UNIVERSITY COLLEGE OF NORTH WALES, BANGOR

NEW SCIENCE BUILDINGS

By Prof. P. W. RICHARDS

THE new building for the Botany and Forestry Departments and the extensions to the Departments of Chemistry, Physics and Zoology of the University College of North Wales, Bangor, were opened on May 20 by Sir Keith Murray, chairman of the University Grants Committee. At the ceremony in the Powis Hall before the formal opening, many representatives of universities and other guests were present, including several representatives of the French Forest Service, which has on a number of occasions hospitably entertained forestry students from Bangor during their annual tour of French forests. One of these representatives, Prof. P. Silvy-Leligois, of Nancy, brought with him a message of good wishes from the École Nationale des Eaux et Forêts.

From the foundation of the University College of North Wales until 1926 the scientific departments were housed near the harbour. The old building, which is now demolished, was opened by Lord Kelvin (then Sir William Thomson) in 1885. The original intention had been to build more spacious accommodation by extending the College's main building in Upper Bangor (finished in 1910); but after the First World War it was decided that a major part of the North Wales Heroes Memorial Fund should be used for providing new science buildings on a site in Deiniol Road. These buildings were completed in 1926 and opened by Sir J. J. Thomson.

Until the Second World War, the number of students in the College did not exceed five hundred, less than half of whom were studying scientific subjects, and the Memorial Buildings, as they were called, proved adequate for their purpose. After the War, the size of the College more than doubled, and it became evident that the number of undergraduate scientists, let alone staff and research workers, was likely to remain permanently far larger than the Memorial Buildings could accommodate. It was thus the need for larger teaching laboratories, as well as for better research facilities, which led the College, with the generous support of the University Grants Committee, to embark on an ambitious building programme, involving the complete rehousing of the Botany and Forestry Departments and increased accommodation for the other science departments. As an essential first step, the College bought in 1947 the Tanrallt site adjoining the Memorial Buildings. It is here that the physics extension and the largest of the new buildings, that for botany and forestry, have been built.

All the new science buildings at Bangor have been designed by Sir Percy Thomas and Son, of Cardiff, and they have been built mainly by Messrs. W. T. Nicholls of Gloucester.

The first of the new buildings to be finished was the new chemistry building, which has been in use since 1950. It extends but does not replace the older building (the Orton Laboratories) and is on a closely adjacent site. In honour of Sir James Dobbie (1884–1903), the first professor of chemistry at the College, it has been named the Dobbie Laboratories. Owing to limitations of space, it has had to be built on a steeply sloping and confined site; to fit into this, it has been built in a single story in part over a semi-basement. It provides two teaching laboratories (with overhead services of gas and water) for eighty and sixty-four undergraduate students respectively, as well as a research laboratory for twelve postgraduate students, a departmental library and reading room, together with auxiliary rooms, including a general operations laboratory, an instrument room, a cold room, a room for chromatography, balance rooms and stores. There is also a lecture room seating 220, the largest in the science departments of the College.

The Department of Zoology, like the other science departments, had long outgrown its accommodation. The old Biology Block, previously shared by the Botany and Zoology Departments, has been adapted and completely refitted to provide for the teaching needs of the Department of Zoology and now includes two lecture rooms, a large laboratory for sixty students and another for thirty students, in addition to laboratories for honours degree work, rooms for staff, a workshop, photographic and instrument rooms, service rooms and three small research rooms. It continues to house the extensive museum collections in the fine room originally built for them. This block, however, could not provide enough room for the research work of the Department; consequently, a three-story building with 5,870 sq. ft. of floor space has been built on an adjoining site. On the ground floor the chief feature is two constant-temperature rooms to work from 0° to 40° C. The first floor contains a suite of laboratories, including an autoclave room and experimental theatre, a radioactive isotope room and research laboratories for the Agricultural Research Council Unit of Embryology which is housed in the Department. The second floor includes, in addition to research rooms of various sizes, an instrument room and a cool room fitted for the maintenance of cultures of marine or freshwater aquatic animals. The whole new building can accommodate fifteen research workers.

Accessible to, but separate from, this building, an animal house for small animals had been built with a floor space of 3,000 sq. ft. This is of light construction and is specially designed to exclude rodents and insect pests so far as possible. The details of its design have been published elsewhere*.

The Physics Department has been responsible, in recent years, for teaching some 150 undergraduate students and, like the Chemistry and Zoology Departments, it now uses for its teaching and research a newly constructed block together with a part of the old Memorial Buildings. The former is incomplete and allows for expansion to at least double its present size. It is of red brick, rectangular in plan, with two floors and a flat roof. The upper floor provides teaching laboratories for at least seventy students and includes, in addition to a large general laboratory, a room for experiments in optics

* Hemmings, W. A., "The Design of Animal Houses". Collected Papers of the Laboratory Animals Bureau, 2 (1954).

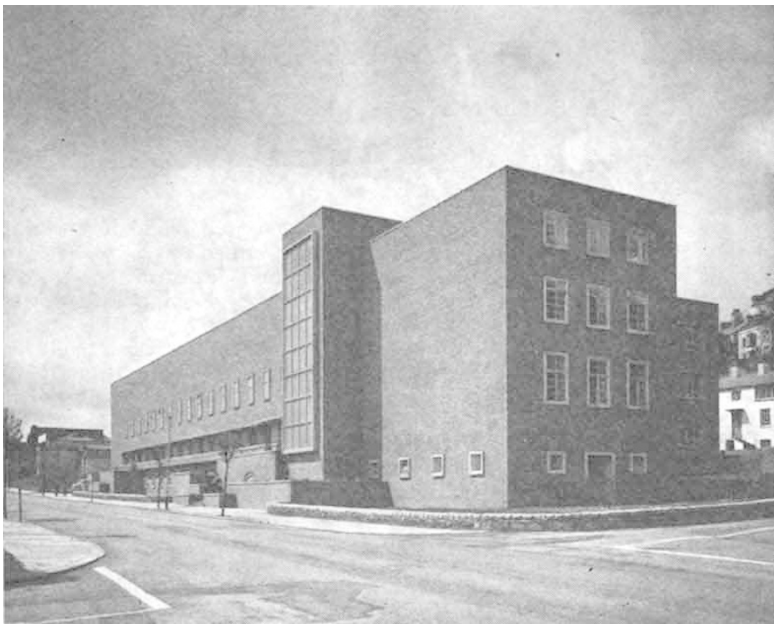

Fig. 1. Botany–Forestry Building, Bangor

and two others for acoustics. More accommodation for research is provided on the ground floor, which is now used for work on nuclear magnetic resonance. Also on the ground floor are the pleasant departmental library and the staff common room.

The botany–forestry building is the largest, as well as the most ambitious in design, of the new buildings at Bangor (Figs. 1 and 2). Since the main frontage of the building stands only a few feet back from the main London–Holyhead road, a dominant consideration in its design was to exclude street noise. Because of this, on the south side of the building facing the road there are few windows and none of large size, except that lighting the main staircase; for the same reason, a large part of this side is occupied by corridors and hall spaces. At first sight, the distribution of windows might give the impression that the interior is poorly lit; but in fact all parts of the building have excellent lighting, particularly the top floor, which houses all the teaching laboratories of the Botany Department; this has a generous provision of roof lights as well as large windows on the north, east and west. The lecture rooms situated in the north-east corner of the building have no windows at all on the wall facing the main road, but are adequately lit as well as almost completely insulated from outside noise. The architect has thus successfully solved the problem of providing at the same time good natural illumination and freedom from noise on a not very easy site.

This is a red brick building on three floors. It has also a semi-basement which allows advantage to be taken of the differing levels of the front and back of the site. In addition, the flat roof is to be provided with two greenhouses, serving as additional laboratories for the physiological work of the Botany Department. Other greenhouses for departmental use are on an adjoining site. About a third of the floor space is allotted to the Forestry Department, the remainder to the Botany Department, which is responsible for training some 150 students, the majority eventually graduating in forestry, agriculture, or one of the pure sciences.

The most striking decorative feature of the building is the large entrance hall panelled with a great variety of ornamental hardwoods.

The Forestry Department, besides rooms for staff and two lecture rooms, has a laboratory for about twenty students, equipped for surveying and engineering drawing as well as for practical classes in forest botany and wood anatomy. There are a large library and reading room and a museum of corresponding dimensions which it is proposed to fill with a variety of exhibits, including dioramas illustrating forests under various systems of management. In addition, the semi-basement contains photographic dark-rooms, a large and well-equipped wood-working shop and a store for the tools, surveying instruments, etc., used by the forestry students in their practical training.

The Botany Department has on the ground floor a lecture room seating 120, a small museum, a

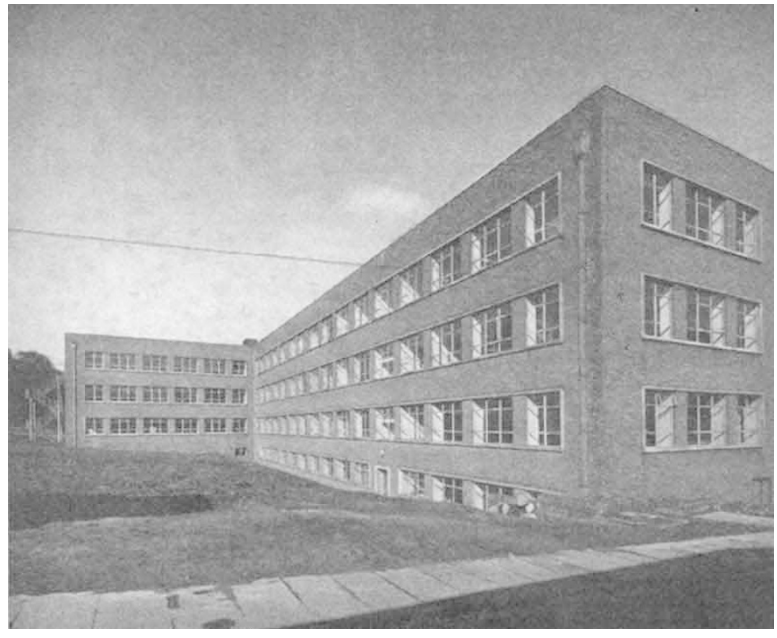

Fig. 2. Botany–Forestry Building, Bangor

herbarium and a research laboratory specially equipped for work on marine and freshwater algae as well as rooms for staff and postgraduate research workers. Further accommodation for staff and postgraduate students is provided on the first floor, which also houses a small lecture room (seating seventy), the library and separate reading room.

On the top floor, which is wholly allotted to botany, there are two large teaching laboratories for general botany, providing places for sixty-two and forty-eight students, respectively. Since these laboratories are placed back to back and divided only by swing doors, they can when occasion demands be treated as a single unit. In these and in the small honours work laboratory (capacity sixteen students) there is ample space for demonstrations and (as in the forestry laboratory) each student is provided with an adjustable 'Anglepoise' lamp and a microscope lamp made to the Department's specification. Only a limited amount of overhead lighting is provided. The small laboratory for advanced mycology is similarly designed.

Also on the top floor are the laboratories for plant physiology. The teaching laboratory, holding sixty students, resembles a well-equipped chemical laboratory. The benches are provided with electrically heated water baths, but not gas, and there are vacuum and compressed air points. There is overhead fluorescent lighting and an adjacent balance room. Near by is a small research laboratory and preparation room.

The semi-basement, in addition to housing the Forestry Department's wood-working shop and instruments store previously mentioned, provides the Botany Department with two photographic darkrooms, a general photographic room, a workshop and sorting room and two constant-temperature rooms.

In his introductory speech at the opening ceremony, Lord Kenyon, president of the College, said that the completion of the new science buildings was an event second in importance only to the opening of the College itself. He expressed the thanks of the College to the University Grants Committee for the financial support which had made the post-war building programme possible.

Sir Keith Murray then spoke of the significance of the occasion as marking the increasing importance of science, and especially of biology, to-day. That the College had found it necessary to increase the accommodation for all its science departments and not only for some of them illustrated the breakdown of the lines of demarcation between the different sciences and the need for training in the fundamental sciences as the basis of all scientific education.

After emphasizing the growing importance of the biological sciences because of the rise in world population and the consequent pressure on food supply and other natural resources, Sir Keith went on to say that the duty of a university is to turn out men and women with minds which are trained and not merely stored with facts; this training should be carried out not merely by formal instruction in the lecture room and laboratory, but by informal contacts between the students and the more mature minds of their teachers, as well as by the contacts of student with student in daily work and extra-curricular activities. The latter are as valuable a part of a university education as the work covered by the examination syllabus.

Sir Keith Murray was thanked by Sir Emrys Evans, principal of the College, and finally the College's gratitude to the architect and the contractors was expressed by Sir Wynn Wheldon and Lady Artemus-Jones, vice-presidents.

PLANT GROWTH SUBSTANCES

THIRD INTERNATIONAL CONFERENCE

THE Third International Conference on Plant Growth Substances was held at Wye College (University of London) during July 17–22. The organizer was Prof. R. L. Wain, head of the Department of Chemistry in the College and director of the Agricultural Research Council Unit for Plant Growth Substances and Systemic Fungicides. D. F. Wightman acted as conference secretary.

The emphasis of the papers and discussions was on the biochemical aspects of the subject but not confined, as in the preceding conference at Lund in 1953, to considerations of the relationships between chemical structure and biological activity. Although two whole sessions were devoted to this topic, the remaining four on the natural auxins, auxin metabolism and mechanism of action promoted the more vigorous discussions.

The two years that have elapsed since the Lund Conference have seen the almost universal adoption of paper partition chromatography as a tool in the study of naturally occurring plant growth substances. The opening session of the Conference clearly demonstrated how valuable this new tool has been in tackling the involved problems of the nature of the natural auxins. Dr. J. P. Nitsch (Harvard University), in a systematic study of extraction, separation and assay methods, has revealed the dangers of using ether as a solvent for extractions in the cold since enzyme activity may still persist in this solvent. Absolute methanol or ethanol are much to be preferred. He also demonstrated how different solvents could change the pattern of active substances extracted, thus illustrating the dangers of too narrow an application of stereotyped techniques. Another, until recently unsuspected, danger was the use of ammonia as a component of the chromatographic solvent for the separation of acid growth substances. Considerable hydrolysis of certain substances may occur during the running of the chromatogram. This presumably accounts for the interconversions of neutral auxin precursors extracted from a variety of plant tissues by Dr. J. A. Bentley and Mr. S. Housley (University of Manchester). Dr. Nitsch also introduced a new assay technique, using segments from the first internode of oat seedlings. This he claims has a sensitivity greater than that of the oat coleoptile curvature test and can measure quantities of indole-3-acetic acid of the order of 0·001 μgm. This makes it possible to study small quantities of tissue such as apical meristems, 200