Churchill College—A Modern University College

New ideas are blended with traditional customs in both academic work and social life.

John Cockcroft

The concept of Churchill College had its origins in discussions between Sir Winston Churchill and his Ministerial Scientific Adviser, Lord Cherwell. Towards the end of 1954, Lord Cherwell produced figures to show the striking progress made by the Soviet Union in science and technology and warned Sir Winston that, even in proportion to our population, Great Britain's production of scientists and technologists was falling far behind the Russians' in quantity and was by no means superior in quality.

After his resignation in April 1955, Sir Winston decided that he would devote his remaining strength and his prestige to awakening the British people to the importance of improving facilities for the highest possible scientific and technological training, and, towards the end of 1955, delivered a major speech on this subject, which created a considerable stir.

Lord Cherwell's first idea was to try to found in Britain an Institution comparable with M.I.T., but the government of the day preferred to build up existing technological institutes—the Imperial College of Science and Technology and the Manchester and Glasgow colleges. Through discussions among Sir Winston's friends and Alexander Todd and myself, the project was changed to building a new College at Cambridge University, which would be, in effect, a National Memorial to Sir Winston and would devote itself to training at the highest level, within the framework of the University of Cambridge, an additional 500 to 600 students.

It was envisaged that about 70 percent of the students would study science and technology and the remainder would study arts subjects, including the social sciences. About one third of the students would be graduate students, either taking 1-year graduate courses or doing research work for a Ph.D. This ratio of graduate students to undergraduate students reflects the continuing growth of graduate studies in the University of Cambridge.

Sir Winston then founded a Board of eight Trustees, four from industry and four from the University, to be responsible for the foundation of the College. The industrial Trustees took the responsibility of raising the funds for the building and endowment of the College, and, up to the present time, have raised over £4.4 million. Of this amount, about £2 million is to be retained for the endowment fund to provide for the continued operation of the College, and about £2.5 million is being spent on the buildings and site. This will provide rooms for about 500 students and staff, together with the College central buildings—the Dining Hall, the students' and staff Common Rooms, libraries, lecture theaters, sports grounds, and facilities.

A competition between 20 young and distinguished architects was held for the design of the College, and the scheme finally chosen was that of Richard Sheppard, Robson, and Partners. The buildings are in a distinctive modern style, with strong horizontal lines, and for the most part, have copper-covered flat roofs. The Dining Hall is the exception. It is 72 feet square and stands 32 feet above the first floor level of a great communal buttery. The Dining Hall has three reinforced concrete vaults for the roof; the North and South faces have vertical concrete louvres admitting the light. The West and East faces are lined with Canadian red cedar timber presented by the Canadian Lumbermen's Association. The Common Rooms have panelled walls, the timber having been given by the Commonwealth Governments of Australia, New Zealand, India, Ceylon, Ghana, Nigeria, Trinidad, and Tobago. The main exterior walls are in a hard brown brick from the stone district near Stamford. The windows are framed in teak.

The student rooms are arranged round six courts, and, in future, there will be at least nine courts. All the rooms are approached by staircases, about 8 to 16 rooms to a staircase, and are served by common facilities—lavatories, baths, showers, and kitchenettes. Most of the rooms are study bedrooms about 160 square feet in area. Some of the rooms have, in addition, a small bedroom about 80 square feet in area. Most of the rooms have a large bay window with a spacious window seat 9 or 10 feet long, which provides a very convenient seat for student parties. Underneath the window seat is a thermostatically controlled heater which blows warm air into the room. Students wishing to have their room temperatures above the normal 65°F of British buildings pay extra for the additional heat.

The academic work of the College is carried out in the traditional Cambridge manner. Students go to University laboratories and lecture rooms for their formal classes and lectures and are taught there by University staff. The College is responsible for individual tutorial work of the students, and, for this purpose, has about 40 teaching Fellows who hold their main appointments in the University, but do individual teaching in the College or other colleges for about 6 hours a week. Students are supervised either singly or in small groups. The object of the College supervision is not to impart additional information, but to help students with their difficulties. The College provides an undergraduate textbook library, where they can find practically all the books required for their work. It will also have, in future, a general library containing books needed by graduate students and staff. This library will consist of memorial libraries—the first to the memory of Brendan Bracken, a ministerial colleague and friend of Sir Winston in

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the war years, and the second in memory of Ernest Bevin, Foreign Secretary in Sir Winston's administration. The second library has been presented by Ernest Bevin's Trades Union.

In addition to the 40 teaching Fellows, the College has, at present, about 15 Research Fellows, 8 Overseas Fellows, 5 Professorial Fellows and 3 Extraordinary Fellows. Graduate students are elected to Research Fellowships by an annual open competition when four or five elections are made. They present a thesis or published work on which the election is made. The quality of the Junior Research Fellows, who are essentially post doctoral fellows, is extremely high, and this group provides a pool from which many permanent College and University appointments are made. The Senior Research Fellows are usually older men appointed for periods of 5 years in the first instance. They usually work in University departments; Sir Edward Bullard has been Head of the Geophysics department for some time in Cambridge.

The Overseas Fellows live in flats in the College grounds and are appointed normally for a period of from 3 months to a year and in some cases for 2 years. They are usually professors from overseas universities wishing to spend up to a year in Cambridge to work with a University department or to write. In the scientific field, they have included Geoffrey Chew, Dalitz, Feinberg, Blankenbecler, and Treiman in theoretical physics; F. H. Westheimer, J. D. Watson, Fodor (Hungary), Michalski (Poland), and Quartey (Ghana) in chemistry; Drs. P. W. Anderson, and W. G. Pfann, Salpeter, Schluter, and Walter Munk in physics and geophysics.

By the appointment of Overseas Fellows, the College is able to strengthen the work of University departments, and, at the same time, to enrich its own more intimate life. The provision for these Fellows was made possible for an initial period of 5 years by a benefaction of $100,000 from the Rockefeller Foundation.

Our Extraordinary Fellows include C. P. Snow, and Richard Keynes who works in a laboratory outside Cambridge, and John Oriel, a well-known oil industrialist who was a prime mover in the foundation of the College.

The Churchill Foundation of the United States, whose American Trustees are Carl Gilbert (Chairman), Henry Alexander, Lew Douglas, James Killian, and Lee DuBridge, was founded in 1960, with the objective of raising funds to support up to ten Churchill Scholars, who will come to us each year from American Universities. The first three Scholars came to us last year from the universities of Harvard, Princeton and Vanderbilt. Next year we expect to have ten, from the universities of Princeton, Michigan State, Purdue, Illinois, University of California at Los Angeles, Northwestern University, Carnegie Institute of Technology, and M.I.T. Two candidates are nominated by each of 20 selected universities and colleges, which are changed each year. A final selection is then made by a committee of the National Academy of Sciences, subject to the approval of the Educational Trustees, Dr. Killian, Dr. DuBridge, and myself. We hope that, in due course, the United States Churchill Foundation may be able to support Overseas Fellows from the United States as well as Scholars, but this requires a greater response to the appeal for funds.

In the academic year 1964–65, the College will have 130 graduate students, of whom 61 will come from overseas, mainly from British Commonwealth countries and from the United States. African students come to us mainly for the 1-year administrative courses, such as those suitable for District Administrative Officers.

The graduate students live in College rooms distributed among the undergraduates' rooms but have their own Common Room. About 30 of them are married, and some of these live in flats in the College grounds. We are about to build a further block of flats for their use, so that married students can be integrated more closely into the life of the College. The graduate students work mainly in University departments, but usually also take part in the tutorial work of the College. They are thus brought into close contact with undergraduates and obtain a useful addition to their income.

The social customs of the College are somewhat different from those of the older Colleges, since Fellows and students can bring lady guests to dine or lunch in the College Hall at any time without formality. This innovation is now spreading to other Colleges, who have in the past been much more monastic in their habits.

The administration of the College is in the hands of the College officers and the Council, of whom the Master is Chairman. The Council meets weekly for about 2 hours and has subcommittees to deal with building, finance, and catering. On the average, very little of a Fellow's time is spent in College Committees. The whole body of Fellows meets once or twice a term to discuss matters of policy and to receive reports on the financial matters, building programme and design, and so on.

The relations with the University are close, owing to the dual nature of most Fellowship appointments. Heads of Colleges help in University administration by deputizing on many occasions for the Vice-Chancellor, who is the Executive Head of the University and Chairman of a very large number of Committees. Heads of Colleges and Fellows also have many outside duties in the educational and political world —a phenomenon similar to that observed in the United States.

One of the most important features of the College system is the informal mixing of Fellows and students of different disciplines in the Common Rooms of the College. Here physicists can meet with economists to argue about the physical factors affecting economic growth; we can hear the latest news from Knossos or Pylos, or the "digs" on the Indian North West Frontier; we can hear about the most recent discoveries of radio sources and quasars or we can discuss architecture and politics. Thus the College provides a general education for students as well as the continual re-education of Fellows.

A new College can influence the policy of the University indirectly, since it has a younger body of Fellows and the society tends to be less conservative in its outlook than older Colleges. We have, in this way, through our Senior Tutor, been able to influence the changes in the admissions system of the Universities of Oxford and Cambridge. The Colleges are now to join the Universities Central Council for Admissions, which operates a computer-controlled clearing house. Students will now be able to put down four choices for their preferred colleges and universities. Thus they could put down one Cambridge college, one Oxford college, and two other universities in their preferred order; or they could put down four universities excluding Oxford and Cambridge. This

will greatly simplify the process of admission, although the University Admissions Officers have still to make their individual decisions. We hope that one effect of the clearing house will be to increase the range of schools from which our students come. At present Churchill College admits students from about 100 schools of widely different types. We are, however, looking for good students wherever we can find them.

Up to now, we have completed our central buildings and rather more than half of our residential accommodation. We are just beginning the construction of our libraries and in the Autumn we expect to begin the construction of a final group of student rooms. This should enable students to have more than two years out of three in College.

NEWS AND COMMENT

Nobel Laureates: Bloch and Lynen Win Prize in Medicine and Physiology

During the past 25 years biochemists have discovered many of the chemical reactions which occur in living cells. Although great gaps remain in our knowledge in this area, at least an outline for the chemistry of life is now plainly visible. This single sentence summarizes one of the great accomplishments of science in the 20th century. Some of the most far-reaching developments in this field, the field of intermediary metabolism, have been achieved by Professor Konrad Bloch of the Chemistry Department at Harvard University and Professor Feodor Lynen at the Max-Planck-Institut für Zellchemie in Munich. On 15 October the Nobel Prize Committee announced that the 1964 prize for medicine and physiology will be awarded jointly to these two men for their contributions to our knowledge of the complex pattern of reactions involved in the biosynthesis of cholesterol and of fatty acids. Their work in both these fields is closely interwoven, but Bloch has been especially concerned with cholesterol, Lynen with fatty acids.

In classical experiments at Columbia in 1937, R. Schoenheimer and D. Rittenberg utilized deuterium as a tracer to show that cholesterol is built up in animal tissues from small molecules. Five years later, Bloch and Rittenberg, using acetic acid labeled with deuterium, proved that this compound is a major precursor of cholesterol in rats. With this work Bloch began the pursuit of a goal—the complete elucidation of the biosynthesis of sterols—to which he has contributed so much during the intervening years.

Although the early work showed that cholesterol must be formed from two-carbon units closely related to acetic acid, and although parallel work demonstrated a similar origin for fatty acids, the chemical nature of the true two-carbon atom intermediate, an "active acetate," remained a baffling problem until F. Lipmann discovered coenzyme A. Subsequently, in 1951, Lynen succeeded in isolating "active acetate" from respiring yeast and showed that it is the acetyl thiol ester of coenzyme A. This discovery has proved fundamental to an understanding of the mechanism of the biosynthesis of both sterols and fatty acids.

The transformation of acetic acid through acetyl coenzyme A to cholesterol involves about 36 steps. The pathway is sketched in the adjacent diagram.

The hydrocarbon squalene proved a landmark in unraveling the biosynthetic pathway shown above. This hydrocarbon is abundant in the livers of sharks, and therefore Bloch planned to inject radioactive acetic acid into dogfish (the dogfish is a member of the shark family), isolate squalene from their livers, and test whether it is an intermediate in the overall synthesis of cholestrol. But even the best research plans sometimes strike unusual snags. Bloch set out for Bermuda, where marine biologists hunted dogfish. But the dogfish proved refractory and promptly died in captivity before they could metabolize acetic acid. So, after a few days on the Bermuda beaches, Bloch returned to the University of Chicago and there, with R. G. Langdon, succeeded in isolating labeled squalene from the livers of rats injected with radioactive acetate. With this material in hand, Bloch and Langdon proved that squalene is biologically converted to cholesterol. Shortly thereafter R. B. Woodward and Bloch proposed a mechanism for the cyclization of squalene to form lanosterol. Their hypothesis received strong support

Pathway of the transformation of acetic acid to cholesterol.