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COLLEGE OF TECHNOLOGY

KEVIN STREET

E D I T O R I A L

Some months ago the Editors invited all Department Heads to give us articles in reply to the question "What are your hopes for your Department from the Commission on Higher Education?". We felt that these articles would provide the College with a charter which would prove very interesting both of itself and by way of comparison with recommendations (if any) from the Commission.

Five of the Department Heads have long ago given us these articles which follow. We acknowledge them and ask them to forgive our tardiness in going to print. The publication of a summary of the Commission's Report has not altered the relevance of the many excellent ideas put forward in these articles. The matter of these articles provides an excellent foundation for the development of a philosophy of Technological Education in the country. On a more local level every member of the staff can benefit from a study (and we select the word "study" guardedly) of these articles. To the contributors the Editors are deeply obliged. As readers your appreciation can be shown by communicating with us by way of a letter or an essay stimulated by these articles.

To those whose articles we still await may we finally recommend the remark of a 19th century English politician

"Conservatism is abused when it disguises either apathy or inadequacy."

The Editors

QUO VADIS ?

What changes do I see occurring in the College in the next few years? The implication seems to be that things are static at the moment. This is far removed from reality. There are two broad areas in which major changes are just beginning to occur. The first of these is administrative and the second academic. If I deal with the administrative first it is not because it is of greater importance but rather that the changes are more clearly definable.

It is generally agreed at all levels that the Colleges of Technology must be given a large measure of self government and the initial steps towards this end will probably be announced by the Vocational Education Committee in the near future. That the Report of the Higher Education Commission embodies a similar recommendation will undoubtedly help to speed matters. Of more direct interest to the Teaching Staff are possibly the introduction of machine processing of accounts, use of computer services for processing statistical data, the introduction of a unified system of Students Records and improved service for the production of class material. Some of these innovations will be in operation next September and in fact at least one before then.

The changes on the academic side will be many during the coming years but by their very nature can be less clearly defined and will take longer to reach fruition. The first major change will undoubtedly be the transfer of the Electrical Installation Department to a new home and its establishment as an independent self contained Electrical Trades School. Close liaison between the School and College would be mandatory and essential.

The disappearance of the Pre-University Course and the Senior Science Course are foreshadowed by the development of the comprehensive schools and the introduction of the new Leaving Certificate. New courses in the Para-medical field and in the Biological sciences of high level technician type are being considered even at the moment. The demands in these areas presage a very great expansion in the next couple of years with the consequent establishment of a Department of Biology as a separate entity. The other Departments of the College will also be involved with new type of Technician Courses. No significant change is likely to occur at the technological level if only as a result of the Higher Education Commissions Report which indicated clearly that the College of Technology should concentrate their resources on fulfilling the needs for Technicians in Irish Industry.

Another development which will have a marked influence on the work of the College is the establishment of a National Council for Technician Awards, - long recognised as necessary and until recently lacking an organised approach. The National Advisory Committee for the Award of Certificates in Applied Science recently established by the Department of Education could well prove to be the instigator of a National Technician Council.

Closer to home and to the individual I expect to see great changes in our methods of teaching at all levels. The use of visual aids and of programmed instruction would seem to be essential if we are to achieve the results we are capable of achieving. A rational teaching load of not more than sixteen hours/week throughout the session and adequate staff of teachers, technicians, clerical and maintenance have become more than just a pleasant idea, they are essential and urgently required and what a change they would make for us all.

Finally if I have been too brief or apparently omitted reference to your particular area of activity - forgive me. In the space of this article it is not possible to do justice to the points mentioned or even deal with all the developments that I foresee ahead. Our only tradition, if it be such, is that we have thrived on the innovation and development of new courses since our foundation. This is a measure of the enthusiasm and devotion of the staff and the excellence of their teaching, - our guide for the future.

Hugh de Lacy

Principal

THE LANGUAGE OF THE SCIENCES

J. M. Forde, B.E.

The Department of Mathematics has acted and will continue to act as a service department to other departments providing, at all levels, facilities for the mathematical education of their students. The development of new courses within the department leading to specialised qualifications in mathematics is being considered. Such qualifications in mathematics as a Dip.Tech. or B.Sc. Special would be very popular. Many an able graduate holding a Pass degree would be glad of an opportunity to study for an Honours degree.

Some of the Honours graduates of our present B.Sc. (General) Course are now anxious to pursue their studies further in Mathematics and would be accepted by the University of London for the M.Sc. Degree if this department had the staff available to provide a suitable course.

Teachers of Mathematics are in very short supply and the creation of the new technical colleges will aggravate the position. This department is prepared to do everything possible to help to remedy this situation. A full-time B.Sc. course in Mathematics and Science with Pedagogics and actual assistant teaching in the final years has already been suggested by the Principal.

Short Post-Graduate evening courses, such as the highly successful "Statistics for Engineers and Scientists" which, in 1962 attracted 145 graduates, were suspended due to the lack of accommodation but will be revived. These courses are very popular with graduates who feel themselves getting out of touch with developments in their own field through a lack of Mathematical knowledge. In lighter vein courses such as "New Mathematics for Parents" could prove useful and in some degree rewarding.

The civilized world is fast moving towards the age of the computer and automated industry and we in this country have made little effort in preparing ourselves for it. We can do much in a College such as this in producing the technicians and technologists to operate and design the hardware and this work would certainly involve the department of Mathematics but the programming side and the study of computer languages would involve the department to a greater extent. However, the study of the mathematical techniques which permit a problem to be presented to the programmer for transmission to the computer would be an even more important function of the department. Here subjects like Numerical Analysis and Statistics are important and indeed a course in Computer Science may be the outcome.

Statistics with application to Quality Control and the Biological Sciences will be important and good courses in such subjects as Probability, Linear Algebra Topology, Boolean Algebra, Vector Analysis, Differential Equations, Linear Operators, Complex Variable will be essential.

The Mathematics Laboratory is shortly to be equipped with two Automatic Electronic desk calculators and several hand operated calculators of various types. An analogue computer will also be installed there and this will open up great possibilities in this field. The I.C.T. 1201 Digital Computer has not yet become operational due to lack of staff and this brings us to the key problem in all the plans outlined herein. Little can be accomplished without staff with specialised knowledge, training and experience and such men are difficult to find and more difficult to entice from the more remunerative posts in industry. The alternative is to release teachers for whole-time study and this is impossible in a department which is grossly understaffed. At present the Department of Mathematics has a total of nine whole-time teachers (including one Temporary whole-time Teacher and one vacancy) and seventeen part-time teachers. All the ungraded whole-time teachers are fully employed at teaching and have no time for the proper study of their subject and its presentation and no possibility of doing research. Nevertheless improvements and developments have occurred and the Department looks to the future with optimism.

PHYSICS AND ITS RELATIVITY

J. P. Roche, M.Sc.

In attempting to rationalize ones thoughts on the operation of a Physics Department in a College of Technology, one is faced with the obvious uncertainties that result from the lack of a general policy on higher education in this country. It may be that the Report from the Commission on Higher Education will recommend a specific programme for development, in particular for Colleges in the Vocational system. This is most unlikely. Thus we have the prospect of nine colleges outside and four in Dublin operating in a policy vacuum.

Kevin Street exists at the moment, in such a vacuum, with the title of College of Technology and including a Physics Department. In attempting to visualize what its future might hold one is obviously forecasting specific roles for a complex of colleges and is therefore a mere speculation.

However, it can be said with certainty that whereas there may have been some reluctance initially in accepting the very idea of a separate Physics Department in Kevin Street, it is now accepted as an academic to the College as a whole. Most of our students take some classes in physics and so the Department plays an important role in the service area. We could proceed on the assumption that this is a necessary and sufficient function for the Department and that all efforts must be bent towards achieving perfection in this function. That would be lovely, neat, complete and effective. Unfortunately physics if it is anything, is open-ended and no one can say "thus far". This is not a creed but a way of nature, and it is ~~for... this reason~~ that we say with certainty that the Department cannot remain viable purely as a service department.

The next obvious stage, then, is nonservice work which means the training of physicists. Here we meet all the old chestnuts of "competing with Universities," "duplication of facilities," and perhaps more significant, "outlets for graduate physicists in this country". There is no answer to these arguments because they are basically dishonest. They are based on the principle of deciding, out of prejudice, against a particular development and then arguing backwards. That the country needs physicists, particularly in industry, is accepted without question by the appropriate authorities. There is very little likelihood of this need being filled by the output from the Universities since they are invariably export models. So, the alternative is up to us, can we produce physicists? The short answer is that we can because we must.

Having once accepted this premise we are faced with the open end of physics, the quo vadis problem. We are not without some guidance/

with the past, because of the inherent reluctance to break with tradition, break new ground. This has been the situation elsewhere; the older institutions clinging to the traditions and the newer institutions starting from scratch with a completely new outlook. Again, perhaps, this is the way of nature, but unfortunately time will not stand still while we brood on our traditions. If we would move, now is the time; the way ahead is forward, not backwards.

"WHITHER, CHEMISTRY?"

E. J. Rothery, B.Sc.

I expect that the Commission will recommend that this College should be graded as a College of Advanced Technology. Recognition of the nature and level of our work is important but it must be coupled with the provision of a National Degree Awarding Body which will provide full degrees of Bachelor and Master Level for our Technological courses.

The Council for National Academic Awards was set up in Britain in 1964 on the recommendation of the Robbins Committee on Higher Education. The main aims of the Council were to provide degree courses, outside the University for students with an interest in industry or commerce as a career. These courses are now being offered in more than thirty colleges of technology in the U.K. while we must still pursue the External London B.Sc. Course. A similar Council in Ireland would offer an excellent local outlet for our students.

I also hope that the Commission will recognise the importance of technician courses and the provision of suitable Ordinary and Higher National Certificates or Diplomas. I envisage technician courses in the future following the lines adopted in our whole-time course for Medical Laboratory Technicians. All National Technician courses should begin with a one-year whole-time course followed by periods of block release, leading to National Diplomas. However, I feel that all students should be able to pass on to a higher qualification of B.Sc. level if they had the necessary ability. The present City and Guilds Courses lack a suitable technological top.

The development of the Technical Leaving Certificate is an important factor in our future development.

If the "Advanced" Certificate is of a sufficiently high level it may be possible to pass the first year of our technician and technological courses to the regional technical schools. This will enable the College to concentrate on more advanced and specialized teaching.

In conclusion, I should like to emphasize that any new national certificates, degree or diploma must command appropriate recognition abroad. With our previous successful record in external qualifications I feel that the time is now ripe for our own qualifications.

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THE CHAPLAINS

Rev. P. Dunne, S.J.

On behalf of my fellow chaplains I welcome the opportunity to tell something of our work, and express again our thanks to everyone in the College for their collaboration with us. I use the word "collaboration" because of its implications, and because long before Vatican II brought out its documents on the Laity, and the Church in the Modern World, the chaplains and the laymen have worked side by side in close harmony for a common purpose. If appreciation of the value of religious and moral training by the authorities and staffs of the Vocational Schools and Colleges of Technology had not been shown both in word and action, then our students today might not be so free from the mental and moral ills that afflict their contemporaries in other countries. Being family men themselves our colleagues realise the help that religion can give in helping them to form character and disciplined minds and bodies, and a sense of values; virtues that young people today so desperately need. We have only to read our newspapers to realise that. We chaplains can also back this up from personal experience in our work. While we are writing in this vein, may we express our appreciation to many of our fellow-teachers who have given and are giving so much help to students with both their academic and personal problems. Very often a teacher can do more good with a friendly chat and word of advice in time, than chaplains and doctors afterwards. We would welcome more of such advice and help. This personal interest on the part of the teacher is invaluable, and the students appreciate it, because it gives them a sense of "belonging"; that they are not alone; that the College is interested in them. That laymen, especially teachers, should be trained to do this work is stressed in Vatican II.

Since the last war many Reports on Education have been issued in England, the Continent and America. In all those that I have read, there has been mention made of the importance of character training, in which religion has a vital part to play. But there were no suggestions made as to how it was to be done. Even in Ireland where it is part of the school curriculum, there are a lot of questions being asked about whether the methods of teaching are as effective as they might be. We chaplains are asking ourselves whether our methods are also as good as we would wish. The one conclusion we all have come to, is that we must re-train ourselves first, and bring ourselves up-to-date. The amount of reading alone to be done in order to do this is enormous. But it is essential, and we are trying to draw up a reading list, a general one first, then a more specialised one. We would very much like to see teachers collaborate with us in this respect, because in the light of the Council Documents on the Church and Education, the role of the Catholic layman, especially teachers, is of the greatest importance. As the number of students increase, they will have to play an increasing part in the religious formation of students. This will entail a deeper knowledge of Theology and Philosophy and its application to the ever changing world of science and/

and scientific thought. The thinking of the atheistic humanist for example, must be considered because they reject everything that is transcendental, place the resolution of all the problems of life on the reasoning of man alone and his care for his fellow man. Man must impose a discipline on himself voluntarily, not because God has commanded him to do so, not because of fear of punishment in this life or the next but because chaos will result unless he does. There is no such thing in their thinking as the help of grace or an everlasting reward, or perfect fulfilment of the human desire for happiness. It is a total rejection of God, and reliance on the goodwill of man alone towards his fellowmen. The second part of the first commandment, without the first element. This line of thought is often reflected in students questions. Deeper insights, therefore, must be sought by the Christian into the meaning and purpose of life, and how a Christian must commit himself to God and the world God created, and the part he must play in finding out how the gifts of Gods creation which are the world and all its wonderful possibilities must be used for our benefit, not our destruction. To bring this down to the practicalities of everyday life needs the insights gained by those involved in all aspects of education. To take one example, what are or will be the effects of the ever widening findings of the Technologist on family, social and emotional life of man. Is the machine going to control the whole man or vice-versa. What of man's free-will? Will he revolt against this domination? Are the signs of this revolt already there? Are the young blindly striking out against this power, or are they trying to escape it all by drink, drugs, sex, and damn the consequences?

We chaplains must face these problems, but we need the help and advice of our fellow teachers, especially those engaged in the world of technology, and the findings of the experts in the field of psychology the open or latent interests of students discovered by the members of the General Studies Department and the results of dialogue between all three. Here is a very wide field of interest, to which each Department can contribute findings of great value, both to the personnel themselves and to the students. It is a big task, but beginnings are being made, and despite difficulties, I think only good can come out of this interchange of ideas and viewpoints.

The need for the establishment of a Department of Philosophy and Theology in all Colleges of Higher Studies has been very clearly and forcibly put by Dr. Philbin in a recent paper read in Queen's University, Belfast. I am rather proud of the fact that for many years there has been one in existence in the Dublin Colleges of Technology. We are bringing out a detailed syllabus of the subject matter of these courses we are making an effort to teach. Our biggest problem is the difficulty of following out our programme, because students ask questions and want their questions answered. They take the opportunity of our class period to ask them. This is useful, but they can be on any topic from the existence of God to Free Love, social justice and problems of the Church, with a fair amount of anti-clericalism thrown in. This we realize is natural. They are beginning for the first time to know the difficulty of applying the religious and moral training they got/

at home and at school to real life, and even though they may not be satisfied with the answers, as we meet them later on in Higher Classes, or after they have left us, we find the attitude has changed and there is goodwill, friendliness and a willingness to discuss real problems in a more rational and adult way.

We are greatly assisted by the fact that we have no responsibility for discipline, except in our own classes, or where there may be an obvious public breach of discipline. For many years they have associated priests and nuns with discipline; now they meet a priest who as one of them put is, is "an older man willing to listen". They can express theories of their own about life, sex, religion, politics, their marks, their need for more independence, some wild, some idealistic, some a mixtum gatherum of good and not so good, and the priest will listen. He will be patient, he will try to sort out the good from the mistaken or immature in their ideas. He will not shoot them down with sarcasm or smile indulgently at their immaturity, not be the least embarrassed at their more outrageous statements, or get into heated argument about some impossible hypotheses. They are adepts at thinking up the latter. After a while they come with personal or home problems and it is in this sphere that a very valuable sort of work is done. It is time consuming, it may go on for an hour or more after class in the evenings, or at week-ends, it is mentally tiring, but it is very much worthwhile. But to get to know the real person behind the student, it is necessary to take part in extracurricular activities. There they are relaxed, free from classroom atmosphere, talk freely, as long as the chaplain does not try to run all their activities or is a bit too censorious. He sees everything, but turns a blind eye to a lot.

The problem of meeting the parents, or visiting the digs is going to become more and more difficult as the numbers increase. Where there are personnel officers, such as E.S.B., Aer Lingus, C.I.E., and many of the electrical firms, the task is made so much easier, but the Post Office students are badly neglected in this sector. For the private full-time students from the country, the first year is all important, and here we try to help as much as we can, again without being over obtrusive. With the likely increase of girl students we are going to need an official Dean of Lady students, who understands their problems and is given facilities to help them.

In the purely spiritual sphere, the development and growth of an interior life of prayer and companionship with God, and commitment to His teaching and way of life, the enclosed retreat has remarkable effects. Here again we have been given every facility by the Heads of Departments and teachers and we know that they have God's special gratitude and blessing for their interest. In some of the sectors of the College there are growing difficulties in releasing students for a day in mid-week, due to pressure of rising standards of training, and the huge increase in the numbers of students. We hope by discussing alternative ways and means to overcome this problem. There has been a falling off in the numbers of students who volunteer to make an enclosed retreat. We are examining our consciences on this matter to/

see if the type of lecture given is compelling or attractive enough to hold their interest. But we also see it as a sign of the times. One thing which the students will not permit us to indulge in is complacency.

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T. A. G. Dowling, B.A.,

One of the terms of reference for this article was "What benefit do you expect to accrue from the Report on Higher Education for the Department of General Studies?" To answer this question I must be forgiven for stating firstly what I would wish for most of all for the College in general because, if this wish were realised, then many of the headaches of my Department would be eliminated.

My hope is that the Commission will recommend the granting of a Charter to Kevin Street. After 50 years of native rule, the Department of Education can scarcely be complimented if 75% of our Trades, Technician and Technological Certificates and Diplomas are conferred from London. One hopes that the Comprehensiveness mooted for Secondary level education will percolate upwards and that "Universitas" will mean what it implies. Why should our professional students be deprived of Degree qualifications when it has been proven over the years that we are providing courses at least of comparable standards to those obtaining in the more privileged Institutions of this city?

How, you may ask, would this affect my Department? Here, any resistance there is to General Studies stems from the fact that the whole academic effort is geared primarily at ensuring that students qualify in their chosen careers by external examination. In the rat race to qualify, even the most desirable non-examination subjects must be viewed on a short-term basis as being more of a hindrance than a help. If the College Authorities had control of the syllabus content, not only would it be possible to cut out deadwood material but, even more important, proper weighting could then be given to the various subjects in each course.

Experts on third level education in most progressive countries advocate the broadening of the syllabus content in all disciplines, the stimulation of enquiry in allied fields of study, and the fostering in the students of a breadth of vision and an adaptability that will serve them in good stead in the fast-changing climate of the modern industrial world.

Traditional methods of teaching must also be examined - "Do we encourage our students to think for themselves?" "Do we provide them with the opportunity and facilities for information retrieval, or do we stifle their initiative by swamping them with predigested facts to be churned up from memory in the examination hall? I would like to see (a) the normal teaching period reduced to 1 hour per class session (b) Notes to be handed out in advance to give the students the opportunity of approaching the lesson not as mere neophytes (c) Earmarking various sections of the College to experiment with the most modern teaching aids and their adaptation to suit our requirements (d) Devo- /

ting an official half day (i) to student integration by arranging that they would participate in selected extra curricular activities and (ii) by Departmental meetings for Programming, Reviewing and assessing schemes of work and for specialist lectures by members of the College Staff and guest speakers. If all this were to happen I feel that, even without mandatory sanctions, we in General Studies would have to rely less on good salesmanship to peddle our wares.

Next you may ask what have we to offer? There are two distinct syllabuses in operation in the College (a) at College level for Technicians, science and engineering students, and (b) at Apprentice level as devised by the Department of Education. Since I was privileged to be on the Committee which devised this syllabus, I shall confine my remarks here to thanking firstly the Inspectorate and the Department personnel who expedited the sanction of the new syllabus and secondly Mr. Trundle and the senior staff of the Electrical Installation Department for their whole-hearted co-operation in enabling me to make Kevin Street the first College in Ireland to implement this new Scheme for all our Apprentices.

At College level our primary function is "to make good certain deficiencies inherent in specialised and intensive technological courses". To provide this rounded education my staff operates in three main directions by providing specialist instruction in (a) communications - including modern continental languages (b) Aesthetic Electives and (c) Industrial Management Studies. Courses in social science and Philosophy conducted by the priest teachers under the direction of Rev. Fr. Dunne, S.J. form the final link with us in producing the complete technologist.

In the four and a half years since French and German have been introduced into our syllabus, outside factors have stressed the need for a larger time allocation for languages. We are fast approaching the stage where candidates for professional posts in science and engineering will be required to be reasonably proficient in at least one foreign language. Furthermore, much worthwhile technical data is now available other than in English. Indeed the vistas opened up for the learner of a foreign language today are greater than ever before when he can visit the continent in a matter of hours and gain a new and deeper insight into the lives of the people if he speaks their language and is conversant with their customs, history and literature.

As a teaching aid the Language Laboratory has proved a wise investment, despite the fact that our particular model has not yet reached the high standards of operational performance one expects from Grundig. Forty members of the teaching staff and fifteen groups of students are now being taught by this new aid. During the current session it has become increasingly clear that a greater time-allocation must be made for languages. We still have to explore the results of a more heavily weighted "crash course" as a possible alternative.

If, as some people maintain, we are a cultured nation, I would venture to suggest that it is more by accident than by educational design. Much remains still to be done before the Liberal Arts are fully appreciated by significant sections of our people. In the intensive 10 to 12 week programmes on Music, Art, Modern Literature, Local History, Public Administration, Public Speaking, Logic, Political Science etc. we have been fortunate in obtaining the professional services of recognised national experts in these fields to lecture to combined groups of students from all Departments of the College. The students elect for various batteries of subjects from a fairly comprehensive and co-ordinated programme. This section must always remain the real power house of our Department since it aims at promoting gracious living and refining the soul.

When full time staff in Applied Economics and Industrial Administration are made available to us, we shall be able to offer a wider programme in these fields than has been possible with part time experts on a one hour per week basis. We do concede that these subjects should not be dealt with at student level in the same depth or intensity as would be done with qualified scientists or engineers already in industry. And yet it is our duty as educators to familiarise our students with the conditions which should obtain in the Ideal Industrial Society. Once the young college graduate is aware of the structure, interaction and interdependence of the various units of Industrial Organisation, the Financing and Costing of Production, the Principles of job evaluation and budgetary control, the necessity for Scientific planning, the effectiveness of financial and non-financial incentives, elements of Industrial Law and the guiding principles underlying modern management techniques - we feel that he is then better equipped to launch himself into the harsh and exacting world of Industry.

Lastly, among the problems still to be resolved within my Department the following are the most urgent:

- (i) Lack of a proper mandate for the enforcement of proper attainment standards.
- (ii) Inadequate time allocation for all sections of the Course. We are dealing with mature students who relish expertise and demand treatment of subjects in reasonable depth.
- (iii) We still await full-time appointments of lecturers in Applied Economics, Industrial Law and Management Studies. These lecturers are urgently needed for next session to Team Teach on Specialist aspects of the official programme with 4th year apprentices.
- (iv) Apropos no. (iii) we must be prepared to pay for expertise. It may be traditional that culture thrives in adversity and that the Muses in our College are vested more often in the Hairshirt than the Toga - still we cannot but deem as naive the logic behind the recent recruitment advertisement for 5 Departments in Kevin Street - can it really be that such blatantly high scarcity values obtain only in four Departments?

Any official attempt to "water down" standards either of syllabus content or of staff qualifications can only result in poorer service in a rather futile scheme. Neither the College Authorities, the relevant Professional Bodies nor An Comhairle Oiliuna would countenance such an unenlightened attitude.
