nometer. Any increase in the absorptive power of the air in the tube due to its rarefaction was shown by a decrease in the deflection, and vice versa.

The following results have, thus far, been obtained:

For pressures ranging from atmospheric pressure to about .5 mm. of mercury, there are two pressures which give maxima of absorption and at least one pressure which gives a minimum of absorption. One of the pressures which give maxima of absorption is near the zero of pressure, and the other lies between 40 and 60 cm. of mercury. The pressure of minimum absorption lies between 25 and 35 cm. of mercury. At the pressures which give maxima of absorption the absorption is greater than at atmospheric pressure, while at the pressure of minimum absorption the absorption is less than at atmospheric pressure. Near the zero of pressure the absorption decreases rapidly.

The percentage absorption, namely the ratio of the energy absorbed at any pressure to that transmitted at atmospheric pressure, expressed in per cent., is a small quantity, varying between + 7 per cent. and — 7 per cent. for the whole tube. This gives a percentage absorption per centimeter of length of the tube varying between + .15 per cent. and — .15 per cent.

University of Cincinnati,
December 3, 1907.

On the Charge Carried by the Negative Ion of an Ionized Gas.[1]

By R. A. Millikan and L. Begeman.

THE paper is a discussion of the sources of error in preceding determinations of e, and a description of attempts to eliminate some of these sources of error. In its essentials the method employed was that used by H. A. Wilson. The source of ionization was radium. The potential difference established between plates 5 mm. apart in the cloud chamber ranged from 1,600 to 3,000 volts. The expansion was of such value as to cause the fall in pressure to be between 22 and 24 cm. of mercury, its initial value being about 75 cm. The cloud was timed as it fell between the cross hairs of a short focus micrometer telescope, so set that the distance between these cross hairs corresponded to an actual fall of 2 mm. The degree of accuracy with which results could be duplicated may be judged from the following typical set of observations.

[1] Abstract of a paper presented at the Chicago meeting of the Physical Society, December 30, 1907, to January 2, 1908.

Field 2950 Volts. Distance between Plates 5 mm.

	Field off. Time of fall.	Field on. Time of fall.
	5.2 sec.	3.8 sec.
	4.8 "	3.8 "
	4.8 "	3.6 "
	5.2 "	4.0 "
	5.6 "	4.0 "
	5.6 "	4.0 "
	4.8 "	3.2 "
	5.2 "	4.0 "
	5.2 "	4.0 "
	5.2 "	3.6 "
	5.2 "	3.6 "
	5.2 "	3.6 "
Mean	5.17 sec.	3.77 sec.

Value of e, 4.25×10^{-10} E.S. units.

The results of ten different sets of observations made with fields of the indicated strengths were as follows:

Field Strength.		e
1600 volts	10.67 E.S.	3.81×10^{-10}
2100 "	14.00 "	3.89 "
2400 "	16.00 "	4.10 "
2950 "	19.67 "	4.25 "
1600 "	10.67 "	4.34 "
1600 "	10.67 "	3.66 "
2100 "	14.00 "	4.10 "
2250 "	15.00 "	3.94 "
2350 "	15.67 "	4.37 "
2750 "	18.30 "	3.84 "
Mean		4.03×10^{-10}

Determination of the Fusion Points of Sodium Nitrate and Potassium Nitrate.[1]

By Floyd R. Watson.

The object of the investigation is to determine a series of definite melting points of salts from 300° to 1,400° Centigrade that will be helpful in the calibration of thermo-elements and resistance thermometers.

The determination of the fusion points of the nitrates of sodium and potassium has developed a method that is sensitive, and has opened the way for the more difficult problem of determining fusion points of salts that melt at higher temperatures.

[1] Abstract of a paper presented at the Chicago meeting of the Physical Society, December 30, 1907, to January 2, 1908.