was made in 1909, when, following Lapworth's classical experiments on the bromination and chlorination of acetone, it was shown that iodination is similar in that the chemical change the speed of which is measured is the conversion of the ketone into the enol form. This was followed by a study of the catalysis of the reaction by acids, which led in 1913 to the conclusion that both the ionized and unionized portions of an acid exert a catalytic effect.

The work was not resumed until some years after the Great War, but then followed a rapid succession of papers which resulted in the establishment of the multiple theory of catalysis. The reactions studied included the iodination of acetone, the hydrolysis of ethyl acetate, the iodination of mesityl oxide and the intramolecular transformation of phorone, all of which are catalysed by acids and bases. Dawson demonstrated that in these reactions it is necessary to attribute catalytic activity not only to hydrion and the hydroxyl ion, but also to undissociated acid molecules and to acid anions, and in fact to any substance which can either receive or donate a proton, that is, to any substance which in the Brönsted-Lowry view is an acid or base. Dawson was not content until his multiple theory was proved up to the hilt, and to this end he subjected the very considerable amount of experimental material to an exhaustive and searching analysis. A more complete and convincing proof of a scientific theory has rarely been achieved.

An account of Dawson's work in this field would be incomplete without some mention of his contribution to our knowledge of the effect of catalytically inert salts on the strength of acids, the effect which Brönsted calls the secondary salt effect. By means of kinetic measurements he showed that the dissociation constant of an acid is markedly affected by the presence of such salts. The change in dissociation constant is represented by an equation of the same form as that to be anticipated by the application of the Debye-Hückel theory of strong electrolytes, but Dawson was at pains to emphasize that quantitatively the results are incompatible with this theory.

During the last few years, Dawson was engaged in a study of the kinetics of the hydrolysis of the halogenated acetates. He revealed the complex nature of these apparently simple processes, and by an extremely elegant method succeeded in disentangling the various reactions, and evaluating the corresponding coefficients.

R. WHYTLAW-GRAY.
G. F. SMITH.

Prof. S. P. L. Sørensen

SØREN PETER LAURITZ SØRENSEN, whose death, at the age of seventy-one years, was recently announced, was the son of a farmer, Hans Sørensen. He was born at Havrebjerg, Slagelse, on January 9, 1868.

Leaving the High School at Sorö in 1886, Sørensen proceeded to the University, where he gained the University Gold Medal in the years 1889 and 1895. Having taken the degree of master of science at the University he soon found himself consulting chemist to the Danish Naval Department's Laboratory. As the result of his work on cobalt oxalates he obtained the degree of doctor of philosophy in 1899. From what we know of Sørensen's early activities it is scarcely surprising to find that at the age of thirty-three years he was appointed director of the world-famous Carlsberg Laboratory in Copenhagen, a position he held until his lamented death in the present year. With the passing of Sørensen, the Carlsberg Laboratory has lost another of its distinguished line of workers. Who will forget Emil Ch. Hansen, its first director, whose work on the cultivation of single-cell yeast created such a drastic change in Continental methods of brewing; Johannes Schmidt, the eminent biologist, or Sørensen's immediate predecessor, Joh. Kjeldahl, whose name is familiar to everyone who has ever made a determination of nitrogen?

Although primarily interested in fermentation problems, Sørensen's classic work on hydrogen ion concentration will remain as a permanent monument among those who know little of his other work. The term '*p*H' has become so much a part of scientific literature and its influence so important a factor in considering biological problems that one wonders how theories of acidity and alkalinity were ever formulated without a knowledge of Sørensen's fundamental conceptions. So far has the influence of this famous theory spread that to-day one hears golfers talking of the *p*H of their 'greens' and gardeners of their lawns.

Less spectacular perhaps, but equally important in the region of fermentation, was Sørensen's work on the synthesis of amino-acids, his studies on the proteins and his detailed and comprehensive investigation of enzyme behaviour. This latter study led him to perfect the well-known 'formol-titration' method for the estimation of certain types of nitrogen. Although Sørensen published from time to time in the *Journal of the Institute of Brewing*, most of his original work appeared in the *Biochemische Zeitschrift* and the *Comptes rendus* of the Carlsberg Laboratory.

Sørensen was an early member of the Royal Danish Academy of Science and later its chairman. He enjoyed honorary membership of a very large number of scientific bodies, including institutions in Uppsala, Stockholm, London, Paris, Boston (U.S.A.) and in other countries. He held three Danish Orders in addition to the Chevalier de la legion d'honneur and other foreign decorations.

I cherish the recollection of a happy meeting with this remarkable man in his laboratory in Copenhagen. He was kindly, courteous, ever willing to listen to those who had not his fund of knowledge and always ready and glad to impart something from his vast store of learning. Sørensen was happy in his domestic life and his second wife, Margrethe Høyrup, a woman of considerable intellectual ability, collaborated with him in much of his later published work.

Sørensen's reputation is assured, and his name will go down among the most illustrious of the past. With his going the world of science loses one of its great men and Denmark one of her most worthy sons.

A. J. CURTIN COSBIE.