I tried to explain in my last lecture why the University of Essex is concentrating at the outset on a very few fields of study, and why it has chosen the physical sciences, social studies, and comparative studies. These are fields, we believe, with a special appeal for many students today who look for subjects concerned with real-life and contemporary problems. The student of economics will follow courses in economic theory, but he will also study the kind of question which will face him should he subsequently take employment as an economist. The student of sociology will be taught sociological theory and method, social history and philosophy, but he will also be asked to investigate an institution, like a hospital or factory, so that he is himself exploring a small part of the society in which he lives. But I am concerned here less with these subjects themselves than with the way in which they are arranged and taught.

Universities have by tradition aimed at providing a liberal education in depth. Specialized study is thought necessary in order that graduates may know enough on leaving the university to take up posts in the professions, in the public services, and in industry and commerce. They need to be experts, and the vastness of modern knowledge prevents them from being experts in more than one or two subjects. Again, the intensive study of a limited field is believed to be the best way, some would say the only way, of training the mind. It alone allows a student really to come to grips with a subject. And it enables him, in company with his teacher, to tackle difficult and exciting problems at the very limits of contemporary knowledge. But specialization should come only after some acquaintance with what the Spanish philosopher, Ortega, has called ‘the system of vital ideas which every age possesses and by which it lives’, a sense at least of the whole range of human achievement. The greater the cult of specialization, the greater the need to give it a solid basis of general culture. And only with the experience of different subjects can anyone make an intelligent choice of specialization in the first place, let alone be able to see his subjects in any kind of perspective.

Before going any further I want to say something about the peculiarly English problem of premature specialization in schools. Most of those who eventually get to a university in this country have begun to specialize in either the arts or the sciences by the age of fourteen. When they leave school at eighteen they have reached a high standard in two or three subjects but at the expense of a balanced education. Universities deplore premature specialization, but it is in part of their own making, for by their entrance requirements they demand a standard in two, and often three, related subjects at the Advanced level that can only be reached if pupils specialize early. In fact, were an enlightened school to produce a pupil familiar with the greatest achievements of the human mind over the whole of modern knowledge but without good marks in a narrow field, there would be a real risk that none of the English
universities would admit him. Less competition for university places as a result of large-scale expansion would of itself greatly ease the problems of the schools. On admissions, Essex proposes a small individual gesture: although our requirements for social studies and comparative studies will be the normal two A levels, for science students it will not be the normal three A level science subjects, but two with, a third A level which may be in science or in arts. But one university cannot be a law unto itself in the matter of admissions. Only when, in full consultation with the schools, all the universities together review their requirements can there be a rational pattern of secondary education.

For all the regrettable consequences of premature specialization it would be wrong, I believe, for a university to abandon its traditional responsibility for study in depth. It is preposterous that schools should drop at thirteen subjects so vital to a student’s general education that the university is asked to reintroduce them at eighteen. In any case, however imaginatively a university may try to supplement the education of victims of specialization; its efforts can only be palliatives. As cures they are about as effective as parking an ambulance at the foot of a cliff. In the universities themselves there is a good deal of pressure for even more specialization. The pace of discovery in most subjects is such that every year more material has to be fitted into the undergraduate course. And the pressure is hard to resist because of the shortness of the English course, and the tradition that in the main our graduates are research students who begin at once scholarly investigation. Four graduate students out of five in this country, excluding those studying education, are engaged in research and follow no courses of instruction. Because of this the first degree course must take students up to a point at which they can be identified as potential researchers and be ready to embark upon research with little supervision. Yet this very same degree course has to be followed by the 80 per cent. of students who have neither the aptitude, nor the inclination even, to be researchers. It is hardly surprising that for many of them the course is too specialized. All the universities in this country have the problem of specialization very much in mind. The older ones are supplementing their one-subject honours courses with two— and three-subject courses; Keele has instituted a foundation year; Sussex, York, and East Anglia are in different ways trying to reconcile depth with breadth.

A Broader-based Curriculum
Let me explain what we propose to do at Essex. The undergraduate course will last for three years. We are not in favour of lengthening it to four years for all students. But our curriculum differs from the traditional English pattern in two ways: it is very much broader in the first year, and it reaches its peak of specialization not at the end of the undergraduate course but a year later in the graduate division. The pyramid of specialization, that is, has its base in the first-year course, and its apex at the end of the first graduate year. The majority of university students in England, though not in Scotland, are still admitted to a single department, and in their very first year they specialize in the subject of their choice. Their scheme of study is, from the beginning, narrow, and they have little opportunity of seeing their subject in the context of related subjects. Many students, into the bargain, have made their choice of subject not because they have an active interest in pursuing it further but because it was the one they have studied longest, or because it was best taught at their particular school, or, quite simply, taught by their favourite teacher. After a term or so at the university
many of them feel like changing, but all too often they cannot. A fateful choice of subject may well commit a student for a lifetime. But this early commitment of the student to a particular department is a reflection of a deeper problem, that of the isolation of the departments themselves. Each offers its own scheme of study and sometimes even covers part of the same ground as a neighbouring department. Apart from anything else it is an inefficient use of staff time.

The first-year course at Essex is intended to meet the problem on both levels. A new student will choose a school of study, and follow a common unified scheme designed by the school, a scheme which crosses traditional departmental boundaries. In the physical sciences, for example, the course will comprise the study of mathematics, physics, and chemistry, not as isolated subjects but as integral parts of physical science. In social studies all students will take a series of courses designed to introduce them to the nature of modern societies, to their characteristic problems, and to the scientific study of these problems. We believe the advantages of this kind of first-year course are that the student makes his choice of subject on the basis of university experience of a number of subjects. Yet the range of three or four related subjects will be sufficiently restricted for the student to gain some knowledge of each in depth. Within certain limits, therefore, the first-year course is exploratory. It will provide, too, an opportunity for departments to co-operate with each other, and it will allow them to compete for the best students—an incentive, we hope, for lively and stimulating teaching. After all, if the student of physical sciences finds that chemistry comes over best to him he will probably choose to specialize in chemistry.

‘Bridge’ Areas of Study
At the end of the first year the student will choose his area of specialization, and the choice will include new bridge areas like theoretical physics, mathematical social science, and physical chemistry. But even in the second and third years our scheme of study will be broader than is usual. The student of economics will follow some courses also in sociology and in politics. The student of literature will study a foreign literature as well as his own. This greater breadth will be achieved in part by postponing some of the material of existing single-subject courses, many of them already overloaded, to the first graduate year; in part, too, by leaving out some material. In most courses there is a good deal of dead wood which can go. The modern physicist does not need to know half a dozen ways of measuring surface tension or viscosity.

We shall offer, then, a series of undergraduate schemes of study, enough in time to meet the different interests of students, but all of them integrated. Let me illustrate first from our school of comparative studies. This will comprise, to begin with, two departments: literature and government. The first-year scheme will be common to the school and will consist of courses in history, literature, and political institutions carefully co-ordinated to provide an introduction to British culture. At the end of the first year students will choose to specialize in either literature or government. They will then study either the literature or the political theory and institutions of this country, together with the literature or the government of Russia, the United States of America, or Latin America. But the scheme will still be articulated; so designed, for example, that the study of nineteenth-century Russian literature illuminates that of our own. The student will not be left to make sense himself out of a collection of
courses. Although the scheme bridges the gap between literature and politics, also between English studies and the study of other countries, it is homogeneous. Again, we are anxious that our science students shall understand something of the work of the social scientists, especially where it is concerned with the social and economic implications of scientific advance; and that the student of social studies shall appreciate the rigour of mathematical procedures, and the scope and limitations of statistical method. But whatever courses are arranged, they will be strictly a part of the honours scheme. In all our schemes of study we stand by the principle of integration. The student will be able, as it were, to choose between the various table d’hôte suggestions, but there will be no à la carte.

Only Honours Courses
All our courses, too, will be for honours. Most English universities have a pass course which is less rigorous than the honours course, and is followed mainly by students who, at the end of their first year, are thought not to be of honours calibre. It is a course for casualties. Often it consists of bits and pieces taken in a number of departments and lacks cohesion as well as depth. Often, too, the pass student feels out of things and neglected. In Essex all students will read for honours, although someone who, in the final examination, is not good enough to be awarded third class nor bad enough to be failed outright, may be awarded a pass. There will obviously be an occasional student who will find the course too demanding and will not complete it. But the advantage for the weaker students of continuing with the honours course is that, as well as following an integrated scheme, they are working together with all their original colleagues. They can be helped by contact with them and they do not bear the stigma of inferior status.

A word about examinations. Only systematic research can show how far the British system really measures intellect and originality, and not simply ability to pass examinations. At this stage we propose no radical change. But we shall vary the circumstances under which a student is assessed: to have some short examinations and some long, to allow students in certain subjects to make use of text books and reference books and to take into account research projects. The student of physics, for example, will be required in his final year to study and report on at least one specialized topic, either experimental or theoretical, and the class of his final degree will be determined in part by this individual research project. It will thus reflect the student’s ability to practise science.

I come now to graduate studies. Our undergraduate schemes of study will, for the abler students, be part of a four-year curriculum which takes in the first year of the graduate division, and leads to the degrees of M.A. and M.Sc. This first-year graduate course will comprise lectures and discussion classes as well as research projects. It will not be exclusively for professional researchers or intending university teachers. The courses will be, very broadly, of two kinds. The first will involve a deeper and more intensive study of one subject, the apex of our pyramid of specialization which I referred to earlier. In mathematics, for example, there will be courses in the field of fluid mechanics, particularly its application to acoustics and geophysics. The second type of course will be more vocational and professional, taking in some of the practical applications of an academic subject. For the graduate who has specialized in Anglo-Russian or Anglo-Latin American studies, we hope there will be courses
designed to meet the needs of someone taking up a career in the Foreign Service or the United Nations. We shall provide, then, first-year graduate courses of instruction in all fields. Those who want to become researchers will remain at the university after the master’s degree, and will embark on a two-year period of research which will lead to a doctorate.

We are planning for large numbers of graduate students. We shall encourage many of our own students to stay on at the university for a fourth year. We hope to attract a good many more from elsewhere. With universities concentrating more and more on particular fields, students will have to be much more willing to move to a different university for their graduate work. The ratio of graduate students to the total university population in this country has risen in recent years from around one in twenty to one in seven. It will go on rising. In Essex we have in mind a ratio ultimately of one in three or four. The rate of growth in the number of graduates in this country may well outstrip during the next few years that of undergraduates. For the government this means greater financial support for graduates, and in every subject not just in the sciences. For the universities it means a quite new concern, both for the courses which are provided for them, and the facilities. Hitherto graduates have been a depressed class in Britain with little account taken of their special problems—for example, the fact that many of them are married. Graduate students ensure the academic succession. We depend on them not only for the expansion of the next few years but also for the very survival of universities as we have known them. For this reason alone they deserve the best of facilities and the closest attention.

I want to mention briefly adult education. Because knowledge is expanding so rapidly much of what a student learns today, particularly in science, will be useless in twenty years’ time. So there is a growing need for university courses, in a great many fields, for graduates who wish to bring themselves up to date. Some of the courses will have to be very advanced, even post-doctoral courses for senior scientists. Many more will be refresher courses, particularly for married women who wish to return to fields like teaching or medicine. There will have to be courses, too, for non-graduates, people prevented by the traffic jams of the nineteen-sixties from gaining a university place, who want to make good their hopes of higher education. Some will be seconded from their jobs to attend full-time courses; others will only be free in the evenings or during the summer, and with shorter working hours and longer holidays there will be a great many more of these. Adult education will be required at the highest intellectual level, a good deal greater in scope than what colleges of further education or university extramural departments are able to offer at present.

These, then, are the main features of our curriculum: a three-year undergraduate course leading to a B.A., with all students reading for honours, broadly based in the first year and becoming progressively more specialized; a one-year graduate course leading to a master’s degree so designed as to encourage a large number of students to stay on for a fourth year; two further years in the graduate division for research students working for a doctorate, and—the latest refinement in university education—post-doctoral courses for senior scholars. These features are by no means peculiar to Essex. Even the more novel have been tried out in many of the established universities. But they reflect, I believe, a growing recognition, first, of the need for undergraduate courses which though still providing intensive study in depth are more broadly based (and here the Scottish universities have given an excellent lead), and,
second, the need for a real drive on graduate studies, with many more systematic
courses of instruction for the M.A. and the M.Sc.

I want now to say something about the teacher and teaching methods. A pedant can
frustrate the most imaginative curriculum, and reduce even the study of Shakespeare
to arid cerebration. Teaching in a university cannot be divorced from research. There
are, of course, first—rate researchers who just are not interested in teaching, although
I believe that most of them welcome the chance to pass on their knowledge and also
their enthusiasm. There are also first-rate teachers who, though they keep up with
their subjects, have published very little. And the balance between teaching and
research will vary in different periods of a teacher’s life, and from subject to subject
and teacher to teacher. But the best university teachers are the scholars who are
themselves advancing knowledge, whose personal researches enable them to teach a
subject in a fresh and original way. In recruiting their staff universities have always
looked first for academic promise. Of course, the mere accumulation of papers is no
guarantee of this, and I hope that at Essex we shall always prefer a single publication
of originality and depth to a plethora of trivial notes. I hope we shall also look for
qualities of liveliness and zest, and always recognize that conscientious teaching and
an active part in student life means time, and time taken from research. One thing
above all else: we want to establish a tradition that good teaching really matters.

Teaching methods are at present being looked into by a committee under the
chairmanship of Sir Edward Hale, and another committee is examining the use of
audio-visual aids in the pure and applied sciences. We shall obviously study carefully
the findings of both. We shall also carry out some investigations of our own. But for
the moment we intend our own principal method of teaching to be a discussion class
of eight to ten. The real impact of teaching comes in the small group with close
contact between a teacher and his students. It is here that a student’s curiosity is
aroused and his understanding developed; here, too, that he receives individual
attention, and an immediate response to his own hesitant reasoning. There is no
substitute for this delicate mechanism of inquiry and response, quest and discovery;
no substitute for this personal contact, particularly in a big university. It is absolutely
essential that even in the biggest department the staff should get to know all their
students one by one, and the students in turn should feel on easy terms with members
of staff. But have we chosen the right size of teaching group? At one end of the scale
is the Oxford tutorial and the Cambridge supervision with ideally one or two students,
a method prevalent though unpublicized in many of the great civic universities. At the
other end is the class or seminar ranging from a mere half-dozen to fifteen or twenty,
or even thirty.

Although we need to know a good deal more about these sizes, it seems that most
students lose little when the group is increased from two or three to eight or ten, and
many clearly gain from the extra numbers. Good students are themselves often the
best teachers; and the larger group is far more economical in manpower. With the
same staff-student ratio, or even one less favourable, the larger group allows more
frequent meetings, without affecting the time which members of staff have for
research. The discussion class with the regular submission of written work will be the
main form of instruction for social and comparative studies. It will also be important
for science students who will become, we hope, articulate scientists, able to
communicate their knowledge in speech as well as in writing.
We shall keep the traditional lecture to transmit facts and ideas and, we hope, enthusiasm; and it will have a special place in the first-year scheme of study for scientists. Here courses of lectures are essential to lay down principles and give a general view of the different subjects so that all students can take a useful part in a discussion class. We shall allow these lectures to grow large. As numbers increase I suppose there will be more formality, and more temptation to the lecturer to play to the gallery. But the large lecture has several advantages. There is a sense of occasion about it which can be inspiring to students and draw the best out of a lecturer. It justifies the trouble and cost of first-class demonstrations, and nowadays with television screens placed around the room these can be seen by everyone. Above all it is economical. Robbins has revealed that one-half of all the university lectures in this country are attended by less than twenty people. The delivery, and even more the preparation, of lecture courses for such small numbers is a luxury we cannot afford, least of all in a period of rapid expansion when limited teaching resources have to be used economically. An important lecture series can nowadays even be video-taped and, if necessary, loaned to another university. This pooling of lectures would mean that the very best scholars would be available to a far larger audience, and would set a high standard of lecturing for others to follow. Most of the teaching at Essex, then, will take the form of small discussion classes supplemented by very large lectures. The small or medium-sized lecture will be exceptional.

But exciting subjects, imaginative courses, even first-rate teaching are in themselves no guarantee of a student’s education. In the end he has to educate himself. It is important, therefore, that lectures, discussion classes, practical work, the preparation of essays, do not swamp his time or exhaust his spirit. The University of Liverpool has the very appropriate motto: *Haec otia studia fovent* — ‘The leisure we have encourages study’. A student’s free time is constantly threatened. There are the demands of the scientist for more formal hours of tuition and laboratory work. And this is hardly surprising, for while the length of the undergraduate course has not changed, knowledge in the sciences has increased, I suppose, ten times in my own lifetime. But we must make sure that when the student of the humanities and social studies is free to play football or go sailing on the Colne the science student is not always confined to his laboratory. There are demands, too, from outside the university that there should be more weeks in the term and more terms in the year, so that greater use is made of lecture rooms and expensive laboratory equipment. But universities have to safeguard the time academic staff devote to the preparation of lectures and discussions, and to their own research. In any case, slogans like ‘the greater utilization of the plant’ are dangerous if we lose sight of the true goals of education. Many students, for example, would get more from summer training schemes in industry than from extra months of academic study; and I have no doubt myself that most undergraduates would be better educated if they had to attend not more lectures but fewer, and learned to work on their own in the library. A university must see to it that a student has the time and the right conditions to educate himself. And it is about self-education and the university as a place to live in that I shall be speaking next week.