of engineers by providing the teaching institutions with detailed information on the type of problems encountered by the professional engineer. In time, each chemical engineering course offered by various institutions would develop its own style and character and the employer would remain free to go to whichever seemed best able to produce the type of man he wanted. The final test of the engineer would always be success or failure in carrying out the work entrusted to him. The Institution could do no more than prepare him for such a test.

Mr. Hutchison referred to the concept of 'unit operations' which, for thirty years, has been retained as a basis for instruction in chemical engineering. Behind all unit operations there are fundamental physical or chemical concepts, so related that, if used with the necessary degree of mathematical skill, they might make unnecessary much of the existing content of chemical engineering instruction. Mr. Hutchison also mentioned an interesting situation in continental Western Europe, where only small groups are willing to call themselves chemical engineers or to recognize the coherent set of principles within which a profession can be practised. Many of the functions claimed by chemical engineering are fulfilled by combined teams of chemists, physicists and engineers.

The attraction of chemical engineering to many young men is its obvious connexion with the realities of industrial processes. The attitude is that of the engineer rather than of the scientist; the laboratory and the lecture theatre are tolerated only as stepping-stones to the world outside. If there is a latent conflict between the two aspects of engineering, "the engineer directing the great powers in nature for the use and convenience of man", and the scientist intent in his laboratory on advancing the frontiers of knowledge, the Institution does provide a solution. It is both a corporate body of practising engineers and a meeting ground for scientists. The primary aim of the Institution is the advancement of science —by which is meant all knowledge—through the skill of practising engineers and scientists alike.

The Cotton, Silk and Man-Made Fibres Research Association

In May 1960, the working party that had been set up to consider the possible fusion of the British Cotton Industry Research Association and the British Rayon Research Association recommended that the two Associations should be merged into one research association as from July 1, 1961. It has now been decided that this will be known as the Cotton, Silk and Man-Made Fibres Research Association, and its main responsibilities will be to serve the processing and merchant converting sections of the industries. The officers of the new Association will be as follows: *Director*, Dr. D. W. Hill; *Deputy Director*, L. A. Wiseman; *Assistant Directors*, G. W. Lobb (to be responsible for research administration), L. H. C. Tippett (to be responsible for physical and mechanical research), and Dr. A. R. Urquhart (to be responsible for chemistry and chemical processing). A large part of the research programmes and other work previously undertaken by the original Associations is being continued by the new organization. The main source of the Research Association's industrial income will be a research levy forming part of the levy collected by the Cotton Board. The Association will also receive a grant from the Department of Scientific and Industrial Research. Plans are already well advanced for the provision of a new chemistry and finishing building at the Shirley Institute, Didsbury, Manchester, which, it is hoped, will be completed by the end of 1962 or early 1963.

Science Museum Exhibition of a Fourteenth-Century Astronomical Clock

The Science Museum will be exhibiting during May 16–June 25 the first full astronomical clock to be produced in Britain for 250 years. The clock is an exact reproduction of one designed and constructed nearly 600 years ago by John Dondi, who was, at times, professor of logic, medicine and astronomy in Italy. During the years 1348–64, Dondi constructed his astronomical clock, which came to fame during the next two centuries, but afterwards it seems to have sunk into oblivion, and little was heard of it until the late G. H. Baillie, in the 1930's, translated the Latin manuscript which Dondi left behind giving a full description of just how he made the clock, with working drawings. The clock remained in Italy until 1585 and then went to Spain, where it was destroyed during the Peninsular Wars. Constructed within about fifty years of the invention of the mechanical clock, at a time when the standard clock was a clumsy forged-iron blacksmith's production, Dondi's clock presented an achievement of great refinement. Astronomical clocks showing the motions of the Sun, Moon and nodes began to be less rare in Europe during the late fifteenth and sixteenth centuries; but those embodying the motions of the five planets as well are rare at any period. The names of Immser and Baldewein came into prominence in Central Europe about 1550; in Western Europe little was done until Johann Klein of Prague and Aureliano and Cajetano of Vienna constructed their clocks in the last quarter of the eighteenth century. Later, clocks were built by Schwilgué in 1842 and Jensen in 1956, and in England there was only Samuel Watson in 1680 and Henry Bridges in 1730. It has fallen to Mr. H. Alan Lloyd to take up Baillie's work and complete it. After publishing a full précis of the translation in 1955, he decided to make a reconstruction of the clock. He was able to find collaborators in the managing director, Mr. Geoffrey Buggins, and in his co-director and chief craftsman, Mr. Peter Haward, of Thwaites and Reed, Ltd. Following the exhibition in London, the clock will be taken to the Smithsonian Institution, Washington.

X-ray Protection at High Voltages

The National Committee on Radiation Protection and Measurement of the U.S. National Bureau of Standards has issued a new handbook with information about how to obtain medical protection from X-rays up to 3×10^6 V. (National Committee on Radiation Protection and Measurements. Report No. 26. Pp. viii+52. (Washington, D.C., Government Printing Office, 1961.) 25 cents.) The handbook sets out standards of safety and contains data and recommendations relating to all persons involved, including the manufacturers of the apparatus and designers and builders of the rooms in which it is housed. Basic requirements for safety standards are essentially the same in this handbook as in its immediate predecessor (No. 60). Tables have been revised to conform with the new lower maximum permissible dose adopted by the Committee in 1957, and the differences in the maximum permissible doses allowed in controlled areas and their environs. Recom-