

The statistics on the next page concerning the number of students who attempted the Honours Leaving Certificate Course in Mathematics, Applied Mathematics, Physics and Chemistry have been compiled by Professor M.A. Hayes. They should form an interesting basis for analysis, conjecture, etc. In this connection we include here the pertinent part of the recommendation of the conferences held in April 1980 and January 1981 (organised by The Royal Irish Academy, The Manpower Consultative Committee, The National Board for Science and Technology and the Institute of Engineers of Ireland) on "Engineering Manpower for Economic Development".

SUPPLY OF STUDENTS – Implications for Second Level Education

The availability of students willing and able to undertake the necessary courses of study is an essential prerequisite to achieving the increased output of engineering manpower. As far as professional engineers are concerned it is widely accepted that the minimum necessary entrance qualification is a standard in mathematics equivalent to achieving a grade C in an honours Leaving Certificate mathematics paper of the present standard. The number achieving this qualification in 1980 was 2,504 while the number attempting the paper was 3,332. Corresponding figures for 1979 were 1,558 and 3,801. Of these 655 entered engineering courses in 1980 and 418 entered in 1979. It is clear, therefore, that to achieve an output of about 1,000, as envisaged, a considerable increase in the number of qualified applicants will be essential.

To achieve this end the Conference recommended that a programme should be initiated to double the number of boys and quadruple the number of girls taking higher mathematics and physics in the Leaving Certificate over the next ten years. This will involve definite plans to make the subjects available to a wider range of pupils particularly to girls and the removal of institutional and administrative barriers to achievement of these goals. It will also be necessary to take steps to revise and update the curricula to make the subjects more attractive while maintaining the necessary depth and rigour of treatment. In order to increase the level of understanding of technology among second level students the Conference proposed the introduction of a new Technology subject on a pilot basis.

If these goals for increased supply of suitably qualified school leavers are to be attained then the shortage of mathematics and physics teachers must be urgently examined, and resolved. It is clear that without an adequate supply of properly qualified teachers in these areas, the increased numbers will not be achieved.

It is important in the introduction of new material to the Leaving Certificate course that teachers be provided with the opportunity to undertake in-career updating courses. This is not only important in relation to providing the increased numbers required with the higher level mathematics and physics qualification, but is equally important in educating and motivating those students who will be required to undertake technician courses to meet the increased demand in that area.

Proper career guidance in schools is an important requirement if able students are to be in a position to evaluate their prospects in engineering courses. It is necessary that third level institutions and both employers and the professional bodies should ensure that career guidance teachers are in full possession of up to date information and close liaison must be maintained.

As it is inevitable that time will be required to produce increased numbers of school leavers with the necessary qualifications for engineering degree courses through developments in the second level school system, the Conference recommended that the feasibility of mounting one-year post Leaving Certificate courses to qualify for entry be investigated. Such courses already exist to a limited extent but the question to be examined is whether a course with an agreed syllabus and examination could be mounted, from which successful students could generally be admitted to third level institutions. This would obviously require agreement on content and standards in advance. Such courses would mainly be intended for students having the necessary ability in mathematics who have not had the opportunity to study the subject at higher level in the Leaving Certificate.

<u>HONOURS</u>	<u>YEAR</u>		<u>1972</u>		<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>	
	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>
MATHEMATICS	1,803	314	1,925	361	1,975	389	2,046	468	2,375	558	2,727	799
APPLIED MATHEMATICS	242	0	215	4	242	1	241	3	317	14	346	9
PHYSICS	1,345	135	1,258	131	1,353	152	1,514	200	1,693	263	2,092	363
CHEMISTRY	1,813	518	1,965	637	1,883	642	2,057	770	2,251	933	2,633	1,188

YEAR

	<u>1977</u>		<u>1978</u>		<u>1979</u>		<u>1980*</u>		<u>1981</u>	
	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>	<u>BOYS</u>	<u>GIRLS</u>
MATHEMATICS	3,062	1,030	2,870	991	2,583	924	2,461	847		
APPLIED MATHEMATICS	392	0	322	7	319	9	362	12		
PHYSICS	2,328	398	2,286	430	2,501	482	2,478	490		
CHEMISTRY	2,898	1,396	2,778	1,588	2,827	1,519	2,982	1,868		