R. Wilson's inclined electroscope in some experiments, ordinary Dolezalek electrometer and Erikson's modification of Dolezalek's electrometer. The rate method and Townsend's null method were both used in taking readings, the null method being found the more satisfactory.

The radiations examined are those from radium D, radium E, uranium X, actinium active deposit, thorium active deposit. The soft radiation was studied by obtaining the differential curve and it was found rather difficult to obtain accurate results.

The results are given in the table below for the two gases used, air and carbon dioxide.

Substance.	Coefficient of Absorption in— Air.	Carbon Dioxide.
Radium E	0.0151 cm.	0.0298 cm.
Radium D (hard)	0.086	0.157
Radium D (soft)	0.64	1.48
Uranium X (hard)	0.0063	0.0116
Uranium X (soft)	0.12	0.24
Actinium Active Deposit (hard)	0.0091	0.0175
Actinium Active (Deposit (soft)	0.35	
Thorium Active Deposit (hard)	0.00683	0.01293
Thorium Active Deposit (soft)	0.09	0.14

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THE MOBILITY OF IONS AT DIFFERENT TEMPERATURES AND CONSTANT GAS DENSITY.[1]

BY HENRY A. ERIKSON.

THE mobility of ions at different temperatures and at constant pressure was determined by Kovarik and by Phillips. The agreement in their results is quite close. The writer has felt that a determination of the mobility at constant gas density ought, however, to be made as the conditions to which the ions are subject at the lower temperatures at least are not necessarily the same in this case as in the case of constant pressure.

The α rays from polonium were used as the ionizing agent. The ions were drawn towards a wire grating through which some of them passed and became subject to an alternating field. The time required to charge the electrometer to a given potential was measured. The reciprocal of this time, *i. e.*, the current is proportional to the frequency. By using various values for the frequency and plotting, the frequency (n) necessary to give no current is obtained and the mobility calculated from the relation

$$k = \frac{4d^2n}{v},$$

where d is the distance from the grating to the plate connected to the electrometer and v the difference of potential.

[1] Abstract of a paper presented at Atlanta meeting of Physical Society, December, 1914.

The vessel was air tight and was immersed in CO_2 snow and liquid air during the measurement at the two lowest temperatures. The results obtained thus far are as follows in centimeters per gradient of one volt. The density being that of air at 0° C. and 76 cm. pressure.

Temp. °C.	k_+	k_-
20	1.35	1.89
− 64	1.34	1.82
−180	1.20	1.24

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