

subject. He was interested in most aspects of the organic chemistry of amino-acids, and it is difficult to single out particular contributions. His work was distinguished by a real elegance in conception and great skill in execution. Thus, his model experiments on the formation of creatine from arginine anticipated by many years more recent work on the occurrence of this reaction in the living animal. Bergmann's papers covered the problems of acyl migration, racemization, reactions of β -hydroxy- α -amino-acids, unsaturated peptides, and many others. His crowning achievement during that period was, however, his novel and important general method of peptide synthesis. The classical methods of Fischer permitted only the preparation of peptides made from simple amino-acids. Bergmann's new method made use of N-carbobenzoxy derivatives of amino-acids; the acyl substituent protected the amino-group during the condensation and could afterwards be easily removed by catalytic reduction. This new method made possible the synthesis of almost any desired peptide.

Bergmann's work during his second, American, period was turning away from pure classical, organic chemistry, and more concerned with the structure and biochemistry of proteins. He showed for the

first time that the pure crystalline, peptic and tryptic enzymes which had been prepared by Northrop and his school would act not only on proteins, as had been thought hitherto, but also on certain peptides. The work dealing with the substrate specificity of these enzymes was of much importance for our knowledge of enzymes and helped greatly towards a better understanding of the structure of proteins. Bergmann's work also extended to the proteinases of plants and those of animal tissues. Another field in which Bergmann made very important contributions was that of the analysis and isolation of amino-acids present in proteins; he discovered many specific precipitating agents for amino-acids and devised new and interesting methods of analysis. Together with Niemann he formulated the so-called 'frequency-law', which assumed that the different amino-acids in a protein molecule are present in certain restricted proportions. Although the exact quantitative relationships assumed may have to be modified, the emphasis on stoichiometric regularities has greatly stimulated analytical work and focused attention on the regularity of the internal architecture of protein molecules.

The loss of Dr. Bergmann will be felt by organic chemists and biochemists all over the world; he leaves a widow and two children. A. NEUBERGER.

NEWS and VIEWS

Glass Technology at Sheffield :

Prof. W. E. S. Turner, O.B.E., F.R.S.

THE announcement that Prof. W. E. S. Turner is to retire from the chair of glass technology in the University of Sheffield, which he has held since 1920, comes as rather a shock. Prof. Turner's name has become so closely associated with the application of scientific principles to glass manufacture that it is hard to visualize the industry without this association. In 1914, Prof. Turner was responsible for the setting up of a Scientific Advisory Committee of the University of Sheffield to deal with technical problems arising in the local industries and, following on this work, was led to prepare a report on conditions in the glass industry. This report also made recommendations to the University Council, with the result that a Department of Glass Technology was set up in June 1915. This work was organized by Dr. Turner, as he then was, and in 1920 the Council converted this Department to a chair of the University. From that date to the present, Prof. Turner has made and established a name in connexion with the glass industry which will stand for all time.

Prof. Turner founded the Society of Glass Technology in 1916, and has been editor of the Society's journal throughout its existence. He has been president of the Society on two occasions, 1922-24 and 1937-38, and has acted as secretary for three long periods. Prof. Turner has also been instrumental in initiating international meetings between glass technologists in America, France, Belgium, Germany and Denmark, founding the International Congress on Glass, the first meeting of which was held in Milan in 1933. He was also responsible for instituting the Glass Convention, which brought together industrialists, administrators, commercial representatives and glass technologists. The teaching work of the Department under his guidance has been of such importance that many of his former students now occupy

important positions throughout the industry. His researches cover the whole range of glass technology and scientific research into glass and related problems. There can be few instances where one man has become so closely identified with an industry and where, in the lifetime of one man, and to a great extent due to his efforts, that industry has developed from one depending almost entirely on craftsmanship to the position where scientific control and mechanized processes have been so fully established.

Dr. Harry Moore

DR. HARRY MOORE, who has been appointed by the Council of the University of Sheffield to succeed Prof. Turner on his retirement, will bring with him to the task the benefit of a broad academic training and research experience, coupled with exceptionally wide and specialized technological knowledge. After a distinguished student career at the Royal College of Science during 1904-7, followed by a year as a demonstrator in the Physics Department of the College, he was, in 1908, appointed lecturer in physics at King's College, London, a post which he held until 1915. While there he published in the *Philosophical Magazine*, the *Proceedings of the Royal Society* and the *Proceedings of the Physical Society* papers on the influence of X-rays on various substances. Another group of papers on X-rays appeared between 1924 and 1928 in the *British Journal of Radiology*. During 1915-19 he was busy in connexion with Ministry of Munitions training schemes, finally being transferred to the Ministry of Labour Training Department as chief technical officer for south-west England. In 1919 he was appointed assistant director of research of the British Scientific Instrument Research Association under Sir Herbert Jackson, and when Sir Herbert retired in 1933, Dr. Moore succeeded him. In 1937, Messrs. Pilkington Brothers decided to build and equip extensive research laboratories and invited