetchik aero- i gidroionov (A Counter of Air and Water-Ions). — Byulleten' Izobret., No. 11, Patent No. 120272. 1959b.
(35)
Reinet, Ya. Yu. Novyi portativnyi schetchik gidro- i aeroionov, prigodnyi dlya opredeleniya zaryadov elektroaerozolei (A New Portable Counter of Water and Air Ions Suitable for the Charge Determination of Electroaerosols). — In Sbornik: "Aeroionizatsiya i gidroaeroionizatsiya v meditsine", pp. 232—235, Tashkent, Gosmedizdat UzSSR. 1962a.
(35)

R e i n e t, Ya. Yu. Spektrometr atmosfernykh ionov (A Spectrometer of Atmospheric Ions). — Byulleten' Izobret., No. 11, Patent No. 197822. 1962b.
(35)

R e i n e t, Ya. Yu. Nekotorye trebovaniya otnositel'no uslovii izmereniya spektra atmosfernykh ionov aspiratsionnym metodom (Some Demands Relating to the Conditions of Measurement of the Spectrum of Atmospheric Ions by the Aspiration Method). — Trudy Vses. Nauchn. Meteorol. Soveshchaniya, Vol. 9:313—321, Leningrad, Gidrometeoizdat. 1963.
(35)

R e i n e t, Ya. Yu. See Reinet, J.

R e i n e t, Ya. Yu., H. F. T a m m e t, and Ya. I. S a l ' m. K metodike izucheniya ionizatsii vozdukha v kurortologii i fizioterapii (Method of Study of Air Ionization in Health Resort Treatment and Physiotherapy). — In Sbornik: "Materialy I resp. s"ezda fizioterapevtov i kurortologov USSR, posvyashch. 100 letiyu so dnya rozhd. prof. A. E. Shcherbaka," pp. 124—124, Kiev, Gosmedizdat USSR. 1963.
(35)

R e z n i k, M. V. See Korsunskii, M. M.

R u d i k, K. I. See Arababzhi, V. I.

S a k s, O. V. O konstruktsii dinamicheskogo kondensatora dlya schetchikov atmosfernykh ionov (On the Construction of a Dynamic Capacitor for Counters of Atmospheric Ions). — Trudy Vses. Nauchn. Meteorol. Soveshchaniya, Vol. 9:303—306, Leningrad, Gidrometeoizdat. 1963.
(35)

S a k s, O. V. See Saks, O.

S a l ' m, Ya. I. See Reinet, Ya. Yu.

S e d u n o v, Yu. G. See Ivanova, N. M.

S e g a l', R. B. Raspredelenie malykh ionov vozdukha po ikh velichine (The Size Distribution of Small Air Ions). — Uchenye Zapiski Cherepovetskogo Gos. Ped. Instituta, 3(3): 3—12; Izvestiya Vysshikh Uchebnykh Zavedenii, Fizika, No. 6:16—21. 1962.
(1)

S e m e n o v, K. A. See Imyanitov, I. M.

S e r e d k i n, A. A. See Komarov, N. N., Krasnogorskaya, N. V.

S e r g i e v a, A. P. Ob elektricheskikh zaryadakh oblachnykh chastits (On Electric Charges of Particles Contained in Clouds). — Izv. AN SSSR, Ser. Geofiz., No. 3:347—357. 1953.
(0)

S h c h e p o t ' e v a, E. S. O podvizhnosti ionov v atmosfere (On the Mobility of Ions in the Atmosphere). — Zhurnal Geofiz. i Meteorol., 6(2):85—100. 1929.
(29)

S h c h e p o t ' e v a, E. S. See Baranov, W. J.

S h e p s e n v o l, M. A. See Shul'man, A. R.

S h u l ' m a n, A. R. and M. A. S h e p s e n v o l. Ob izmerenii slabykh tokov (On the Measurement of Weak Currents). — In: Sbornik posvyashchennyi semidesyatiletiyu akad. A. F. Ioffe, pp. 510—522, Moskva, Izd. AN SSSR. 1950.
(26)

S p e r a n s k i i, A. A. Instruktsiya k upotrebleniyu aspiratsionnogo pribora Eberta (Operating Instructions for an Ebert Aspiration Counter). — Kurortnoe Delo, No. 6:1—13. 1926.
(35)

S t y r o, B. I. and A. I. Y u r g e l i o n i s. O chisle ionov v Palange (On the Number of Ions in Palanga). — Trudy AN Lit. SSR, Vol. 413:51—54. 1956.
(35)

S u s h c h i n s k i i, B. L. See Makhotkin, L. G.

T a m m e t, H. F. K teorii aspiratsionnykh schetchikov aeroionov (On the Theory of Aspiration Counters of Air Ions). — Izv. AN SSSR, Ser. Geofiz. No. 8:1263—1270. 1960.
(2, 7, 8)

T a m m e t, H. F. K voprosu sozdaniya aeroionizatorov i ionometrov dlya shirokogo vnedreniya aeroionoterapii (The Problem of Manufacturing Air Ionizators and Ionometers for a Widespread Application of Air Ionotherapy). — In Sbornik: "Aeroionizatsiya i gidroaeroionizatsiya v meditsine," pp. 250—256, Tashkent, Gosmedizdat UzSSR, 1962a.
(0)

T a m m e t, H. F. Schetchik aeroionov (Counter of Air Ions). — Byulleten' Izobret., No. 20, Patent No. 151071. 1962b.
(31)

T a m m e t, H. F. Iskazhayushchie effekty v aspiratsionnykh schetchikakh aeroionov (Distorting Effects of Air Ions in Aspiration Counters). — Izv. AN SSSR, Ser. Geofiz. No. 6:845—853. 1962c.
(14, 16, 19, 20, 25, 34)

T a m m e t, H. F. Analiticheskii metod obrabotki nablyudenii pri izuchenii raspredeleniya aeroionov po podvizhnostyam (An Analytical Method for Evaluating the Observations in the Study of the Air-Ion Distribution According to Mobility). — Trudy Glav. Geofiz. Observatorii, Vol. 136:103—110. 1962d.
(29)

T a m m e t, H. F. Vozdeistvie ob"emnogo zaryada v aspiratsionnykh schetchikakh aeroionov (The Effect of Space Charge in Aspiration Counters). — Uchenye Zapiski Tartuskogo Gos. Universiteta, Vol. 140:46—61. 1963a.
(16, 17)

T a m m e t, H. F. K voprosu o skhemakh vklyucheniya aspiratsionnykh schetchikov aeroionov (On the Problems of Circuit Arrangements for Aspiration Counters of Air Ions). — Trudy Glav. Geofiz. Observatorii, Vol. 146:71—74. 1963b.
(31)

T a m m e t, H. F. Optimal'nye parametry aspiratsionnykh schetchikov aeroionov (Optimum Parameters of Aspiration Counters of Air Ions). — Trudy Vsesoyuz. Nauchn. Meteorol. Soveshchaniya, Vol. 9:322—328. 1963c.
(34)

T a m m e t, H. F. Opredelenie deistvuyushchei emkosti tsilindricheskogo izmeritel'nogo kondensatora aspiratsionnogo schetchika aeroionov (The Determination of the Effective Capacitance of a Cylindrical Measuring Capacitor of an Air-Ion Aspiration Counter). — Izv. AN SSSR, Ser. Geofiz., No. 3:436—436 [sic]. 1964a.
(33)

T a m m e t, H. F. Aspiratsionnyi metod izucheniya ionizirovannogo vozdukha i aerozolei (Aspiration Method for Studying Ionized Air and Aerosols). Author's Summary of Thesis, Tartu. 1964b.
(2)

T a m m e t, H. F. See Reinet, Ya. Yu.

T a r g, S. M. Osnovnye zadachi teorii laminarnykh techenii (Basic Problems in the Theory of Laminar Flow). — Moskva-Leningrad, Gostekhteoretizdat. 1951.
(18)

T e r e k h o v, Yu. V. Portativnyi schetchik gidroaeroionov (A Portable Counter of Hydroair Ions). — In Sbornik: "Aeroionizatsiya i Gidroaeroionizatsiya v meditsine," pp. 302—303, Tashkent, Gosmedizdat UzSSR. 1962.
(35)

T e v e r o v s k i i, E. M. O diffuzii i koagulyatsii chastits aerozolya v turbulentnom potoke v atmosfere (On the Diffusion and Coagulation of Aerosol Particles in a Turbulent Stream in the Atmosphere). — In Sbornik: "Novye idei v oblasti izucheniya aerozolei," pp. 108—127. Moskva-Leningrad, Izd. AN SSSR. 1949.
(20)

T r u t e n', R. M. See Korsunskii, M. M.

T s v a n g, L. R. Impul'snyi metod izmereniya spektra legkikh ionov v atmosfere (Pulse Method of Measuring the Spectrum of Light Ions in the Atmosphere). — Izv. AN SSSR, Ser. Geofiz., No. 2:202—209. 1956.
(0)

T s v a n g, L. R. and L. N. G u t m a n. Izmerenie spektra legkikh atmosfernykh ionov (Measurement of the Spectrum of Light Atmospheric Ions). — Izv. AN SSSR, Ser. Geofiz., No. 7:891—902. 1958.
(0)

T s v a n g, L. R. and N. N. K o m a r o v. Issledovanie spektra legkikh ionov v svobodnoi atmosfere (Investigation of the Spectrum of Light Ions in the Free Atmosphere). — Izv. AN SSSR, Ser. Geofiz., No. 8:1167—1176. 1959.
(0)

T v e r s k o i, P. N. Kurs meteorologii (Course of Meteorology). — Leningrad, Gidrometeoizdat. 1962.
(0)

T v e r s k o i, P. N. and A. N. O t t o. Pribor dlya scheta ionov v atmosfere i ot iskusstvennykh ionizatorov (Instrument for Counting Ions in the Atmosphere and Ions Generated by Artificial Ionizers). — In Sbornik: "Aeroionizatsiya i gidroaeroionizatsiya v meditsine," pp. 229—231, Tashkent, Gosmedizdat UzSSR. 1962.
(35)

V a l t a, Z. F. Priroda i podvizhnost' vozdushnykh ionov (The Nature and Mobility of Air Ions). — Geofiz. i meteorol., 6(3):197—215. 1929.
(8)

Y u r g e l i o n i s, A. I. See Styro, B. I.

Z a c h e c k, S. I. Ustroistvo dlya izmereniya i registratsii elektroprovodimosti vozdukha v atmosfere (A Device for Measuring and Recording the Electrical Conductivity of Atmospheric Air). — Byul. Izobret., No. 8, Patent No. 146547. 1962.
(13)

Z a c h e k, S. I. Pribor dlya izmereniya provodimosti vozdukha v svobodnoi atmosfere (An Instrument for Measuring the Conductivity of Air in the Free Atmosphere). — 5-ya nauchno-tekhnicheskaya konferentsiya po novoi geofizike i gidrometeorologii, meteorologii i priboram, 21—25 aprelya 1964g., pp. 74—75, Synopses of Reports, Leningrad. 1964a.
(13)

Z a c h e k, S. I. Teoriya differentsial'nogo dinamicheskogo elektrometra (Theory of Differential Dynamic Electrometer). — Trudy Glav. Geofiz. Observ., Vol. 157:87—93. 1964b.
(9)

Z a c h e k, S. I. K voprosu ob izmerenii elektricheskoi provodimosti vozdukha v svobodnoi atmosfere s samoleta (The Problem of Measuring the Electrical Conductivity of Air in the Free Atmosphere from an Airplane). — Trudy Glav. Geofiz. Observ., Vol. 157:94—120. 1964b.
(13, 20, 24)

Z a c h e k. S. I. See Imyanitov, I. M.

Publications in Other Languages

A d k i n s, C. J. The Small Ion Concentration and Space-charge Near the Ground. — Quart. J. Roy. Meteorol. Soc., 85(363):237—252. 1959.
(35)

A l t b e r g, W. Über monomolekulare Elektrizitätsträger in Gasen und eine neue Messmethode der Molekulardurchmesser. — Ann. Physik, Vol. 37:849—880. 1912.
(7)

A l t b e r g, W. See Al'tberg, V.

A n t o n e s c u, V. I. See Neaga, V. G.

A o k i, T. and K. K a t o. Ratio of Atmospheric Ion. — Bull. Electrotechn. Lab., 18(8):561—575, 628. 1954.
(29)

A s e l m a n n, E. Über Elektrizitätsträger, die durch fallende Flüssigkeiten erzeugt werden. — Ann. Physik, Vol. 19:960—984. 1906.
(6, 11)

A w b e r y, J. H. See Griffits, E.

B a i l e y, A. D. See Narcisi, R. S.

B a r a n o w, W. J. and E. S. S t s c h e p e t j e w a. Über die Anwendung des Ebertschen Ionenzählers zur Bestimmung der Zahl und der Beweglichkeit der kleinen Ionen in der Atmosphäre. — Phys. Z., Vol. 29:741—750. 1928.
(29)

Baranow, W.J. See Baranov, V.I.
Beau, G., L. Blanquet, and P. Blanquet. L'enregistrement continu de la charge spatiale atmosphérique. — Ann. Inst. hydrol. et climatol., Vol. 24 (74/75):1—17. 1953.
(35)
Beau, G., L. Blanquet, P. Blanquet, and A. Fourton. Contribution à l'étude de l'enregistrement de la charge spatiale atmosphérique. — C. r. Acad. Sci. Vol. 243(10):784—786. 1956.
(35)
Becker, A. Neuer Zylinderkondensator zur Untersuchung leitender Gase. — Z. Instrumentenkunde, Vol. 29:258—261. 1909.
(4, 15, 25)
Becker, A. Über die Träger der Quecksilberfallelektrizität. — Ann. Physik. Vol. 31:98—126. 1910.
(2, 11, 16, 19, 22)
Beckett, J.C. Air Ion Measurement. — Proc. Internat. Conf. Ioniz. Air, Sect. 3, Vol. 1:1—15, Philadelphia, Pa. 1961.
(25, 35)
Benndorf, H. Über ein mechanisch registrierendes Elektrometer für luftelektrische Messungen. — Phys. Z., Vol. 7:98—101. 1906.
(35)
Benndorf, H. Zur Theorie luftelektrischer Registrierungen I. — Sitzungsber. Akad. Wiss. IIa, Vol. 118:1163—1195, Wien. 1909.
(13)
Benndorf, H. Zur Raumladungmessung in der freien Atmosphäre. — Phys. Z., Vol. 27:576—578. 1926.
(13)
Bent, R.B. The Testing of Apparatus for Ground Fair-weather Space-charge Measurements, — J. Atmos. and Ferr. Phys., 26(2):313—318. 1964.
(35)
Bergstedt, B.A. Application of the Electrostatic Precipitator to the Measurement of Radioactive Aerosols. — J. Sci. Instr., 33(4):142—148. 1956.
(0)
Bessa, F.I. See El Nadi, A.F.
Billard, F. See Fontan, J.
Blackwood, O. The Existence of Homogeneous Groups of Large Ions. — Phys. Rev., Vol. 16:85—101. 1920.
(7, 29)
Blanc, D. See Fontan, J.
Blanquet, L. See Beau, G.
Blanquet, P. See Beau, G.
Bloch, E. Sur la measure de la mobilité des ions dans les gaz par une methode de zéro. — C. r. Acad. Sci., Vol. 138:1492—1494. 1904.
(25)
Bordeau, R.E., E.C. Whipple, and J.F. Clark. Analytic and Experimental Electrical Conductivity between the Stratosphere and the Ionosphere. — J. Geophys. Res., 64(10):1363—1370. 1959.
(35)
Boylan, R.K. The Mobilities of Atmospheric Large Ions. — Proc. Roy. Irish Acad., A 40(4):76—84. 1931.
(29)
Boylan, R.K. See Nolan, J.J.

Brackett, F.S. See Daniel, J.H.
Bricard, J. See Fontan, J.
Brown, J.C. The Relation of Space-charge and Potential Gradient to the Diurnal System of Convection in the Lower Atmosphere. — Terr. Magn., 35(1):1—15. 1930.
(11)
Cagniard, L. Sur le rôle de la ventilation dans les appareils utilisés pour mesurer les conductibilités électriques de l'air atmosphérique. — C. r. Acad. Sci., Vol. 217:574—576. 1943.
(2, 4)
Cagniard, L. Sur les principes de la mesure des conductibilités ioniques de l'air à l'aide des appareils de déperdition. — Ann. Géophys., Vol. 1:25—36. 1944.
(2, 4)
Cagniard, L. and C. Lévy. Un nouvel appareil du type de Gerdien pour la mesure correcte et précise des conductibilités électriques de l'air atmosphérique. — Ann. Géophys., Vol. 2:19—24. 1946.
(33)
Calinicenco, N. See Vasiliu, Ch.
Callahan, R. and G.A. Faucher. Aircraft Investigation of the Large Ion Content and Conductivity of the Atmosphere and their Relation to Meteorological Factors. — J. Atmos. and Terr. Phys., 5(5/6): 253—272. 1954.
(35)
Callahan, R.C., S.C. Coroniti, A.J. Parziale, and R. Patten. Electrical Conductivity of Air in the Troposphere. — J. Geophys. Res., 56(4):545—551. 1951.
(35)
Callahan, R.C. See Coroniti, S.C.
Callahan, R.C. See Sagalyn, R.C.
Carson, J. See Schilling, G.T.
Challande, R. and B. David. Nouvelle méthode de prélévement des particules solides dans la stratosphere. — C. r. Acad. Sci., 250(8):1520—1521. 1960.
(0)
Chalmers, J.A. Atmospheric Electrical Conductivity Near the Earth Surface. — J. Atmos. and Terr. Phys., 3(4):223—224. 1953.
(13)
Chalmers, J.A. See Higazi, K.A.
Chapman, S. Carrier Mobility Spectra of Spray Electrified Liquids. — Phys. Rev., Vol. 52:184—190. 1937.
(25, 35)
Clark, J.F. See Bordeau, R.E.
Clark, W.E. See Whitby, K.T.
Cobb, W.E. See Woessner, R.H.
Collin, H.L., K.N. Groom, and K.A. Higazi. The "Memory" of the Atmosphere. — J. Atmos. and Terr. Phys., 28(6/7):659—697. 1966.
(30)
Coroniti, S.C. Airborne Conductivity Meter. — Geofis. pura e. appl., Vol. 47:79—83. 1960.
35
Coroniti, S.C., A.J. Parziale, R.C. Callahan, and R. Patten. Effect of Aircraft Charge on Airborne Conductivity Measurements. —

J. Geophys. Res., 57(2):197—205. 1052.
(13)
Coroniti, S.C. See Callahan, R.C.
Coroniti, S.C., A. Nazarek, C.G. Stergis, D.E. Kotas, D.W. Seymour, and T.V. Werme. Balloon Borne Conductivity Meter.—Instrumentation for Geophysical Research No. 3, AFCRC-TR54-206. 1954.
(35A)
Csanady, G.T. Concentration Fluctuations in Turbulent Diffusion.—J. Atmos. Sci., 34(1):21—28. 1967.
(30)
Curtis, H.O. and M.C. Hyland. Aircraft Measurements of the Ratio of Negative to Positive Conductivity, In: "Recent Advances in Atmospheric Electricity," pp. 111—117, London—New York—Paris—Los Angeles, Perg. Press. 1958.
(35)
Dalla Valle, J.M. See Hinkle, B.L.
Daniel, J.H. and F.S. Brackett. An Electrical Method for Investigating the Nature and Behavior of Small, Airborne, Charged Particles.—J. Appl. Phys., 22(5):542—554. 1951.
(25, 35)
Daunderer, A. Luftelektrische Messungen.—Phys. Z., Vol. 8:281—286. 1907.
(11)
Daunderer, A. Über die Beziehung zwischen Dichte und Mittelpunkts-Potential im Innern eines würfelförmigen von elektrisch leitenden Wänden begrenzten Raumes.—Z. Math. und Phys., Vol. 57:293—301. 1909.
(11)
David, B. See Challande, R.
Davis, A.H. Convective Cooling in Liquids—Some Thermal Conductivity Data.—Philos. Mag., Vol. 47:972—977. 1924.
(24)
De Broglie, M.M. Recherches sur les centres électrisés de faible mobilité dans les gaz.—J. Phys. théor. et appl., Vol. 8:869—888. 1909.
(35)
Deignan, J. See Nolan, P.J.
Dessauer, F., W. Graffunder, and J. Laub. Beobachtungen über Ionenschwankungen im Freien und in geschlossenen Räumen.—Ann. Meteorol., 7(3/4):173—185. 1955—1956.
(30)
Dessauer, F. See Wolodkewitsch, N.
Dolezalek, H. Freiluft-Isolator mit über 10^{14} Ohm Widerstand für alle Klimate.—Geofis. pura e appl., Vol. 33:223—228. 1956.
(35)
Dolezalek, H. Der Freiluftisolator mit 10^{14} Ohm; Verbesserungen und Ergänzungen.—Geofis. pura e appl., 49(2):249—254. 1961.
(35)
Dolezalek, H. Die luftelektrische Station, Teil 2: Beschreibung der Station, Gerlands Beitr.—Geophys., 71(3):161—171. 1962a.
(35)
Dolezalek, H. On the Measurement of Mobility and Conductivity in the Mesosphere.—Z. Geophys., 28(H5):239—243. 1962b.
(A)
Dolezalek, H. See Israël, H.
Dolezalek, H. and A.L. Oster. Spectrometer for Atmospheric Ions in Their Uppermost Range of Mobility (Project: Measuring Ionic Mobilities in the Terrestrial Upper Stratosphere and Mesosphere, Phase II).—Final Report Contract DA-19-020-AMC-0058 (X), AVSSD-0200-66-RR, Wilmington, Mass. 1966a.
(A)
Dolezalek, H. and A.L. Oster. Ion-Spectrometer for the Terrestrial Mesosphere and the Atmosphere of Mars.—Z. Geophys., 32(H3): 163—172. 1966b.
(A)
Dow, W.G. See Hok, G.
Dowling, J.J. and C.J. Haughey. On the Electrification of Phosphorus Smoke Nuclei.—Proc. Roy. Irish Acad. A36(3):50—59. 1922.
(35)
Ebert, H. Aspirationsapparat zur Bestimmung des Ionengehalts der Atmosphäre.—Phys. Z., Vol. 2:662—664. 1901.
(25, 35)
Ebert, H. Eine neue Form des Ionen-Aspirations-Apparates.—Verhandl. Deutsch. phys. Ges., Vol. 7:34—37. 1905.
(25, 35)
Eichmeier, J. Beweglichkeitsspektren natürlicher atmosphärischer Ionen im Klein- und Mittelionenbereich.—Z. Angew. Phys., 23(4): 256—260. 1967.
(34)
Eichmeier, J. Die theoretischen Grundlagen und das Auflösungsvermögen von Aspiration-Beweglichkeit spektrographen für atmosphärische Ionen.—Z. Geophys., 34(HI): 69—96. 1968.
(34)
Eichmeier, J. See Siksna, R.
El Nadi, A.F. and I.F. Bessa. Small Ion Characteristics.—Proc. Math. and Phys. Soc., Vol. 22:27—42. Egypt. 1958.
(34)
El Nadi, A.F. and N. Farag. The Mobility Spectrum and the Ion Concentration of Large Ions in Air Mixed with N_2O Gas.—Geofis. pura e appl., 47(3):114—122. 1960.
(29)
El Nadi, A.F. and N. Farag. The Effect of Light on the Mobility and Concentration of Large Ions in Air Mixed with N_2O Gas.—J. Atmos. and Terr. Phys., Vol. 22(1):23—31. 1961.
(29)
El Nadi, A.F. See Ortner, G.
Elster, J. and H. Geitel. Über einen Apparat zur Messung der Elektrizitätszerstreuung in der Luft.—Phys. Z., Vol. 1:11—14. 1899.
(25)
Erikson, H.A. The Change of Mobility of the Positive Ions in Air with Age.—Phys. Rev., Vol. 18:100—101. 1921.
(8, 25, 31)
Erikson, H.A. The Change of Mobility of the Positive Ions with Age in Oxygen and Nitrogen.—Phys. Rev., Vol. 19:275—276. 1922.
(8, 25)

Erikson, H. A. On the Nature of the Ions in Air and in Carbon Dioxide.— Phys. Rev., Vol. 24:502—509. 1924.
(8, 25)
Erikson, H. A. Factors Affecting the Nature of Ions in Air.—Phys. Rev., Vol. 34:635—643. 1929.
(8, 25)
Farag, N. See El Nadi, A. F.
Faucher, G. A. A Study of Air-Flow in a Large-Ion Chamber.—In: "Recent Advances in Atmospheric Electricity," pp. 55—60, London—New York—Paris—Los Angeles. Perg. Press. 1958; J. Atmos. and Terr. Phys., 12(4):288—292. 1958.
(20)
Faucher, G. A. See Callahan, R. and Sagalyn, R.
Fischer, H. J. See Mühleisen, R.
Fontan, J., F. Billard, D. Blanc, J. Bricard, M. L. Huertas, and A. M. Marty. Etude de la mobilité des ions radioactifs formés sur les atomes de recul provenant de la désintegration du thoron dans l'air et différents gaz.—C. r. Acad. Sci., Vol. 262(19): B1315 B1317. 1966.
(0)
Fontell, N. Über die Ionenbeweglichkeit in Luft-Azeton and Luft-Essigsäuregemischen.—Soc. Sci. Fennica, Comm. Phys.—Math., 6(6):1—27. 1932.
(23)
Forster, W. W. Deposition of Unipolar Charged Aerosol Particles by Mutual Repulsion.—Brit. J. Appl. Phys., 10(5):206—213. 1959.
(2)
Fourton, A. See Beau, G.
Franck, J. Über die Beweglichkeit der Ladungsträger der Spitzenentladung.—Ann. Physik, Vol. 21:972—1000. 1906.
(16)
Fraser, D. A. See Mendenhall, A. L.
Frenkiel, F. N. Turbulent Diffusion: Mean Concentration Distribution in a Flow Field of Homogeneous Turbulence.—Adv. Appl. Mech., Vol. 3:61—107. 1953.
(20)
Fuchs, N. A. On the Stationary Charge Distribution on Aerosol Particles in a Bipolar Ionic Atmosphere.—Geofis. pura e appl., 56(3):185—193. 1963.
(0)
Fuks, N. A. See Fuchs, N. A.
Funder, L. Ermittlung, Ursachen und Bedeuten des Ionengehaltes der Grubenwetter.—Gerlands Beitr. Geophys., Vol. 54:370—449. 1939.
(34, 35)
Funder, L. Die Luftelektrizität, eine vernachlässigte Grösse in den Grubenwettern.—Glückauf, 76(17): 237— 243. 1940.
(35)
Gadomski, J. The High Resistance Insulator Adapted to the Exploitation in Different Climatic Circumstances.—Cha-Pa Observ. Atmosph. and Radioactiv, pp. 139—142, Lódŕ. 1958—1959.
(35)

Gagge, A. P. and I. M. Moriyama. The Annual and Diurnal Variation of Ions in an Urban Community.—Terr. Magn. and Atmos. Electr., 40(3):295—306. 1935.
(35)
Geitel, H. See Elster, J.
Gerdien, H. Die absolute Messung der elektrischen Leitfähigkeit und der spezifischen Ionengeschwindigkeit in der Atmosphäre.—Phys. Z., Vol. 4:632—635. 1903.
(35)
Gerdien, H. Demonstration eines Apparates zur absoluten Messung der elektrischen Leitfähigkeit der Luft.—Phys. Z., Vol. 6:800—801. 1905a.
(25, 34, 35)
Gerdien, H. Die absolute Messung der spezifischen Leitfähigkeit und der Dichte des verticalen Leitungsstromes in der Atmosphäre.—Terr. Magn. and Atmos. Electr., Vol. 10:65—79. 1905b.
(25, 35)
Gerdien, H. Untersuchungen über die atmosphärischen radioaktiven Induktionen.—Abhandl. Ges. Wiss., 5(25):1—74, Göttingen. 1907.
(0)
Giese, W. Experimentelle Beiträge zur Kenntis von elektrischen Leitungsvermögen der Flammengase.—Ann. Physik, Vol. 17:1—41, 236—257, 519—550. 1882.
(0, 1)
Gillespie, T. Electric Charge Effects in Aerosol Particle Collision Phenomena.—Internat. J. Air Pollution, 3(1/3):44—49. 1960.
(0)
Gillespie, T. and G. Langstroth. An Instrument for Determining the Electric Charge Distribution in Aerosols.—Canad. J. Chem., 30(12):1056—1068. 1952.
(0)
Giorgi, M. Apparecchiature "CENFAM" per la registrazione continua di parametri della elettricità atmosferica, Atti 13.—Conv. annuale, Ass. geofis. Ital. pp. 355—362. Roma, s. a. 1963.
(35)
Gish, O. H. Systematic Errors in Measurements of Ionic Content and the Conductivity of the Air.—Gerlands Beitr. Geophys., Vol. 35: 1—5. 1932.
(14)
Gish, O. H. Effects of Turbulent Air-Flow in some Apparatus Used in Atmospheric-electric Measurements.—Terr. Magn. and Atmos. Electr., 38(3):257—259. 1933a.
(20)
Gish, O. H. Bemerkungen zur Arbeit: H. Graziadei, "Studie über die Methodik der Ionenzählung."—Phys. Z., Vol. 34:712—713. 1933b.
(20)
Gish, O. H. and K. L. Sherman. Electrical Conductivity of Air to an Altitude of 22 kilometers.—Nat. Geogr. Soc. Contrib. Techn. Papers, Stratosphere Ser. No. 2:94—116. 1936.
(35)

Gockel, A. Luftelektrische Beobachtungen im Schweizerischen Mittelland, im Jura und in den Alpen. — Neue Denkschriften Schweizerisch. Naturforsch. Ges., Appendix 1, Vol. 54:1—75. 1917.
(11, 35)

Godefroy, A. Appareil enregistreur pour la mesure des résistances élevées et variables. Application à la mesure de la conductibilité électrique de l'air. — Ann. géophys., 5(2):164—166. 1949.
(35)

Gonsior, B. Messungen der luftelektrischen Raumladung mit Schwebestoff-Filtern. — In: "Luftelektrizität im AGJ", pp. 17—23, Aachen. 1957.
(35)

Graffunder, W. See Dessauer, F.

Graziadei, H. Th. Studie über die Methodik der Ionenzählung. — Phys. Z., Vol. 34:82—88. 1933.
(14)

Graziadei, H. Th. Zur Turbulenz bei Ionenzählern. — Phys. Z., Vol. 36: 181—182. 1935.
(20)

Green, H. L. and W. R. Lane. Particulate Clouds: Dusts, Smokes and Mists. — E. and F. N. SPON LTD, London. 1957.
(0)

Greinacher, H. and W. Klein. Über einen Apparat zur Dauerregistrierung der spezifischen Ionenzahl der Atmosphäre. — Gerlands Beitr., Geophys., Vol. 51:298—307. 1937.
(35)

Grieger, H. Ein neuer Apparat zur Messung des Ionenspektrums. — Z. Instrumentenkunde, Vol. 55:116—122. 1935.
(35)

Griffits, E. and J. H. Awbery. The Dependence of the Mobility of Ions in Air on the Relative Humidity. — Proc. Phys. Soc., Vol. 41:240—247. 1929.
(7)

Gröber, H. and S. Erk. Die Grundgesetze der Wärmübertragung, 3rd fully revised edition by U. Grigull. — Berlin u. a., Springer. 1955.
(24)

Groom, K. N. See Collin, H. L.

Gunn, R. Electrification of Cloud Droplets in Nonprecipitating Cumuli. — J. Meteorol., 9(6):397—402. 1952.

Gunn, R. Measurements of the Electricity Carried by Precipitation Particles. — In: "Thunderstorm Electricity" (ed. H. R. Byers), pp. 193—206. Chicago. 1953.
(11)

Gunn, R. Improved Apparatus for the Measurement of Atmospheric Electrical Conductivity. — Rev. Sci. Instrum., 36(5):594—598. 1965.
(35)

Gunn, R. See Woessner, R. H.

Gupta, B. K. See Venkiteshwaran, S. P.

Hansen, W. W. On the Origin of the Space-charge in the Atmosphere. — Terr. Magn. and Atmos. Electr., 40(3):277—279. 1935.
(11)

Harris, J. T. See Nolan, J. J.

Hasenclever, D. and H. Chr. Siegmann. Neue Methode der Staubmessung mittels Kleinionenanlagerung. — Staub, 20(7):212—218. 1960.
(4)

Hatakeyama, H., J. Kobayashi, J. Kitaoka, and K. Uchikawa. A Radiosonde Instrument for the Measurement of Atmospheric Electricity and its Flight Results. — In: "Recent Advances in Atmospheric Electricity," pp. 119—135, London—New York—Paris—Los Angeles, Perg. Press. 1958.
(35)

Haughey, C. J. See Dowling, J. J.

Hess, V. F. Neue Untersuchungen über die Ionisierungsbilanz der Atmosphäre auf Helgoland. — Gerlands Beitz., Geophys., Vol. 22: 256—314 und Sitzungsber. Akad. Wiss. IIa, Vol. 138:169—221. Wien. 1929.
(35)

Hess, V. F. See O'Donnel, G. A.

Hewitt, G. W. The Charging of Small Particles for Electrostatic Precipitation. — Commun. and Electronics, Vol. 31:300—306. 1957.
(25, 35)

Hewlett, C. W. Investigation of Certain Causes Responsible for Uncertainty in the Measurement of Atmospheric Conductivity by the Gerdien Conductivity Apparatus. — Terr. Magn. and Atmos. Electr., 19(4):219—233. 1914.
(35)

Higazi, K. A. and J. A. Chalmers. Measurements of Atmospheric Electrical Conductivity near the Ground. — J. Atmos. and Terr. Phys., 28(3):327—330. 1966.
(13)

Higazi, K. A. See Collin, H. L.

Hinkle, B. L., C. Orr, and J. M. Dalla Valle. A New Method for the Measurement of Aerosol Electrification. — J. Colloid Sci., 9(1):70—80. 1954.
(0)

Hinze, J. O. Turbulence. — New York—Toronto—London, McGraw-Hill Book Company, Inc. 1959.
(20)

Hock, A. and H. Schmeer. Über ein Gerät zur störfeldfreien Luftionenmessung und einen Impulszähler zur direkten Anzeige der Windgeschwindigkeit. — Z. angew. Phys., 14(H7):398—404. 1962.
(25, 35)

Hock, A. Messgeräte zur Bestimmung der Verteilung atmosphärischer Kleinionen und Kondensationskerne in bodennahen Schichten der Atmosphäre. — Arch. Techn. Messen, Vol. 373:29—34. 1967.
(35)

Hoegl, A. Messung von Konzentration und Beweglichkeit atmosphärischer Ionen. — Z. angew. Phys., 16(H4):252—258. 1963.
(4, 18, 29, 34, 35)

Hoegl, A. Messtechnik zur Bestimmung von Konzentration und Beweglichkeit atmosphärischer Ionen. — Elektromedizin, 8(3):148—152. 1963a.
(35)

Hogg, A. R. Atmospheric Electric Observations.—Gerlands Beitr. Geophys., Vol. 41:1—31. 1934.
(35)

Hogg, A. R. The Intermediate Ions in the Atmosphere.—Proc. Phys. Soc., Vol. 51:1014—1027. 1939.
(7)

Hok, G., N. W. Spencer, and W. G. Dow. Dynamic Probe Measurements in the Ionosphere.—J. Geophys. Res., 58(2):235—242. 1953.
(A)

Holl, W. See Mühleisen, R.

Hoppel, W. A. The Ions of the Troposphere: Their Interactions with Aerosols and the Geoelectric Field.—Diss. Cath. Univ., America, Washington. 1968.
(34)

Hoppel, W. A. and J. H. Kraakevik. The Mobility of Tropospheric Ions Above the Exchange Layer.—J. Atmos. Sci., 22(5):509—517. 1965.
(7, 14, 29)

Huddar, B. B. See Venkiteshwaram, S. P.

Huertas, M. L. See Fontan, J.

Hyland, M. C. See Curtis, H.

Ishikawa, H. See Takeuti, T.

Israël, H. Ein transportables Messgerät für schwere Ionen.—Z. Geophys., Vol. 5:342—350. 1929.
(35)

Israël, H. Zur Theorie und Methodik der Grössenbestimmung von Luftionen.—Gerlands Beitr., Geophys., Vol. 31:173—216. 1931.
(5, 6, 9, 10, 20, 25)

Israël, H. Zum Problem der Randstörungen bei Ionenmessungen, Gerlands Beitr., Geophys., Vol. 35:341—348. 1932a.
(14)

Israël, H. Ergänzungen zu meiner Arbeit: Zur Theorie und Methoden der Grössenbestimmung von Luftionen.—Gerlands Beitr., Geophys., Vol. 36:24—37. 1932b.
(14)

Israël, H. Der Wegersche Kleinionen-Aspirator als selbständiges Messgerät.—Meteorol. Z., Vol. 54:487—488. 1937.
(25)

Israël, H. Verzeichnis der luftelektrisch arbeitenden Stationen.—In: "Luftelektrizität im IGJ," pp. 111—114b., Aachen. 1957a.
(0)

Israël, H. Atmospharische Elektrizität, T. 1.—Leipzig, Akad. Verlagsges. Geest und Portig K.-G. 1957b.
(1, 5, 10, 14, 29, 35)

Israël, H. Atmosphärische Elektrizitat, T. 2.—Leipzig, Akad. Verlagsges. Geest und Portig K.-G. 1961.
(11)

Israël, H. and H. Dolezalek. Zur Methodik luftelektrischer Messungen IV: Störspannungen in luftelektrischen Messfühlern und ihre Verhütung, Gerlands Beitr. Geophys., 66 (H2), 129—142. 1957.
(13)

Israël, H. and L. Schalz. The Mobility-Spectrum of Atmospheric Ions.—Principles of Measurements and Results.—Terr. Magn. and Atmos. Electr., 38(4):285—300. 1933.
(10)

Itawa, A. See Takeuti, T.

Itawara, Yo. Zur Methodik der Ionenzählung in der freien Atmosphäre.—Phys. Z., Vol. 32:97—106. 1931.
(14)

Johnstone, H. F. See Kraemer, H. F.

Jonassen, N. Om måling afatmosfaerisk lufts iontaethed.—Teknisk forl., Kopenhavn. 1962.
(31, 35)

Jones, O. C., R. S. Maddever, and J. K. Sanders. Radiosonde Measurement of Vertical Electric Field and Polar Conductivity.—J. Sci. Instrum., 36(1):24—28. 1959.
(35)

Junge, C. E. Air Chemistry and Radioactivity.—New York—London, Acad. Press. 1963.
(0)

Junge, Chr. The Size Distribution and Aging of Natural Aerosols as Determined from Electrical and Optical Data in the Atmosphere.—J. Meteorol., 12(1):13—25. 1955.
(0)

Junod, A., R. Sänger, and J. Chr. Thams. Enregistrement direct du spectre des petits ions atmosphériques.—Z. angew. Math. und Phys., 13(3):272—278. 1962.
(12)

Kaden, H. Die elektromagnetische Schirmung in der Fernmelde- und Hochfrequenztechnik.—Berlin, Springer. 1950.
(6, 32)

Kähler, K. Über die durch Wasserfälle erzeugte Leitfähigkeit der Luft.—Ann. Physik, Vol. 12:1119—1141. 1903.
(6, 25, 35)

Kähler, K. Einführung in die atmosphärische Elektrizität.—Berlin, Verlag Bornträger. 1929.
(35)

Kähler, K. Über die Verteilung der Elektrizitätsträger in der Atmosphäre.—Meteorol. Z., Vol. 47:57—68. 1930.
(35)

Kato, K. See Aoki, T.

Kawano, M. See Wilkening, M. H.

Kennedy, H. The Large Ions in Atmosphere.—Proc. Roy. Irish Acad., Vol. A32(1):1—6. 1913.
(35)

Kennedy, H. See McClelland, J. A.

Kenny, P. J. See Nolan, P. J.

Kern, W. See Riezler, W.

Kilinski, E. Ein neues Verfahren zur Registrierung der luftelektrischen Leitfähigkeit.—Z. Meteorol., Vol. 3:174—175. 1949.
(35)

Kilinski, E. Die neuen Registrieranlagen im luftelektrischen Hause des Hauptobservatoriums in Potsdam. — Z. Meteorol, Vol. 7:146—150. 1953.
(35)

Kitaoka, T. See Hatakeyama, H.

Klein, W. See Greinacher, H.

Knoll, M., J. Eichmeier, and R. W. Schön. Properties, Measurement and Bioclimatic Action of "Small" Multimolecular Atmospheric Ions. — In: "Advances in Electronics and Electron Physics," Vol. 19:177—254, New York, Acad. Press. 1964.
(35)

Kobayashi, J. See Hatakeyama, H.

Koenigsfeld, L. La mesure de la conductibilité par radiosonde. — Publs. ser. B. Inst. roy. Metéorol. No. 18:1—8, Belgique. 1955.
(35)

Koenigsfeld, L. La mesure du gradient du potentiel et de la conductibilité par radiosonde. — In: "Luftelektrizität im IGJ," pp. 84—90, Aachen. 1957.
(35)

Kohlrausch, K. W. F. Über elektrostatische Kapazität und Widerstandskapazität. — Verk. Deutsch. Phys. Ges., Vol. 8:151—156. 1906.
(4)

Kohlrausch, K. W. F. Zur Methodik der Beweglichkeits- und Wiedervereinigungsmessungen an Ionen in strömender Luft. — Sitzungsber. Akad. Wiss. IIa, Vol. 123:1929—1954, Wien. 1914.
(6)

Kotas, D. E. See Coroniti, S. C.

Kraakevik, J. H. The Airborne Measurement of Atmospheric Conductivity. — J. Geophys. Res., Vol. 63(1): 161—169. 1958.
(35)

Kraemer, H. F. and H. F. Johnstone. Collection of Aerosol Particles in Presence of Electrostatic Fields. — Industr. and Engng. Chem., Vol. 47(12):2426—2434. 1955.
(4)

Kroening, J. L. Ion-density Measurements in the Stratosphere. — J. Geophys. Res., Vol. 65(1):145—151. 1960.
(14, 35)

Kurz, K. Über die scheinbaren Unterschiede der Leitfähigkeit der Atmosphäre bei positiver and negativer Ladung des Plattenelektrometers. — Phys. Z., Vol. 7:771—775. 1906.
(13)

Kurz, K. Die Beeinflussung der Ergebnisse luftelektrischer Messung durch die festen radioaktiven Stoffe der Atmosphäre. — Ann. Physik, Vol. 24:890—930. 1907.
(13)

Lamb, H. Hydrodynamics. — Cambridge University Press, 6th edition. 1957.
(18)

Lane, C. See Wilkening, M. H.

Lane, W. R. See Green, H. L.

Langevin, M. P. Sur les ions de l'atmosphère. — C. r. Acad. Sci., Vol. 140:232—234. 1905a.
(1, 5)

Langevin, M. P. Sur un enregistreur des ions de l'atmosphère. — C. r. Acad. Sci., Vol. 140:305—307. 1905 b.
(1)

Langevin, M. P. and M. Moulin. Electromètre enregistreur des ions de l'atmosphère. — Le Radium, Vol. 4:218—229. 1907.
(35)

Langstroth, G. See Gillespie, T.

Laub, J. See Dessauer, F.

Lautner, P. See Mecklenburg, W.

Leckie, A. J. Luftelektrische Messungen an Bosschalaboratorium der Technischen Hochschule in Bandoeng. — Gerlands Beitr. Geophys., Vol. 52:280—333, Java. 1938.
(35)

Lenard, P. Über die Elektrizitätszerstreuung in ultraviolett durchstrahlter Luft. — Ann. Physik, Vol. 3:298—319. 1900.
(1)

Lenard, P. and C. Ramsauer. Über Bildung grosser Elektrizitätsträger. — Sitzungsberg. Akad. Wiss. Math-naturwiss. Kl. Abh., Vol. 32:1—31. Heidelberg. 1910.
(14, 25)

Lévy, C. See Cagniard, L.

Lindsay, R. See Siksna, R.

Lipscomb, W. N., F. R. Rubin, and J. H. Sturdivant. An Investigation of a Method for the Analysis of Smokes According to Particle Size. — J. Appl. Phys., Vol. 18(1):72—79. 1947.
(0, 23)

Loeb, L. B. Effect of the Gauze in the Franck Modification of the Rutherford Alternating Current Method for Measuring Ionic Mobilities. — J. Franklin Inst., Vol. 196:771—778. 1923.
(6)

Loeb, L. B. See Leb, L.

Loeb, L. B. Basic Processes of Gaseous Electronics. — Berkeley — Los Angeles, Univ. Calif. Press. 1960.
(0, A)

Lonsdale, T. The Flow of Water in the Annular Space between Two Coaxial Pipes. — Philos. Mag., Vol. 46:163—169. 1923.
(34)

Lutz, C. W. Eine neue Form des Ebertschen Aspirations — Apparates. — Sitzungsber. math. — naturwiss. Kl. Bayerischen Akad. Wiss., Vol. 14:1—17, München. 1909.
(25, 35)

Lutz, C. W. Aufzeichnung der elektrischen Raumladung der Luft. — Gerlands Beitr. Geophys., Vol. 41:416—428. 1934.
(35)

Lutz, C. W. Aufzeichnung der elektrischen Leitfähigkeit der Luft. — Gerlands Beitr. Geophys., Vol. 47:241—251. 1936.
(35)

Mache, H. Eine einfache Methode, die Geschwindigkeit von Gasionen zu bestimmen, welche weder hohes Molisierungs- noch Regenerierungsvermögen besitzen. — Phys. Z., Vol. 4:717—721. 1903.
(6, 19)

Mackell, J.F. Influence of the Earth's Potential Gradient Upon the Measurement of the Atmospheric Ionic Density by the Ebert Ion Counter.— Phys. Rev., Vol. 17:390—391. 1921.
(13)

Mackell, J.F. The Influence of the Earth's Potential Gradient upon Measurements of the Mean Ionic Density of the Atmosphere by the Ebert Ion-counter.— Phys. Rev., Vol. 21:436—448. 1923.
(13)

Maddever, R.C. See Jones, O.C.

Mallahan, F.J. See Moore, C.B.

Marty, A.M. See Fontan, J.

Masson, H. See Salvador, O.

Mateicine, V. See Vasilin, Ch.

Maushart, R. Über die Beweglichkeit positiver Ionen in extrem reinen Gasen und Gasgemischen.— Ann. Phys., Vol. 1(H 4/5):246:280.1958.
(A)

McClelland, J.A. On the Conductivity of the Hot Gases from Flames.— Philos. Mag., Vol. 46:29—42. 1898.
(0, 6, 11, 25, 35)

McClelland, J.A. and H.Kennedy. The Large Ions in the Atomsphere.— Proc. Roy. Irish Acad., Vol. A, 30:72—91. 1912.
(4, 25)

McFarland, A.R. See Whitby, K.T.

Mecklenburg. W. and P.Lautner. Zur Messung des Potentialgradienten und der Raumladung in der freien Atmosphäre.— Z. Phys., Vol. 115(H 9/10):557—570. 1940.
(11)

Mendenhall, A.L. and D.A.Fraser. A Continuously Recording Instrument to Measure Air-Borne Ion Concentration.— Americ. Industrial Hygiene Ass.J., 24(6):555—562. 1963.
(35)

Metnieks, A. See Siksna, R.

Metnieks, A.L. and L.W.Pollak. Tables and Graphs for Use in Aerosol Physics. Part I. Mobility v. Radius and Vice Versa.— Geophys. Bull. Dublin Inst. Advanced Studies School Cosmic Phys., No.16, 6, pp. 1—37. 1961.
(0)

Misaki, M.A. A Method of Measuring the Ion Spectrum.— Papers Meteorol. and Geophys., Vol. 1:313—318. 1950.
(7)

Misaki, M.A. Determination of Air Flow in an Ion Chamber. Preliminary Examination for the Study of Ion Spectrum.— Papers Meteorol. and Geophys., Vol. 11:348—355. 1960.
(4, 18, 20)

Misaki, M. Studies on the Atmospheric Ion Spectrum I. Procedures of Experiments and Data Analysis.— Papers Meteorol. and Geophys., Vol. 12:247—260. 1961.
(35)

Mitchell, J.H. and K.E.W.Riedler. The Speed of Positive Ions in Nitrogen.— Proc. Roy. Soc., Vol. A,146:911—921. 1934.
(1)

Moore, C.B., B.Vonnegut, and F.J.Malahan. Airborne Filters for the Measurement of Atmospheric Space Charge.— J. Geophys. Res., 66(10):3219—3226. 1961.
(35)

Moriyama, I.M. See Gagge, A.P.

Moulin, M. See Langevin, M.P.

Mühleisen, R. Vorschläge für die Auswahl, Einrichtung und Zusammenarbeit luftelektrischer Stationen im internationalen Geophysikalischen Jahr.— In: "Luftelektrizität im IGJ," pp. 72—75. Aachen. 1957a.
(11)

Mühleisen, R. Atmosphärische Elektrizität.— In: "Handbuch der Physik," B. 48, pp.541 — 607, Berlin—Gott. — Heidelberg. 1957b.
(35)

Mühleisen, R. and H.J.Fischer. Radiosonden für luftelektrische Messungen.— Arch. techn. Messen, No. 274:229—232. 1958.
(35)

Mühleisen, R. and H.J.Fischer. Luftelektrische Aerologie.— Beitr. Phys. Atmos., 34(1/2):3—14. 1961.
(14)

Mühleisen, R. and W.Holl. Eine neue Methode zur Messung der elektrischen Raumladungsdichte der Luft.— Geofis. pura e appl., Vol. 22:189—194. 1952.
(11)

Narcisi, R.S. and A.D.Bailey. Mass Spectrometric Measurements of Positive Ions at Altitudes from 64 to 112 kilometers.— J. Geophys. Res.,70(15):3687—3700. 1965.
(0, A)

Nazarek, A. See Coroniti, S.C.

Neaga, V.G. and V.I.Antonescu. Realizarea unui aparat pentru inregistrarea automată a conductibilităti electrice a aerului.— Studii si cercetări fiz. Acad. RPR, 9(3):389—391. 1958.
(35)

Neher, H.V. An Automatic Ionization Chamber.— Rev. Sci. Instrum., Vol. 24:99—102. 1953.
(35)

Nitta, M. See Yaita, T.

Nolan, J.J. The Mobilities of Ions Produced by Spraying Distilled Water.— Proc. Roy. Irish Acad., A33(2):9—23. 1916.
(29)

Nolan, J.J. The Nature of the Ions Produced in Air by Radio-active Bodies.— Proc. Roy. Irish Acad., A35(4):38—45. 1919.
(7, 25)

Nolan, J.J. Ionic Mobilities in Air and Hydrogen.— Proc. Roy. Irish Acad., A36(5):74—92. 1923.
(29)

Nolan, J.J., R.K.Boylan, and G.P.Sachy. The Equilibrium of Ionization in the Atmosphere.— Proc. Roy. Irish Acad., A37(1): 1—12. 1925.
(25)

Nolan, J.J. and J.T.Harris. Ionization in Moist and Dry Air.— Proc. Roy. Irish Acad., A36(2):31—49. 1922.
(7, 25)

Nolan, J.J. and P.J. Nolan. Preliminary Account of Observations on Atmospheric Electricity in Country Air.—Gerlands Beitr. Geophys., Vol. 25:414—428. 1930.
(4, 25)

Nolan, J.J. and P.J. Nolan. Observations on Atmospheric Ionization at Glencree, Co. Wielow.—Proc. Roy. Irish Acad., A40(2):11—59. 1931.
(25)

Nolan, J.J. and P.J. Nolan. A New Method for Counting Atmospheric Ions and Determining Their Mobilities.—Proc. Roy. Irish Acad., A42(3):15—19. 1935.
(25)

Nolan, J.J. and G.P. Sachy. Atmospheric Ionization.—Proc. Roy. Irish Acad., A37(7):71—94. 1927.
(29)

Nolan, P.J. See Nolan, J.J.

Nolan, P.J. Evidence for the Existence of Homogeneous Groups of Large Ions.—Phys. Rev., Vol. 18:185—198. 1921.
(29)

Nolan, P.J. The Character of the Ionization Produced by Spraying Water.—Philos. Mag., 1(2):417—428. 1926.
(35)

Nolan, P.J. and J. Deignan. Observations on Atmospheric Condensation Nuclei in Stored Air.—Proc. Roy. Irish Acad., A51(18):239—249. 1948.
(6)

Nolan, P.J. and P.J. Kenny. A Modified McClelland Method for Measuring Ionic Mobilities.—J. Atmos. and Terr. Phys., 2(5):266—271. 1952.
(5)

Nolan, P.J. and T.C. O'Connor. Size, Mobility and Charge of Multiply Charged Large Ions.—Proc. Roy. Irish Acad., A57(10):161—171. 1955.
(6)

Nordmann, Ch. Méthode pour l'enregistrement continu de l'état d'ionisation des gas.—Ionographe, C.r. Acad. Sci., Vol. 138:1418—1420. 1904a.
(25)

Nordmann, Ch. Enregistrement continu de l'ionisation gazeuse et de la radioactivité par les méthodes de déperdition.—C.r. Acad. Sci., Vol. 138:1596—1599. 1904b.
(25)

Norinder, H. Investigation with Regard to the Induced Charge from Electrical Fields on the Ebert Ion Counter.—Ark. mat. astron. och fys. 15, H1, No. 2:1—19. 1921.
(13)

Norinder, H. and R. Siksna. Mobility of Atmospheric Small Ions during Summer Night at Uppsala.—J. Atmos. and Terr. Phys., Vol. 4:93—105. 1953.
(30)

Obolensky, W.N. Über elektrische Ladungen in der Atmosphäre.—Ann. Physik, Vol. 77:644—666. 1925.
(11)

O'Connor, T.C. See Nolan, P.J.

O'Donnel, G.A. Electric Conductivity and Small Ion Concentration of the Atmosphere at One Metre above Ground and Conductivity at Ground Level.—J. Atmos. and Terr. Phys., Vol. 2(4):201—215. 1952.
(13)

O'Donnel, G.A. and V.F. Hess. A Comparative Study of Atmospheric Conductivity at Ground Level and One Meter Above Ground.—Arch. Meteorol. Geophys. und Bioklimatol., Vol. A4:351—367. 1951.
(34)

Onu, Const. See Vasiliu, Ch.

Orr, C. See Hinkle, B.L.

Ortner, G. and A.F. El Nadi. Intermediate and Large Atmospheric Ions at Cairo-Giza.—J. Atmos. and Terr. Phys., 7(1/2): 31—39. 1955.
(9)

Oster, A.L. See Dolezalek, H.

Oster, A.L. and S.C. Coroniti. A Method of Measuring Electron and Ion Densities in the Region of 40—80 kilometers.—J. Geophys. Res., 73(13):4421—4424. 1968.
(A)

Oster, A.L. and H. Dolezalek. Laboratory Instrumentation for Testing and Calibration of in situ Probes for Lower Ionosphere, Mesosphere and Stratosphere.—Rev. Sci. Instrum., 37(4):407—411. 1966.
(A)

Pai, S.I. Viscous Flow Theory II—Turbulent Flow. Princeton a.o., D. Van Nostrand Company. 1957.
(20)

Paltridge, G.W. Experimental Measurements of the Small-Ion Density and Electrical Conductivity of the Stratosphere.—J. Geophys. Res., 70(12):2751—2761. 1965.
(4, 35)

Paltridge, G.W. Stratospheric Small-Ion Density Measurements from a High-Altitude Jet Aircraft.—J. Geophys. Res., 71(8):1945—1952. 1966.
(35)

Papp, M. See Stierstadt, K.

Parziale, A.J. See Callahan, R.C., Coroniti, S.C.

Patten, R. See Callahan, R.C., Coroniti, S.C.

Pedersen, A. Measurement of Ion Concentrations in the D Region of the Ionosphere with a Gerdien Condenser Rocket Probe.—Res. Inst. of Nat. Defence, Electr. Dep., Stockholm, Sweden, FOA—3—A607. 1964.
(A)

Pflügel, D. Über die Teilflächenmethode zur Bestimmung der Kapazität beliebiger Leiter.—Z. angew. Phys., 23(H2):89—94. 1967.
(33)

Phillips, B.B. A Discussion of the Sampling Problem during Aspiration Type Ionic Measurements.—Trans. Amer. Geophys. Union, 44(1):52—52. 1963.
(13)

Pluvinage, Ph. Etude théorique et experimentale de la conductibilité électrique dans les nuages nonorageux II.—Ann. géophys., Vol. 2:160—178. 1946.
(35)

Pollak, L.W. See Metnieks, A. L.
Prüller, P. and J. Reinet. Long-Term Investigations of Atmospheric Ionization in Tartu, Estonian SSR.—Int. J. Biometeorol., 10(2): 127—133. 1966.
(29, 30)
Ramsauer, C. See Lenard, P.
Ramsauer, C.—See Metnieks, A. L.
Reimers, H. Messungen der kleinen Ionen der Luft mit einem neuen Messgerät.—Berlin. 1944.
(20, 32)
Reinet, J.—see Reinet, Yu. A.
Reinet, J. Atmosfääri ionisatsiooni muutustest Tartus aastase perioodi vältel.—Tartu Riikliku Ülikooli Toimetised, Vol. 59:71—107. 1958.
(11)
Reinet, J., H. Tammet, and J. Salm. On the Methods of Counting Air Ions.—In: Biometeorology, Vol. 2:1037—1046, London, Pergamon Press. 1967.
(35)
Rich, T.A. The Average Size of Submicron Particles.—Internat. J. Air. Pollut., 1(4):288—292. 1959.
(4)
Richardson, L. F. Atmospheric Diffusion Shown on a Distance-Neighbour Graph.—Proc. Roy. Soc., Vol. A110 : 709—737. 1926.
(20)
Riecke, E. Beiträge zu der Lehre von der Luftelektrizität.—Ann. Physik, Vol. 12:52—84. 1903.
(4)
Riedler, K. E. W. See Mitchell, J. N.
Riezler, W. and W. Kern. Ein Elektrofilter zur Abscheidung radioaktiver Aerosole.—Nukleonic, 1(5):191—195. 1959.
(0)
Rohmann, H. Methode zur Messung der Grösse von Schwebeteilchen.—Z. Phys., Vol. 17:253—265. 1923.
(0)
Rubin, T. R. See Lipscomb, W. N.
Rutherford, E. See Thomson, J. J.
Rutherford, E. Uranium Radiation and Electrical Conduction Produced by it.—Philos. Mag., Vol. 47:109—163. 1899.
(0, 25)
Sachy, P. J. See Nolan, J. J.
Sagalyn, R. C. See Callahan, R. C.
Sagalyn, R. C. and G. A. Faucher. Space and Time Variations of Charged Nuclei and Electrical Conductivity of the Atmosphere.—Quart. J. Roy. Meteorol. Soc., 82(354):428—445. 1956.
(30)
Sagalyn, R. C. and G. A. Faucher. Time Variations of Charged Atmospheric Nuclei.—In: "Artific. Stimulat. Rain," pp. 97—120. London—New York—Paris. 1957.
(30)
Salagyn, R. C. Space Electricity: Physical Problems and Experimental Techniques.—In: Probl. Atmos. Space Electr., pp. 548—565, Amsterdam a. o., Elsevier. 1965.
(A)

Saks, O. Automaatne fotograafiline ioonide loendaja.—Tartu Riikliku Ulikooli Toimetised, Vol. 42; 84—93. 1956.
Saks, O. See Saks, O. B.
Salles, E. Mesure de la conductibilité électrique de l'atmosphère à l'Observatoire de la Chambon-la-Forêt, 1939.—Ann. Inst. phys. globe Univ. Paris, Vol. 20:54—59. 1942.
(35)
Salm, J. See J. Reinet.
Salvador, O. and H. Masson. Enregistrement continu de la conductibilité ionique de l'air au voisinage du sol.—J. phys. et radium, 19(12):124A—128A, Suppl. 1958.
(35)
Sanders, J.K. See Jones, O.C.
Sänger, R. See Junod, A.
Schaffhauser, J. Messung von kurzperiodigen Schwankungen der Luftionisation.—Arch. Meteorol. Geophys. und Bioklimatal., A., Vol. 5:179—186. 1952.
(25, 30)
Schiller, L. Strömung in Rohren.—Handbuch Experimentalphysik Wien-Harms, 4(4): 1—207, Leipzig, Akad. Verlagsges, M. B. H. 1932.
(34)
Schilling, G.T. and J. Carson. On the Electrical Conductivity of Air Inside Buildings.—Arch. Meteorol. Geophys. und Bioklimatol., Vol. 5:52—58. 1953.
(30)
Schlichting, H. Entstehung der Turbulenz.—In: Handbuch der Physik, Vol. 8/1, Strömungmechanik 1, Berlin u. a., Springer. 1959.
(34)
Schmeer, H. See Hock, A. and R. Siksna.
Schmeer, H. R. Untersuchung über die Messbarkeit der elektrischen Leitfähigkeit und der Dichte der Kleinionen in der Atmosphäre.—Arch. Techn. Messen, Vol. 361:31—36, 55—56. 1966.
(9, 13, 14, 32, 33)
Scholz, J. Über die Messmethoden der elektrischen Leitfähigkeit der Atmosphäre.—Phys. Z., Vol. 32:130—139. 1931a.
(13)
Scholz, J. Gegenfelduntersuchungen und Beweglichkeitsmessung kleiner Ionen.—Gerlands. Beitr. Geophys. Vol. 29:226—238. 1931b.
(4, 14, 15)
Scholz, J. Luftelektrische Messungen auf Franz-Josephs-Land während des II internationalen Polarjahres 1932—1933.—Trudy Arkticheskogo Instituta, Vol. 6:1—169. 1935.
(14)
Schön, R. W. See Knoll, M.
Schulz, L. See Israël, H.
Sekiyama, M. The Measurement of the Aerosol by Using an Ion-Detector.—J. Fac. Ibaraki Univ., 7(3):81—84. 1959.
(4)
Seymour, D.W. See Coroniti, S. C.
Sheppard, P. A. Character of Atmospheric Ionisation.—Nature, Vol. 129:169—169. 1932.
(30)

Sherman, K. L. See Gish, O. H.
Shimizu, T. Dissipation Coefficient of Electricity of Fine Wire.— Mem. Fac. Liber. Arts Fakui Univ., Ser. 1, No. 6:43—50. 1956.
(4)
Shimizu, T. Distribution of Ions Around Charged Fine Wires. — J. Geomagn. and Geolectr., 9(2):116—118. 1957.
Shimizu, T. A Study on the Capture of Atmospheric Ions by Charged Wire Rings.— Mem. Fac. Liber. Arts Fukui, Univ., Ser. 2, Part 4, No. 10:81—117. 1960.
(4)
Siegmann, H. Chr. See Hasenclever, D.
Siksna, R. See Norinder, H.
Siksna, R. Measurements of Large Ions in the Atmospheric Air at Uppsala.— Ark. geofys., Vol. 1 : 483—518. 1950.
(5, 14)
Siksna, R. Some Topics Concerning Experimental Investigation of Air Ions.— Proc. Internat. conf. ioniz. air, Philadelphia, Pa., Sect. 9, Vol. 1:25. 1961a.
(4, 25, 35)
Siksna, R. An Ionometric Counter for Condensation Nuclei.— Geofis. pura e appl., Vol. 50:23—36. 1961b.
(4)
Siksna, R. and J. Eichmeier. Fluctuations in the Concentration of Artificially Produced Air Ions in Closed Room.— Ark. geofys., Vol. 3:299—313. 1961.
(30)
Siksna, R. and J. Eichmeier. Continuous Recording of Small Air Ions in Closed Rooms.— Ark. geofys., 4(6)563—576. 1966.
(35)
Siksna, R. and Ya. Lindsay. Air Ions Produced by a Tritium-ion Generator. II. Measurement of Ions in a Room. Mobility. — Ark, geofys., Vol. 3:141—154. 1961.
Siksna, R. and A. Metnieks. Aufladung eines isolierten Rohrs bei Durchströmen von ionisierter Luft und Adsorption der Ionen.— Z. angew. Phys., 5(12):454—461. 1953.
(16, 20, 24)
Siksna, R. and H. Schmeer. On the Recording of Rapidly Fluctuating Concentrations of Air Ions.— Ark. geofys., Vol. 3:315—330. 1961.
(30)
Spencer, N. W. See Hok, G.
Steinmauer, R. See Weiss, R.
Stergis, C. G. See Coroniti, S. C.
Stierstadt, K. and M. Papp. Aerosole als Träger der natürlichen Radioaktivität.— Atomkernenergie, 5(12):459—481. 1960.
(0)
Stschepotjewa, E. S. See Baranow, W. J. and E. C. Shchepot'eva.
Sturdivant, J. H. See Lipscomb, W. N.
Swann, W. F. G. The Measurement of Atmospheric Conductivity, Together with Certain Remarks on the Theory of Atmospheric Radioactive Measurements.— Terr. Magn. and Atmos. Electr., Vol. 19:23—37. 1914a.
(4)

Swann, W. F. G. The Theory of Electrical Dispersion into the Free Atmosphere, with the Discussion of the Theory of the Gerdien Conductivity Apparatus, and of the Theory of the Collection of Radioactive Deposit by a Charged Conductor.— Terr. Magn. and Atmos. Electr., Vol. 19:81—92. 1914b.
(4, 33)
Swann, W. F. G. On Certain New Atmospheric-electric Instruments and Methods.— Terr. Magn. and Atmos. Electr., Vol. 19:177—185. 1914c.
(14, 25, 32, 35)
Swann, W. F. G. On Certain Matters Relating to the Theory of Atmospheric-electric Measurements.— Terr. Magn. and Atmos. Electr., Vol. 19: 205—218. 1914d.
(4, 13)
Swann, W. F. G. The Theory of the Action of the Earth's Potential-gradient in Measurements with the Ebert Ion-counter.— Phys. Rev., Vol. 21: 449—455. 1923.
(13)
Takeuti, T., H. Ishikawa, and A. Iwata. Preliminary Balloon Measurement of Negative Small Ion Density.— J. Geomagn. Geoelectr., 18(4):493—494. 1966.
(35)
Tammet, H. See Reinet, J. and H. F. Tammet.
Thams, J. Chr. See Junod, A.
Thellier, O. Mésure de la conductibilité électrique de l'air par une mèthode de zero.— C. r. Acad. Sci., 196(22):1684—1686. 1933.
(35)
Thellier, O. Mésure de la conductivité électrique de l'air à Paris.— Ann. Inst. phys. globe Univ. Paris, Vol. 14:71—76. 1936.
(35)
Thellier, O. Sur l'ionisation de l'air dans une atmosphère pure (campagne) et polluée (grande ville).— Ann. Inst. phys. globe Univ. Paris, Vol. 19:107—179. 1941.
(35)
Thomson, J. J. and E. Rutherford. On the Passage of Electricity through Gases Exposed to Röntgen Rays.— Philos. Mag., Vol. 72: 392—407. 1896.
(0, 1, 25)
Thomson, W. Courants terrestres et électricité atmosphèriqué.— Conf. internat. pour la détermination des unités électriques, 16—26 Oct. 1882. Procés-verbaux, Paris, pp. 84—91. 1882.
(11)
Torreson, O. W. Instruments Used in Observations of Atmospheric Electricity.— In: Terr. Magn. and Electr. New York, pp. 231—269. 1949.
(35)
Torreson, O. W. and G. R. Wait. Measurements of Total Nuclei, of Uncharged Nuclei and of Large Ions in the Free Atmosphere at Washington.— Terr. Magn. and Atmos. Electr., Vol. 39:47—64. 1934.
(35)
Torreson, O. W. See Wait, G. R.

Townsend, J.S. Electrical Properties of Newly Prepared Gases. — Philos. Mag., Vol. 45:125—151. 1898.
(1, 2)
Uchikawa, K. On the Improvement of the Atmospheric Radiosonde. — Geophys. Mag., Vol. 31:705—714. 1963.
(35)
Uchikawa, K. Atmospheric Electricity Radiosondes for the IQSY. — Geophys. Mag., 33(2):163—177. 1966.
(35)
Uchikawa, K. See Hatakeyama, H.
Ulsamer, J. Wärmeabgabe eines Drahtes oder Rohres an einem senkrecht zur Achse strömenden Gas- oder Flüssigkeitsstrom. — Forsch. Geb. Ingenieurwesens, Vol. 3:94— 98. 1932.
(24)
Vasiliu, Ch., N. Calinicenco, Const Onu. Determinări de conductibilităti ale aerului in regiuni de munte. — Bul. stiint. Acad. RPR Sec. mat. şi fiz., 6(2):397—405. 1954.
(35)
Vasiliu, Ch., N. Calinicenco, and V. Mateiciuc. Contributiuni relativ la metodele intrebuintate in măsurarea conductibilitătii electrice a aerului. — Bul. Inst. Politehn. Iasi, 2(1/2):67— 80. 1956.
(35)
Venkiteshwaran, S.P. Measurement of the Electrical Potential Gradient and Conductivity by Radiosonde at Poona, India. — In: Recent Advances in Atmospheric Electricity, pp. 89—100, London—New York—Paris—Los Angeles, Perg. Press. 1958.
(35)
Venkiteshwaran, S.P., B.K. Gupta, and B.B. Huddar. Measurement of the Electrical Conductivity in the Upper Air by Radiosonde. — Proc. Indian Acad. Sci., A, 38(2):109—115. 1953.
(35)
Vogler, G. Über den Einfluss eines Emissionseffektes auf das Messergebnis der elektrischen Leitfähigkeit der Luft. — Geofis. pura e appl., Vol. 43:250—254. 1959.
Vogler, G. Einfluss der Auflagerung radioaktiver Substanzen an Aerosole auf den Emissionseffekt bei der Messung der elektrischen Leitfähigkeit der Luft. — Z. Naturforsch., a15(1):89—89. 1960.
(13)
Vonnegut, B. See Moore, C.B.
Wait, G.R. Report on Ion-Counters, Methods of Use and Results. — C.r. Assemblée de Lisbonne, 1933. — Union Géod. Géophys. Internat. Ass. Magn. Electr. Terr. Bull., No. 9:143—147, Copenhagen. 1934.
(13, 20)
Wait, G.R. and O.W. Torreson. The Large-ion and Small-ion Content of the Atmosphere at Washington. — Terr. Magn. and Atmos. Electr., 39(2):111—119. 1934.
(35)
Wait, G.R. See Torreson, O.W.
Weger, N. Eine Verbesserung der Methodik der Kleinionen—Zählung. — Phys. Z., Vol. 36:15—20. 1935a.
(4, 25)

Weger, N. Über einige bei Ionenmessungen mit Zylinderkondensatoren auftretende Störungen. — Gerlands Beitr. Geophys., Vol. 45:195—201. 1935b
(28)
Weiss, R. and R. Steinmauer. Messungen der Luftionen. — In: Innsbruck. Gerlands Beitr. Geophys., Vol. 50:238—251. 1937.
(25)
Werme, J.V. See Coroniti, S.C.
Whipple, E.C. An Improved Technique for Obtaining Atmospheric Ion Mobility Distributions. — J. Geophys. Res., 65(11):3679—3684. 1960.
(7)
Whipple, E.C. See Bordeau, R.E.
Whitby, K.T. and W.E. Clark. Electric Aerosol Particle Counting and Size Distribution Measuring System for the 0.015 to 1 m Size Range. — Tellus, 18(2/3):573—586. 1966.
(35)
Whitby, K.T. and A.Ya. McFarland. The Decay of Unipolar Small Ions and Homogeneous Aerosols in Closed Spaces and Flow Systems. — Proc. Internat. Conf. Ioniz. Air, I. Sect. 7, Philadelphia, Pa. 1961.
(2)
Wiedemann, G. Die Lehre von der Elektrizität, Vol. 4, Sect. 2 — Braunschweig, Vieweg und Sohn. 1885.
(1, 25)
Wigand, A. Measurements of the Electrical Conductivity in the Free Atmosphere up to 9000 Meters in Height. — Terr. Magn. and Atmos. Electr., Vol. 19:93—101. 1914.
(35)
Wigand, A. Aerophysikalische Forschungen mit dem Flugzeuge. — Naturwissenschaften, Vol. 7:487—491. 1919.
(35)
Wigand, A. Messungen der Ionisation und Ionenbeweglichkeit bei Luftfahrten. — Phys. Z., Vol. 22:36—46. 1921.
(35)
Wilkening, M.H. Natural Radioactivity as a Tracer in the Sorting of Aerosols According to Mobility. — Rev. Sci. Instrum., Vol. 23:13—16. 1952.
(0)
Wilkening, M.N., M. Kawano, and C. Lane. Rodondaughter Ions and their Relation to Some Electrical Properties of the Atmosphere. — Tellus, 18(2/3): 679—684. 1966.
(0)
Woessner, R.H., W.E. Cobb, and R. Gunn. Simultaneous Measurements of the Positive and Negative Light-ion Conductivities to 26 Kilometers. — J. Geophys. Res., 63(1):171—180. 1958.
(35)
Wolodkewitsch, N. Über die elektrische Diffusion der Ionen in Gasen bipolarer Beladung. — Z. Phys., Vol. 84:593—609. 1933a.
(2)
Wolodkewitsch, N. Untersuchungen über die "elektrische Diffusion" der Ionen in Gasen unipolarer Beladung. — Ann. Physik, Vol. 16: 7—43. 1933b.
(2)

Wolodkewitsch, N. and F. Dessauer. Weitere Entwicklung der Apparatur zur Erzeugung unipolar beladener Luftströmung und Messung der Luftladungsdichte. — In: Zehn Jahre Forschung auf dem physikalischmedizinischen Grenzgebiet, pp. 34—51, Leipzig, Verlag G. Thieme. 1931a.
(35)

Wolodkewitsch, N. and F. Dessauer, Beweglichkeit und Grösse der Ionen. — In: Zehn Jahre Forschung auf dem physikalischmedizinischen Grenzgebiet, pp. 52—81, Leipzig, Verlag G. Thieme. 1931b.
(20, 35)

Yaita, T. and M. Nitta. The Effects of Turbulence upon the Measurements of Atmospheric Ions. — Bull. Electrotechn. Lab., 19(4): 272—284, 308. 1955.
(20, 21, 34)

Young, W. M. Mobility of the Ions in the Corona Discharge. — Phys. Rev., Vol. 28:129—141. 1926.
(35)

Yunker, E. A. The Mobility Spectrum of Atmospheric Ions. — Terr. Magn. and Atmos. Electr., 45(2): 127—132. 1940.
(32, 35)

Zelenyi, J. On Air Electrified by the Discharging Action of Ultra-violet Light. — Philos. Mag., Vol. 45:272—273. 1898a.
(11)

Zelenyi J. On the Ratio of the Velocities of the Two Ions Produced in Gases by Röntgen Radiation, and on Some Related Phenomena. — Philos, Mag., Vol. 46:120—154. 1898b.
(6, 7)

Zelenyi, J. The Velocity of the Ions Produced in Gases by Röntgen Rays. — Philos. Trans. Roy. Soc., A, Vol. 195:193—234. 1901.
(0, 7, 25)

Zelenyi, J. The Distribution of Mobilities of Ions in Moist Air. — Phys. Rev., Vol. 34:310—334. 1929.
(8, 19)

LIST OF USSR ABBREVIATIONS APPEARING IN THE BIBLIOGRAPHY

Abbreviation	Full name (transliterated)	Translation
AN SSSR	Akademiya Nauk SSSR	Academy of Sciences of the USSR
Dokl.	Doklady	Proceedings
Izd.	Izdatel'stvo	Publishing House
Izv.	Izvestiya	Bulletin
MGU	Moskovskii Gosudarstvennyi Universitet	Moscow State University
NIU GMS SSSR	Nauchno-Issledovatel'skoe Upravlenie Gidrometeorologicheskoi Sluzhby SSSR	Scientific Research Board of the Hydrometeorological Service of the USSR
ZhRFKhO	Zhurnal Russkogo Fiziko-Khimicheskogo Obshchestva	Journal of the Russian Physicochemical Society