scientist, but he recognized that the future even of the wool industry would be determined by the extent to which it used the findings of the increasing number of chemists, physicists, engineers and biologists being trained in the universities. Fortunately the wool industry has taken full advantage of the opportunity and is now based on sophisticated applied science and engineering.

Whereas fifty years ago the structure of wool was almost unknown, now, as a result largely of the work pioneered by Astbury and Speakman in Leeds and actively pursued by other groups of investigators not only in Britain but also in France, Sweden, Germany, the United States, Australia and South Africa, it is sufficiently well established to form the basis on which new and commercially significant processes have been developed and which increase the usefulness of wool. In the engineering field, processing has been rationalized and new machines such as the Raper 'Auto-leveller', the Ambler 'Superdraft' system of spinning, and the Sulzer weaving machine have been produced, while advances in biological research and animal husbandry have greatly increased the amount of wool available. The industry is progressive, modern and exciting. In Britain it is well served by an active Research Association and there are ample facilities for training personnel in technical colleges and in universities. The modern industry is based on sound science and ingenious invention and its problems are challenging ones. It offers, and will continue to offer, intellectually rewarding careers for young people with a wide variety of talents, for few industries require the services not only of scientists, technologists, engineers and economists but also of men and women with a true flair for style and design.

In a wider context a note such as this would not be complete without some mention of the fundamental scientific consequences of the researches on the structure of wool, for out of these have emerged important aspects of the new science of molecular biology. Moreover, the complexity of wool—an insoluble protein—necessitated the development of new techniques to obtain information about the sequence and proportions of the constituent amino-acids. One of these procedures, that of partition chromatography, was developed by A. J. P. Martin and R. L. M. Synge working in the laboratories of the Wool Industries Research Association, and for this work they were awarded the 1952 Nobel Prize in Chemistry.

Until just before his death Prof. Barker retained an active interest in textile education and developments, and he must have been gratified to observe the ever-increasing significance of science in the industry which meant so much to him. C. S. Whewell

Dr. Peter Pringsheim

After a long life-time devoted to the subject of luminescence, Dr. Peter Pringsheim died on November 20, 1963.

He was born on March 19, 1881, son of Prof. Alfred Pringsheim, mathematician, of Munich, and took his doctorate there under Röntgen in 1906 with a dissertation on "The Minimum Potential for Spark Discharge". Periods of work at Göttingen, Cambridge (under J. J. Thomson) and Berlin followed, and the summer of 1914 found him in Australia with the meeting of the British Association for the Advancement of Science. Here he was interned for the period of the First World War, after which he returned to Berlin, married his Belgian wife in 1923, and was appointed full professor of the university in 1930. Three years later the Hitler régime caused him to leave Germany for a chair in the University of Brussels, which he retained until 1949. However, he was caught up with again in 1940 by the invasion of Belgium in the Second World War, and sent to internment in the south of France, but obtained liberation the following year on an American visa to carry out research at the University of California, Berkeley. His knowledge of the luminescence of uranyl compounds was doubtless the reason for his transfer to the University of Chicago, during 1942–44, and again as visiting professor during 1946–47, after an interval as director of research, Ray Control Co., Pasadena.

During 1947–55 he occupied the post of senior scientist, Argonne National Laboratory, Chicago, retiring at the age of seventy-five to Antwerp.

Pringsheim was an active research worker and an assiduous amasser of information from all sources on his chosen subject. Eighty publications, in fourteen journals, describe his investigations; the subjects include the polarization of fluorescence from vapours and dye solutions; general observations on fluorescence and photochemical changes in solutions of hydrocarbons, of dyes and of uranyl compounds and metal complexes; and luminescence and colour centres in irradiated crystals. The introductory chapter in his book *Luminescence* (1943) exhibits his interest in the ancient history of the subject together with his precise yet light touch in description.

His first book, *Fluorescenz und Phosphoreszenz im Lichte der neueren Atom-theorie* (Springer, Berlin, 1921; third edition, 1928), was written during his time of internment in Australia, and remained for many years the only authoritative book on the subject. Important contributions were made also in Volumes 19, 21 and 23 of the *Handbuch der Physik* (Springer, Berlin). In 1943 he produced, in collaboration with Marcel Vogel, *Luminescence of Liquids and Solids* (Interscience), and finally, in 1949, his massive work, *Fluorescence and Phosphorescence* (Interscience), dedicated to James Franck. This book, containing more than 1,900 references to the literature, has been of immense value to recent workers in this subject of increasing topical interest, not only because of its completeness and reliability, but also because of the clear and critical exposition of the facts in a manner so characteristic of the author.

Pringsheim, during his life-time, was acquainted or associated with all the leading figures carrying out work on luminescence, such as James Franck, Pohl, Hertz, Jablonski, Terenin and Vavilov, and followed its transformation from vague pre-quantum ideas to present-day concepts, constantly both forward and backward looking. Without him the subject would have lacked a great teacher and adviser.

In 1937 he was elected Foreign Member of the Polish Academy. His wife survives him. E. J. Bowen

Dr. A. A. Benedetti-Pichler

Dr. Anton Alexander Benedetti-Pichler, who died suddenly on December 10, 1964, was a pioneer in the establishment of microchemistry in the United States.

Born in Vienna, Austria, in 1894, Dr. Pichler received degrees at the Technische Hochschule in Graz, where he worked for many years with the pioneer in microchemistry, Hofrat Friedrich Emich. It was during his years with Dr. Emich that Pichler learned from him the importance of extreme attention to minute details, which showed up through all his life in his contributions to the field of microchemistry and to general analytical techniques. "During the early years," he once said, "Emich was a very exacting chief, and I did not have an easy time. Later, he relaxed when he found that I really tried to do my best."

After obtaining the *venia legendi* in analytical chemistry, Dr. Pichler decided to take up permanent residence in the United States in 1929, in order to introduce the inorganic microchemical working procedures of Dr. Emich and his co-workers there, and to raise the standards of the analytical chemist.

Mainly through the consistent efforts of Dr. Pichler in the 1930's there have been laid the solid foundations of the Microchemistry Section in the American Chemical

Society, now the Division of Analytical Chemistry. He was also instrumental in the establishment of the Metropolitan Microchemical Society, now the American Microchemical Society. Both organizations guarantee future improvement in the status of analytical chemists and permit a more scientific approach to analytical problems.

With his co-workers, Dr. Pichler laid the foundations of the techniques in handling ultra-micro amounts of samples by strictly logical and mathematical treatment of the principles established for the milligram and microgram ranges by both Emich and Pregl. Based on this fundamental work, it was possible to develop, quickly and efficiently, the chemistry of the transuranium elements which led to the Manhattan Project during the Second World War, and the atomic bomb.

British analytical chemists are familiar with Pichler's work, having listened to his brilliant plenary lecture at the Birmingham Analytical Symposium in 1958. International societies heaped numerous honours on Dr. Pichler; for example, he received the 1932 Fritz Pregl prize in microchemistry from the Academy of Sciences of Vienna; the Emich Plaque of the Austrian Society for Microchemistry in 1955; the Honor Insignia of Arts and Sciences (First Class) from the President of Austria in 1962; and the Anachem Award of the Association of Analytical Chemists in 1963.

His love for beauty in Nature took him on extensive trips to the western parts of the United States on several occasions, and influenced him not only to become a member of the National Parks Association, but also to stay in the United States.

He also decided to develop several acres of farmland near Camden, South Carolina, primarily for his wife, the daughter of an Austrian forester. While there, he became interested in conservation. With the help of the local representative of the Department of Agriculture, he was striving to restore the farm's fertility at the time of his death.

His desire for accuracy can be illustrated by his research on establishing the origin of paintings. He found it necessary to study methods of painting in oil himself so he could interpret correctly his findings of the authorship of paintings and the period of applications.

His dry sense of humour may have caused him to be misunderstood among the people who met him, but students and associates admired him for his brilliant, scholarly mind. They loved his lectures in which he logically developed his points, and the splendid demonstrations, with the simplest equipment proving the essential points of his dissertation.

His final inheritance to the world he left behind was the book *Identification of Materials, via Physical Properties, Chemical Tests and Microscopy*. It represents a summary and splendid combination of experiences during his lifetime in scientific microchemical approaches, in teaching analytical chemistry and in consulting work to large industrial concerns.

Dr. A. A. Benedetti-Pichler must be considered as one of the pioneers in microchemistry, alongside Emich, Feigl and Pregl, especially for introducing it in the United States. To his students and associates he will be remembered as the precise, modest, true scholar and beloved friend.

H. K. AND W. R. ALBER

NEWS and VIEWS

Organic Chemistry in the University of Leicester : Prof. C. W. Rees

DR. C. W. REES, reader in organic chemistry at King's College London, has been appointed professor of organic chemistry in the University of Leicester. Dr. Rees was a student at University College, Southampton, from 1947 until 1953. After working under Dr. (now Professor) N. B. Chapman, he took up an appointment under Prof. A. Albert in the Department of Medical Chemistry of the Australian National University, which was then operating in London. He joined Birkbeck College as an assistant lecturer in chemistry in 1955 and became lecturer in 1956. In the following year he transferred to King's College, London, and was later promoted to a readership. Dr. Rees's research interests have centred largely on the chemistry of heterocyclic compounds with special reference to the mechanisms of their reactions. Certain aspects of his work have been supported by the Medical Research Council and by the British Empire Cancer Campaign. He has numerous publications in the *Journal of the Chemical Society* and in recent years he has been responsible for the section on Organic Reaction Mechanisms in the *Annual Reports on the Progress of Chemistry*.

The National Institute for Research in Nuclear Science

AT the Committee stage of the Science and Technology Bill in the House of Lords on February 23, Lord Bridges again raised the question of the position of the National Institute for Research in Nuclear Science under the Science Research Council. He was concerned that its relations with the Atomic Energy Research Establishment at Harwell might be affected adversely and also that, since from April 1 the laboratories of the National Institute would come under a Nuclear Physics Board, reporting to the Science Research Council which, in turn, reported to the Minister of Education and Science, the lengthened lines of communication would lead to delay and frustration. He suggested that the Science Research Council should be sufficiently well staffed to be given very wide delegated powers to settle questions of finance and administration, including possibly authority to appoint staff. Lord Bridges was supported by Lord Sherfield and the Earl of Bessborough, and the Parliamentary Secretary to the Ministry of Technology, Lord Snow, readily gave Lord Bridges the specific assurance for which he asked, that absorption of the National Institute for Research in Nuclear Science under the Science Research Council would not be used to impose a more rigid bureaucratic system of control in finance and administration, including the appointment of staff. However, Lord Snow firmly defended the proposed arrangements, and the Minister of State for Education and Science, Lord Bowden, later added that the decision as to whether the Institute and the Atomic Energy Authority should come under the Science Research Council was only taken after very considerable debate. It was decided that the Bill allowed sufficient flexibility, if the proposal proved unworkable, to make a change by administrative action without seeking further legislative powers. On finance, Lord Snow explained that within its annual estimated provision, the National Institute had delegated powers up to £25,000 from capital expenditure and the Authority up to £100,000; above this, authorization by the Secretary of State and the Treasury was required. The Finance Member of the Authority was a member of the Board of the Institute. The Department for Scientific and Industrial Research had delegated powers up to £50,000 for capital schemes and the Government was considering the appropriate level of financial delegation for the Science Research Council. The capital expenditure of the Institute in 1963–64 was about £1·6 million, of which £1 million was on schemes of more than £100,000 and £250,000 on schemes between £50,000 and £100,000.