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This is a particularly opportune time to report on developments in Mathematics and allied disciplines in the University. The move from Acton to Uxbridge, which has already begun and which should be completed before the next academic year, is symbolic of the explosive expansion in Mathematics and its applications which is occurring on a national scale. Much of this expansion is due to the increasing versatility of ever more powerful computers and in this respect too, Brunel is on the eve of important developments. Newspaper advertisements suggest that unlimited career possibilities are open to those who graduate in mathematics or computer science and that those who fail the examinations may, nevertheless, prosper in the lower echelons. There is a sense in which the profession of mathematician has become respectable with the setting up of the Institute of Mathematics and its Applications. The British Computer Society is similarly concerned with the professional status of computer scientists.

Within the University there is a welcome recognition of all these developments, first, in the establishment of a School of Mathematical Studies and, secondly, in the provision of a mathematics building to be completed in 1968 in a central position on the campus. The School comprises, in the first instance, the Department of Mathematics, the Department of Computer Science and the Division of Statistics and Operational Research. It is fully intended to appoint a Professor of Statistics at the earliest possible opportunity in recognition of the rapidly growing importance and volume of the work of this Division. The new building contains about 40,000 ft² of accommodation which includes areas for a computer installation, both digital and analog, and rooms for some 70 academic staff, together with research, technical and clerical staff.

At the present time there are two small digital computers in the School which can be used to develop programs for the Chilton Atlas, on-line access to time-sharing computers in the London area, a range of analog computing equipment and desk calculating machines. The installation of a new and powerful computer complex is planned for 1969-70.

The School is responsible for the teaching of Mathematics, Computer Programming and Statistics to students in all departments of the University. This service teaching amounts to over 50 per cent of the total teaching load of the School and it means, of course, that the growth of the School is very much controlled by the expansion of the whole University. However, the School has a growing number of its own students and this expansion may proceed even more rapidly because of the interest in Computer Science.

All undergraduate students admitted to the School of Mathematical Studies at present choose one of the two mathematics courses available during the first two years. One of the courses comprises Mathematics with Technological Applications, the other Mathematics with Management Applications. In line with University policy, these are sandwich courses lasting four years,

in which periods of academic study alternate with periods spent in industry, commerce or research establishments. During years three and four, students may either proceed to an Honours degree with emphasis on one or other of these applications, or may aim at an Ordinary degree. Ordinary degree students will study a wide range of mathematical techniques and methods and emphasis will be placed on the application of this knowledge to the solution of practical situations with less attention to the rigorous study in depth associated with the Honours courses. In the fourth year, both Ordinary and Honours degree students will undertake a project and submit a written report.

Perhaps it is of interest to enlarge a little on the aims of these undergraduate courses. One is particularly suitable for those who wish to apply their mathematics in a traditional way to technical problems in industry. This course includes pure and classical applied mathematics, numerical analysis, computer programming, statistics, physics, electronics and complementary studies including languages. Optional studies available in the fourth year include algebra and topology, branches of applied mathematics, advanced computer programming, operational research techniques and nuclear reactor theory.

Mathematicians who wish to apply themselves to organisational and administrative problems in industry will take the management type course. This includes the same pure mathematics, statistics, computer programming and some of the numerical analysis as the technological course but applied mathematics, physics and electronics are replaced by economics, financial aspects of business, operational research and data processing. For part of their time in the fourth year students specialise either in advanced methods of operational research or in econometrics and market research.

The aims of the courses are reflected in the entry requirements; for the technological course candidates must hold the General Certificate of Education at Advanced Level in Pure Mathematics, and either Applied Mathematics or Physics; and at the Ordinary Level in three other subjects, preferably including English Language. Candidates who have passed at the Advanced Level in Mathematics (Pure and Applied) must also have passed in Physics. Candidates who have taken Schools Mathematics Project papers or those of other Mathematics Projects are eligible as are students with outstanding mathematical ability who possess an Ordinary National Certificate or Diploma in Engineering or Science. Candidates for the management-type course should hold the General Certificate of Education at Advanced Level in Pure Mathematics or Pure and Applied Mathematics and one other suitable subject such as Applied Mathematics, Physics, Economics, Statistics, Economic History, Logic, Geography, Philosophy or a foreign language. Here again suitable papers associated with the various Mathematics Projects qualify students for admission, provided they also have passes in three other subjects at the Ordinary Level, preferably including English. Suitable holders of an Ordinary National Certificate may also be admitted.

Those who are hearing about sandwich courses in Mathematics for the first time are often puzzled to understand what sort of firms employ mathematics students during the industrial periods. The computer firms, and firms with large computer installations, are particularly appropriate for mathematicians with the groundwork in computer studies and allied branches of mathematics which form such an important part of Brunel University courses. Government research laboratories of all kinds are willing to offer training to mathematicians, often in statistical units. Operational research and data processing groups are, likewise, valuable sources of training places. Some of the more unusual establishments which have taken Brunel mathematicians in recent years include the Accounts and Data Processing Division of the Ministry of Agriculture, the National Institute for Medical Research, various life insurance companies, the Board of Trade Census Office, various hospitals and a firm concerned with the rearing of young chickens. In the first year the students are mostly engaged on programming but in later years they are able to undertake responsible work of a mathematical or statistical nature and are frequently put in charge of some small problem that may be part of a larger investigation in which the organisation is currently interested. It is encouraging that the firms report favourably on the students' work and many of them are anxious to make offers of employment after graduation.

The present post-graduate courses lead to the degrees of M Tech in Numerical Analysis and Operational Research respectively. These are part-time courses of study requiring attendance at the University on one day each week and candidates are prepared for a written examination at the end of two years. Suitably qualified candidates who submit a satisfactory dissertation not less than six months after passing the examination will be eligible for the award of a Master's degree. Both courses are excellent examples of genuine collaboration with industry. The Operational Research course is being conducted jointly by the School of Mathematical Studies and the School of Social Sciences in the University. It has been developed in conjunction

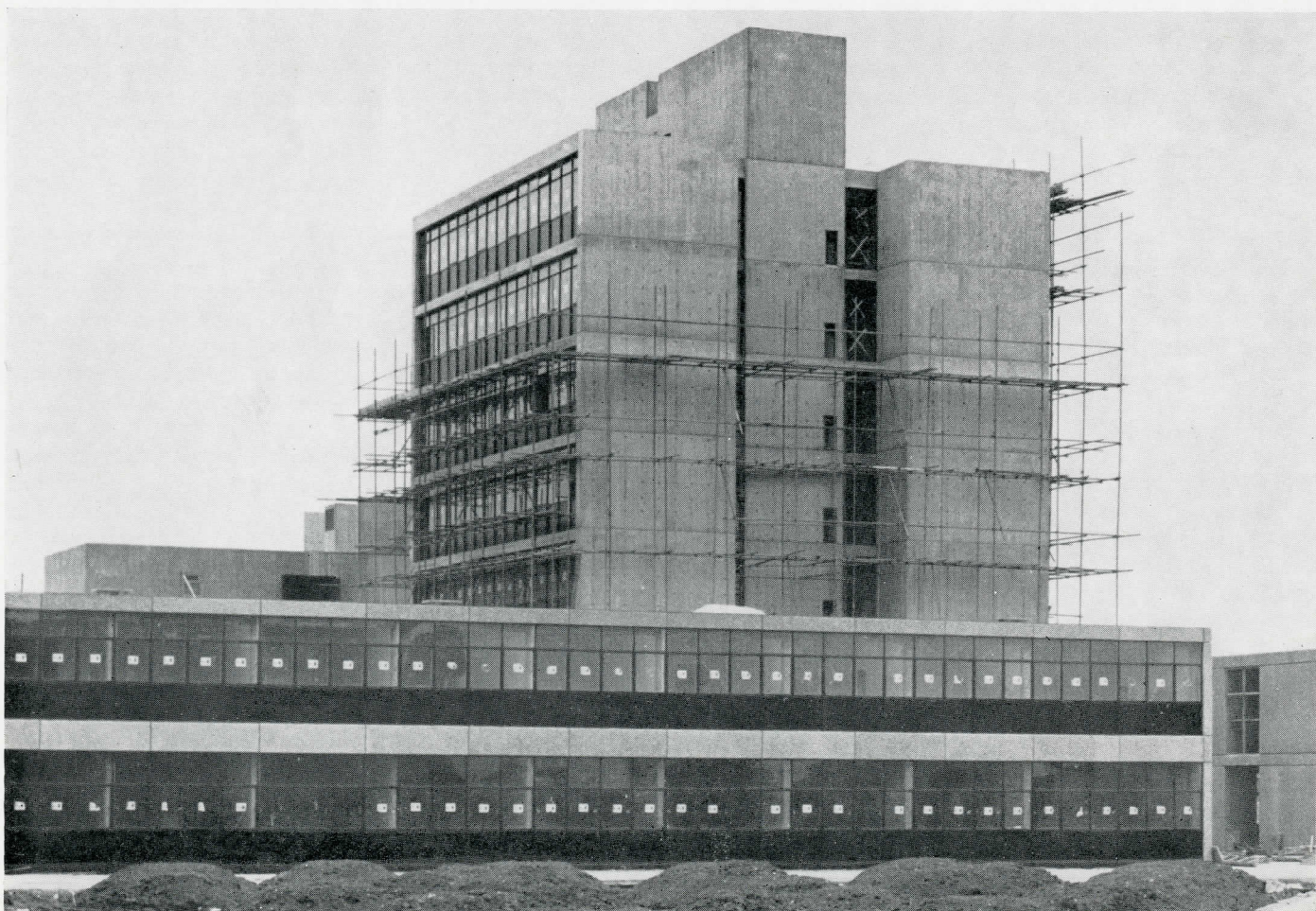
with the Operational Research branch of the National Coal Board and their specialists assist in the teaching programme. We are fortunate to have been able to appoint E. L. Albasiny of the National Physical Laboratory as an Associate Senior Lecturer: his lecturing forms a major and invaluable part of the Numerical Analysis course.

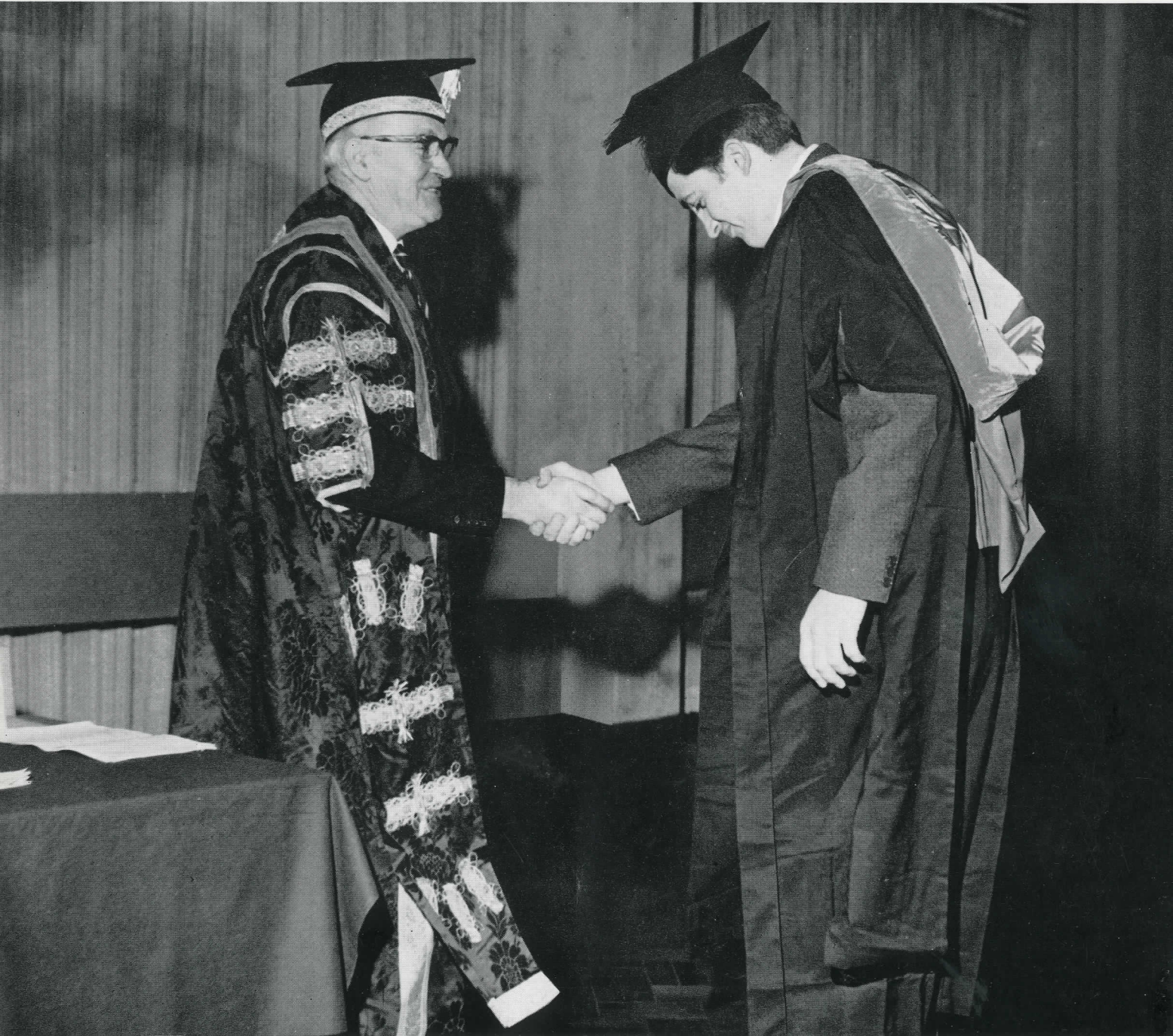
Courses leading to B Tech and M Tech in Computer Science are being prepared and, if numbers permit, the Master's course will start in October 1968. There is much talk in academic circles of the need to attract sixth formers into science-based courses. With this in mind, discussions are proceeding which may lead to another undergraduate course with a substantial computer science content for those who have no formal mathematical training. This would be a joint venture by the Department of Computer Science and the School of Social Sciences.

The Department of Mathematics has a long tradition of successful short courses in specialised mathematical techniques and their applications, and it is intended that these will continue when the new building is occupied.

Research work has been severely restricted so far, by lack of suitable accommodation and computer equipment. Some work is under way, however, notably in the fields of statistics and operational research, numerical analysis, rational function approximation, computer graphics and graphic languages, simulation, analog and hybrid computing. Considerable expansion of this side of the School's activity is planned. The recent appointment of the Industrial Liaison Officer is expected to stimulate the flow of problems from industry, not least of those susceptible to mathematical and computer methods of solution and we welcome this further possibility of collaboration with industry.

The Mathematics and Computer Science building which is nearing completion. The single-storey accommodation will contain a large computer complex and the tower will house 60 members of staff.





At the Degree Congregation on 1 March 1968 the Chancellor, Lord Halsbury, conferred higher degrees on nineteen students of the University. It was the first ceremony of its kind to be held in the new buildings at Uxbridge.