

THE GENERAL ELECTRIC COMPANY, p.l.c.

PLEASE REPLY TO: HIRST RESEARCH CENTRE, EAST LANE, WEMBLEY, MIDDLESEX, HA9 7PP

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21st May 1985

The Rt. Hon Mrs Margaret Thatcher MP
10 Downing Street
London

Dear

Prime Minister,

I felt that the meeting you held on the subject of Industry and Education was extremely useful, and I look forward to the follow-up in January 1986.

My purpose in writing is to record our views on the most important issues of that discussion.

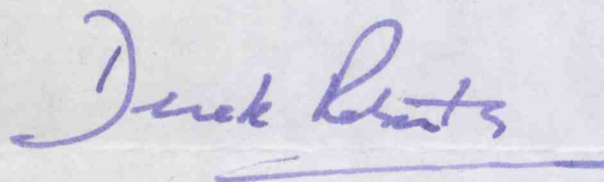
Here goes:

- i) We in GEC have 3 areas of strong interdependence with the universities and polytechnics,
 - a) Research collaboration and our exploitation of the expanding knowledge base to which they contribute at the more fundamental levels.
 - b) The recruitment of the scientists and engineers who are essential to the health of GEC. Typically we recruit 1600 graduates each year and have about 1500 sponsored students at any time - and offer about 1500 vacation training places. Very few companies deal in such numbers, but all companies should be encouraged to achieve or beat those ratios.
 - c) Continuing education, training and re-training are both urgent and continuing needs. We must - and do - take the initiative; at the same time we rely on help from the educational institutions. In this area it is particularly relevant to note the importance of the Open University - a major national asset.
- ii) We currently provide help to the universities in all the ways suggested in your letter - and one or two others. We do more now than some years ago, and I have no doubt that we will continue to increase such support.

- continued -

- iii) Greater commitment by industry to post-graduate and post-experience training would reduce the pressure for specialised vocational courses at first degree level, thus giving the universities a better chance to accept a more liberal sixth form curriculum and A-level system. This combination of changes would also provide a stronger educational foundation on which to create the "system" skills that are frequently referred to.
- iv) We agree with the emphasis placed on schools, and we are currently discussing ways of doing more in this area. The problem with maths and physics (and chemistry!) teaching is not just the shortage of adequately competent teachers, but the almost total absence of inspirational teachers in these disciplines. We are totally in favour of industry trying to help, but the real solution must be in overcoming union antipathy to pay differentials.

Yours sincerely

A handwritten signature in blue ink, reading "Derek Roberts", with a horizontal line underneath.

D H ROBERTS
Technical Director
The General Electrical Company plc

Copy to: Lord Weinstock



10 DOWNING STREET

From the Private Secretary

23 May 1985

I enclose a letter the Prime Minister has received from Mr D H Roberts of the General Electric Company plc, following her meeting on the Switch.

I should be grateful for your advice as to whether or not a simple acknowledgment will suffice.

Copies of this letter go to Chris Snell (Department of Employment), Andrew Lansley (Department of Trade and Industry), Leigh Lewis (Office of the Minister without Portfolio), John Graham (Scottish Office) and Robin Nicholson (Cabinet Office).

(Mark Addison)

Miss E. Hodkinson,
Department of Education and Science



10 DOWNING STREET

CF.

'Switch' meeting

I have agreed, after discussion
with DTS, that the GEC
Research Director should
come, as proposed by
Lord Weinstock.

MEA 10/5

SREW

24 April 1985

I enclose a copy of a letter from Lord Weinstock dated 19 April. You may like to incorporate some of the points ~~we~~ makes in the briefing to be provided for the meeting on 21 May.

Lord Weinstock indicates that he will not be attending the meeting since Sir Robert Clayton will. But I should be grateful for your advice on his suggestion that Derek Roberts, GEC's Research Director, should also be invited.

Mark Addison

Miss Elizabeth Hodgkinson
Department of Education and Science

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THE GENERAL ELECTRIC COMPANY, p.l.c.
1 STANHOPE GATE · LONDON W1A 1EH
01-493 8484

c/f

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19th April, 1985

Dear Margaret,

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see p 2 att.

Thank you for your letter of 19th March, 1985 about graduate engineers and technologists.

GEC will, of course, do what it can to help, and I attach a note on the questions in your letter, with some facts about what we are already doing. There are four points which deserve special attention:-

i) we are short not just of new graduates. The pace of technical change is now such that regular re-training is needed. It is therefore important that a new programme should in some way take account of the need to update and re-train at least some of our existing engineers - people who have already proved they can get things done;

ii) some people learn their engineering as much by action as in the classroom. Many educationalists still do not understand the importance of activity-related

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learning at all levels (primary, secondary and degree) in terms of students' career prospects and the economy;

iii) many technologists and technicians don't in fact work in the engineering industry at all; over fifty per cent of them are currently employed outside the engineering industry. The Engineering Industry Training Board cannot deal with the problems involved, because while GEC, for instance, is in the Board's scope, many employers of engineers and technologists (such as ICI, BP, BT and Marks & Spencer) are not. Through the Information Technology Skills Agency, employers are looking for solutions in the creative sense and to practical problems (e.g. the question of some sort of rough and ready code of conduct about poaching while we build up resources). But they need Government support. The recommendation by the House of Lords Science and Technology Committee for a new statutory Education and Training Board would be a good starting point provided it is confined to scarce technological skills;

iv) difficulty and confusion is caused by the unco-ordinated involvement of several Government departments, national bodies such as the UGC,

educational institutions and local authorities, all of which enjoy a large degree of independence and have vested interests to protect. The new programme needs single-minded direction by a determined Government.

Sir Robert Clayton will attend the meeting on 21st May, so you probably won't need me as well. But may I suggest that Derek Roberts, our Director of Research, attends because he has a particular expertise in this field and will look after the follow up in GEC.

Yours,
Amued

Lord Weinstock

The Rt. Hon. Mrs. Margaret Thatcher, MP,
10, Downing Street,
LONDON, S.W.1.

Enc.

PROGRAMME TO INCREASE GRADUATE ENGINEERS AND TECHNOLOGISTS

(Prime Minister's Letter of 19th March 1985)

- (1) Many of the fundamental problems regarding business skills and employment prospects are referred to in the recently published White Paper, but the context of the overall problem is relevant to GEC's specific comments on the Prime Minister's questions.

The Problem

- (2) Too few young people master mathematics and science in our primary and secondary schools. It follows that the pool available to train as engineers and technologists at university and the polytechnics is too small to start with; this will be aggravated by the fall of about one third in the number of youngsters in their late 'teens between 1984 and 1990.
- (3) Simply determining new curricula in the schools is no solution. There is a serious shortage of effective teachers, particularly in mathematics. And we do not make the best of what we have because many educationalists do not seem to understand that young people learn in different ways; conventional methods of teaching do not suit everyone. In GEC's experience, some youngsters respond

much better to practical than to formal learning.

(4) Young people who, for one reason or another, have rejected conventional education, can learn effectively through activity-based training. The better YTS programmes have enabled the young to understand the real life relevance of subjects like mathematics and physics. The Technical Vocational Education Initiative, the new Certificate of Pre-Vocational Education and the Scottish Education System also encompass such learning styles. Activity-based training should be considered more throughout primary and secondary education in the UK.

(5) Of the people who do come through as graduate engineers and technologists, far too many never enter engineering industry or leave it. Some join other manufacturing industry (e.g. ICI and BP) but many go into non-manufacturing companies such as BT and Marks & Spencer (who now recruits engineers but does not train them) and professions such as accountancy and banking. Overall over 50% of technologists and technicians are currently employed outside the engineering industry, which cannot make sense.

(6) We have also to recognise that the pace of technical change is now so great that some re-training or extension of expertise is needed for our existing graduate engineers and technologists, possibly as often as every 10 years. Without this we shall not make full use of them throughout their working lives. The UK is slipping behind its competitors in this respect as well as in the provision of

new young graduates. It is very important that the Government's new programme should take account of this need. Clearly employers have a responsibility but it should be shared between them and higher education institutions with the Government acting as a catalyst to get things moving, especially in such fields as distance learning and Tutorial Video Instruction programmes.

Industrial Contribution

- (7) The Prime Minister asks what contribution industry can make. GEC will, of course, do what it can to help. The answers to her specific questions (i-v on page 2 of her letter), that is the details of equipment, teaching staff, design of courses and career prospects, can be worked out by her officials and GEC managers. A lot is already done. For example, 8 of our staff hold positions as visiting university professors; our central research laboratories teach several under-graduate courses; and the students involved have access to our specialist equipment. And, the technological training carried out in GEC during a 12 month period, amounts to;

New graduates	1,500
Student apprentices	1,800
Technician apprentices	3,000
Craft apprentices	2,500
Mature technicians and technologists	11,000

YTS youngsters, customers
employees and overseas
employers' staff

8,000

- (8) In assessing the contribution industry can make, it is necessary to distinguish between "industry" and particular employers, because a relatively small number of high technology companies are in fact doing the larger part of the UK's high technology training. Most UK companies either cannot or will not train for technological skills and are poaching skilled and experienced people from those who carry the burden of training them. But this minority of companies cannot be expected to cope with this indefinitely and, anyway, they cannot do enough unaided. The costs of training technologists are considerable, and if these businesses are to carry out more training and sponsorship to help overcome a broad national problem, they need financial help.
- (9) Turning to a on page 2 of the Prime Minister's letter, the key subjects for expansion at universities and polytechnics include electronics engineering, computer science and physics; GEC managers can identify appropriate centres of excellence for officials. It may be necessary to introduce more flexible entry qualifications for science and engineering courses at universities, and the better polytechnics must not be forgotten when extra resources are allocated. Incidentally, the progress of the Open Tech started by one of the Prime Minister's former colleagues has been disappointingly slow.

Organisation

- (10) There are 2 key points on b and c on page 2 of the Prime Minister's letter.
- (11) Because the Engineering Industry Training Board functions in a sectorial manner (GEC is in its scope but, for example, the other companies mentioned at para. 5 above are not), it cannot be effective either creatively or in dealing with practical problems. Many employers of engineers and technologists do not face the cost pressures applying to engineering industry who operate extensively in export markets and there is a need for a rough and ready code of conduct about poaching in order to minimise any inflationary spiral while we are building up our resources of these people.
- (12) Through the recently formed Information Technology Skills Agency, high technology employers are now trying to identify solutions. But they need Government support. Perhaps the recommendation made by the House of Lords Science and Technology Committee for the setting up of a statutory scarce technological skills education and training board offers a constructive starting point and a way out of the problem with the EITB.
- (13) Still more difficulties and confusion are caused by the unco-ordinated involvement of several Government departments and bodies in the scarce technological skills area, including the Departments of Education & Science,

Employment, Trade & Industry, the MSC and the EITB, besides such institutions as the UGC, the examination boards, the universities, polytechnics and Local Education Authorities. All enjoy a large degree of independence, have axes to grind and interests to protect. This confusion will continue to restrict the process of change and to have an adverse affect on our industrial advance, unless the new initiatives are directed in a single-minded way by a determined Government.

17th April 1985

SCIENCE + TECH:

Employment, "and the MIT Budget, Pt 3"

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