temperature had to be reduced considerably. The zinc ionization-chamber previously described was used. It was covered with thin asbestos, then wound with nichrome resistance-wire, and packed in magnesia. By passing currents up to 1·5 amperes through this wire, the chamber could be maintained at any temperature between 10° and 100° C. for as long a time as desired. The chamber was absolutely airtight, the wax joints around the electrode and guard-ring being kept cool with a water-jacket. The temperatures were calculated from the changes in pressure.

Variation of Ionization with Pressure.—The gases used were carbon dioxide, acetylene, and hydrogen. Several sets of readings were taken with each of these gases at room temperature to show the connexion between ionization and pressure. The readings and curve (fig. 5) shown were obtained with carbon dioxide, and are typical of the others. The ionization shows a slight maximum at 650 mm. pressure, due presumably to a soft radiation from the walls of the chamber.

p (mm.).	n.
764	17·0
726	16·6
667	16·7
626	16·5
579	16·0
519	14·2
450	13·1
366	11·6
262	8·9
141	5·5
60	3·6

We may proceed as follows to see whether this curve gives any indication of the presence of ionization by collision. The possible components of the ionization are—(1) the ionization due to the earth's penetrating radiation, which from the experiments of McLennan and Treleaven will be about 5·1 ions per c.c. per second at 760 mm. pressure: (2) that due to a possible ionization by thermal collisions, which from the same experiments cannot be more than about 4·8 ions per c.c. per second at 760 mm. pressure; (3) that due to any radioactive impurity in the walls of the receiver. Now component (1) will vary directly as the pressure, and may be