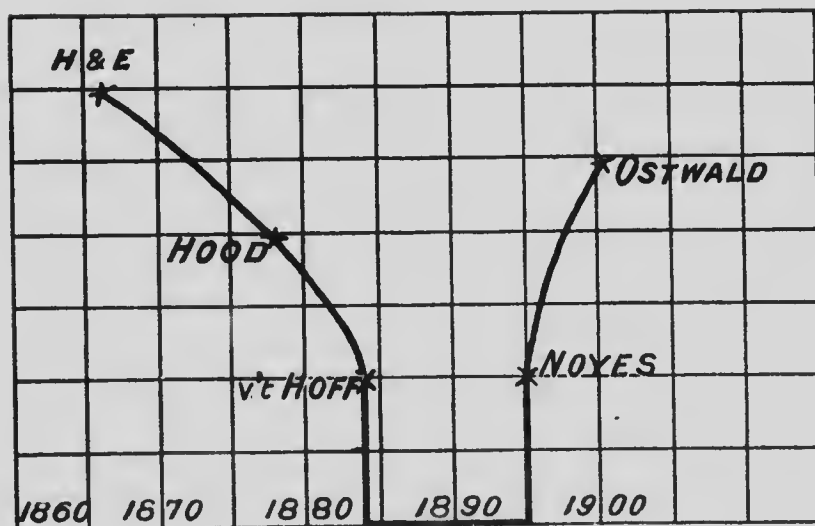


weaker and weaker tools were coming into use, until the very recollection of the method of Harcourt seems to have died out.

If there were time, I should like to go into the reasons for this gradual adoption of the methods of guess and try, but there isn't. It is connected, however, with Guldberg and Waage's application of the kinetic theory to this subject, which made men feel that they were likely to be good guessers. They thought they had a sure tip.

This short line on the board<sup>1</sup> represents ten years of active work, the *Zeitschrift für physikalische Chemie* was founded here, and Arrhenius' theory of electrolytic dissociation was first applied to a kinetic problem here. Dozens of reactions were studied from the kinetic point of view.



all by method number four; and with the result that might be predicted. If the case experimented with happened to be a simple one, the law was guessed; if not, it wasn't. And so, in addition to the reactions for which the relations between rate and concentrations were ascertained, there were gradually being discovered a number of reactions for which these relations could not be formulated.

The first step upward was taken in 1895, by Dr. now Professor A. A. Noyes.<sup>2</sup> He reintroduced van't Hoff's method, method three; quoted van't Hoff's arguments to show that it is superior to number four; and proved its superiority by recalculating Magnanini's measurements (Mag-

<sup>1</sup> Referring to diagram.

<sup>2</sup> Zelt. phys. Chem., 18 110 (1895).