

THE COLLEGE OF TECHNOLOGY, HULL

NEW WORKSHOPS AND LABORATORIES

WITH the official opening on December 3, 1956, of the first phase of the new College of Technology by Lord Hives, chairman of Rolls-Royce, Ltd., and chairman of the National Council for Technological Awards, commenced a new era of greater activity and opportunity in the field of technical and technological education for the City of Kingston upon Hull.

Since its inception in 1894 the College has identified itself with the industrial and commercial life of the City and grown to become the seat of centralized technological studies in the area and beyond, until in 1956 there were 530 full-time and more than 3,800 part-time day and evening students. The increasing numbers of students could only be accommodated by the acquisition of a number of annexes scattered about the City, and to overcome the problems inherent in such decentralization the Education Authority produced its plan of central Colleges for Technology, Commerce and Art and an Adult College for Liberal Studies to be sited in the Queen's Gardens area and which "with their garden precincts were to contribute to the architectural beauty which the planners contemplated for the centre of the City".

The first stage of the College of Technology is the spacious single-story workshop block now completed at a cost of about £312,000 and containing additional new equipment and furnishings worth £127,000. It accommodates the Mechanical Engineering, Electrical Engineering and Building Departments. It also contains temporary classrooms and drawing offices, which will be later transferred to the main block, the vacated space being used for the further extensions of these Departments and the Printing Department of the College.

The building is arranged as four blocks of accommodation divided by wide access and service corridors and with a floor area of approximately 64,000 sq. ft. It is planned on a 24-ft. square grid and the structure is entirely in reinforced concrete. The building is carried on *in situ* piles and from the pile caps ground beams carry the superstructure and also form the system of under-floor service ducts which serve all workshops. Large crawlway ducts beneath the corridors accommodate the main service pipes, and from these smaller ducts branch off to each shop. The workshops are lit by a large north light and a small south light which balances the lighting intensity. Artificial lighting is by fluorescent fittings. The building is faced externally with hand-made facing bricks and with reconstructed Portland stone slabs. The heating installation consists of unit heaters supplemented by radiators fed by a low-pressure hot-water system.

The three Departments offer a wide range of courses. Thus the Mechanical Engineering Department provides full and part-time courses in mechanical, aeronautical, production, marine, civil and automobile engineering and naval architecture for the ordinary and higher national certificates and diplomas, University of London degrees and postgraduate work. In addition, there are courses for technicians and craftsmen in the engineering and allied industries.

Up-to-date machinery and equipment have been installed throughout. The Heat Engines Laboratory contains an oil-fired water-tube boiler with superheater and a comprehensive range of prime movers, including a 30 b.h.p. steam turbine and condensing plant, a Ricardo variable-compression engine, a single-cylinder diesel engine and a Rover gas turbine. The services of the Materials Test Laboratory with its wide range of testing machines are extensively used by local engineering firms, while the Metrology Laboratory is well equipped with precision measuring machines and instruments. A Structures Laboratory, equipped for advanced work in civil and aeronautical engineering, has a reinforced floor for dealing with heavy loads. Two large Aeronautical Laboratories with a supersonic bay contain a variety of wind tunnels, together with an air compressor and receivers having a working pressure of 350 lb. per sq. in. for operating the supersonic wind tunnel, now being designed, and to be constructed, by the staff. In addition to two well-equipped Mechanics Laboratories, there is a Hydraulics Laboratory with a specially constructed flume and containing experimental turbines and pumps fitted with dynamometers. The Machine Shop contains more than twenty modern machines representative of a very extensive range of operations in engineering practice, and the Production Engineering Laboratory includes a vertical gear generator, a relieving lathe, a super-finishing machine and a 17-in. lathe with hydraulic profiling equipment. Two Automobile Engineering Shops, a large Fitting Shop, separate Acetylene and Electrical Welding Shops with argon-arc equipment and a maintenance workshop complete this section.

The Department of Electrical Engineering provides courses for the national certificates and London external degree, certificates of competency in marine and civil aviation radio engineering and radar. City and Guilds courses associated with electrical and communications engineering for technicians are also offered.

The laboratories possess many distinctive features in lay-out and equipment. There are two Science Laboratories, an Electrical Machines and an Advanced Circuits Laboratory with such special items of equipment as a grid-controlled six-phase mercury arc rectifier, motor alternator sets with wide frequency ranges, a high-tension testing transformer and an a.c. potentiometer with all associated accessories. An Electronics and Telecommunications Laboratory is equipped for instruction at all stages and the radio equipment and Morse rooms are provided with the latest marine transmitting, receiving, direction-finding and echo-sounding gear. There is also an Electrical Installation and Cables Laboratory and photometer room.

The Building Department provides full-time and part-time courses in general building, civil engineering, quantity surveying, sanitary inspection, timber technology, etc., leading to professional qualifications. Building craft courses are conducted in carpentry and joinery, brickwork, masonry, plumbing, and wood-cutting machinist's work.

A spacious carpentry and joinery workshop with portable electric hand-tools is adjacent to the wood-cutting machine shop, which includes such modern high-speed machines as a four-cutter, a spindle moulder, a router and a morticer.

The workshop block will be connected with the main entrance hall and exhibition space of the nine-tiered main building, on which work is commencing now, at a cost of about £675,000. This second instalment will include administrative offices, suites of classrooms, drawing offices and lecture theatres, staff and students' libraries, laboratories for pure and applied chemistry, chemical engineering, physics (including special laboratories for work on radioisotopes), the natural sciences, mathematics (statistics), the building sciences, radar and food technology.

Staff and students' refectories and students' common rooms will also be available.

The principal of the College, Mr. Emlyn Jones, has a staff of 64 full-time and 350 part-time lecturers and was, at one time, the head of the Chemistry Department at the Rutherford College of Technology, Newcastle upon Tyne.

INSTRUMENTATION APPRECIATION IN CHEMICAL INDUSTRY

TO increase the efficiency of its factories, both large and small, must be the constant aim of every section of British industry, and any new steps which are taken towards this end are a matter of general importance and interest. This is perhaps particularly true of the chemical industry, which makes such a large contribution to our total exports and the products of which are so widely used as the basic materials of other industries.

Instrumentation, which is taken to embrace both the equipment and the technique used for measurement and automatic control, is one of the most powerful aids which the industry has had at its disposal in increasingly better developed form and which it has used increasingly effectively for thirty years and more. It is to be expected, in Britain as in other countries, that the extent of the use of instrumentation and the skill with which it is applied will have varied very much in all industries from one factory to another. In some instances, this variation, in the past, has followed the differences in the conditions demanded by the operational needs of the processes and, particularly, according to the uses of continuous or batch methods of production. More recently, however, the limitation to the use of instrumentation by industry has been set either by the age of the factory or by an unawareness on the part of the factory management of the benefits to be derived from proper use of instrumentation.

One or other of these two limitations has been responsible for a very marked disparity between the best and the worst practice encountered in the chemical industry in Britain. This of course applies, to a greater or lesser extent, to the use which the industry has made of other means of decreasing its production costs and of increasing its output; it is not a condition peculiar to the chemical industry, nor does the worst practice in the chemical industry compare unfavourably with the worst in other industries in Britain or in other countries, even the most

progressive of them, any more than does the best practice to be found in Britain fall short of the best to be found elsewhere.

It is none the less important that every possible step should be taken to encourage the chemical industry, as well as all other industries, to make the fullest use of instrumentation as an aid to production efficiency in all its factories however small some of them may be. The Association of British Chemical Manufacturers recognized the need for doing everything possible to bring the standard of instrumentation of the less well-instrumented factories up to that found in the most progressive organizations, and the Association set up an Instrumentation Advisory Committee to assist in doing this. The task is not an easy one, for several reasons. Perhaps the most important of these arises from the fact that the firms which are backward in this field and which, therefore, need most help are in this position because the value of instrumentation is not appreciated by their managements. Consequently, they have not realized that they can obtain help from the Instrument Advisory Committee and, therefore, they do not seek it.

The logical action on the part of the Association's Advisory Committee was to arrange an "Instrumentation Appreciation Conference" designed especially for managers, which was held in Harrogate during April 19-22, 1956. Great care was taken in the selection of subjects for discussion and in their presentation. Naturally, emphasis was placed on the profit to be obtained from good instrumentation. The Committee was fortunate in being able to present a greater number of concrete examples of applications where such profits had been obtained than has been presented at any other conference on this subject. Moreover, these examples were chosen to show how even very simple installations for measurement and control could bring substantial benefits. As was inevitable, in spite of the care taken to point out the general nature of the conference, many firms sent technical representatives instead of the managerial representatives. Nevertheless, a number of firms responded to the recommendations of their Association, and the formal, and particularly the informal, discussions during the conference showed that it fulfilled a very valuable purpose.

The proceedings have now been published*, complete with the papers and discussions, and with a report on the final session during which members of the Advisory Committee answered questions from the delegates. It is hoped that many of those in the chemical industry who were not at the conference and who are responsible for the management of factories will read these proceedings very carefully. Their attention should be directed to the introductory paper by Mr. Bertram White, managing director of A. Boake Roberts and Co., Ltd., and chairman of the Federation of British Industries' Technical Legislation Committee, and to the concluding paper on the reasons for instrumentation, by Dr. Hiscock, operations director of the Imperial Smelting Corporation, Ltd., and chairman of the Association of Chemical and Allied Employers. These two papers make stimulating reading and are indicative of the spirit of the whole conference and of the object which the authors of the papers set out to achieve.

* Proceedings of the Instrumentation Appreciation Conference, Hotel Majestic, Harrogate, 19th to 22nd April, 1956. Pp. vi+183. (London: Association of British Chemical Manufacturers, 1956.) 12s. 6d.