cording to the latest available information, the curve is considered to arise from a tri-atomic form of hydrogen (H_3).

(2) The method is extremely sensitive, even more so than is the case with the spectroscope. With one-hundredth of a milligram (less than one-six thousandth part of a grain) of a substance in the tube, and with an exposure of less than one-millionth of a second, not only is the corresponding curve found on the plate, but at the same time its atomic weight may be obtained with an accuracy of less than one per cent.

(3) Because of the sensitiveness of the method, substances existing in the vessel only for a very short time leave their record behind them. The importance of this is at once evident.

(4) Impurities, so bothersome in ordinary analysis, have few, if any, harmful effects. They simply give rise to additional curves on the plates.

MULTIPLE CHARGES.

We have assumed that each positively charged ray carries only one unit charge, or, in other words, that it has lost only one electron. But there is nothing in the picture of the atom given above to indicate that this should be the case. Cannot an atom sometimes lose more than one electron and thus bear two, three, four and even more charges of positive electricity? That this is actually the case has also been shown by Prof. Thomson. A careful analysis of all the lines which appear on his photographs has shown that all curves which begin at the line AA' (figure 5) correspond to particles which have lost only one electron, whereas the prolongation of a line extending beyond this distance (see lines marked C, C', figure 5) is due to particles which have lost *more* than one electron.

To make clear why this is so, a brief consideration of one or two other points is necessary. The particles giving rise to the initial (that is, least deflected) portions of all curves are those which possess the maximum amount of energy, or in other words, those which have acquired their speed by travelling the whole length of the electric field between the electrodes of the discharge chamber. If now we assume that atoms may lose two electrons and so become doubly positively charged, the fastest of these will enter the observation chamber with just twice the amount of energy of the corresponding singly