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PREM 19/1370

Part One.

CONFIDENTIAL FI

Public Seminar / Reception on Science, Technology & Industry

SCIENCE & TECHNOLOGY

PART 1

MARCH 1983

Referred to	Date	Referred to	Date	Referred to	Date	Referred to	Date
11.3.83		~~21.9.83~~					
~~14.3.83~~		~~27.9.83~~					
~~24.3.83~~		~~29.9.83~~					
~~3.3.83~~		~~3.10.83~~					
~~27.5.83~~		~~6.10.83~~					
~~3.5.83~~		~~14.10.83~~					
~~27.6.83~~		~~25.10.83~~					
~~7.7.83~~		~~22.12.83~~					
		1-2-84					
~~12.7.83~~		> ENDS <					
~~18.7.83~~							
~~12.8.83~~							
15.8.83							
~~19.8.83~~							
~~30.8.83~~							
~~19/9/83~~							
~~5/9/83~~							
~~12.9.83~~							
~~15.9.83~~							
~~17.9.83~~							
~~13.9.83~~							

PART 1 ends:-

Duty Clerk & DB 2/2/84

PART 2 begins:-

Nicholson & DB W.0191 5/3/84

Susan

Yes. The message is not needed until 21 March. DMS 2/2

David,

When looking out these past papers I noticed that Dr. N.'s office have said that draft reply (re your letter of 23.12) will not arrive until end of Feb!

Are you content to wait?

Susan

2.2.84

DEPARTMENT OF TRADE AND INDUSTRY
1-19 VICTORIA STREET
LONDON SW1H 0ET

Telephone (Direct dialling) 01-215 5147
GTN 215
(Switchboard) 215 7877

From the Minister of State
for Industry and
Information Technology
RT HON KENNETH BAKER MP

Sir Alastair Pilkington
British Association for the
Advancement of Science
Fortress House
23 Savile Row
LONDON
W1X 1AB

cc PS/Mr Butcher
Mr Roith
Mr Croft
Mr Solomon
Mr Barclay - No 10
Dr Nicholson - Cabinet Office
Dr Copestake - on File

7 February 1984

Dear Sir Alastair

will request if required

Mr Baker has asked me to thank you for your letter of 20 January inviting him to speak at the launch of your new journal on 21 March 1984. He is very pleased to accept and looks forward to meeting you and the British Association's guests on that occasion.

Yours sincerely

Steve Mummery

pp NEIL McMILLAN
Private Secretary

Science + Tech March 83

Seminar

13 FEB 1984

PS/Mr Baker

cc PS/Mr Butcher
Mr Roith
Mr Croft
Mr Solomon
Mr Barclay - No. 10
Dr Nicholson -
Cabinet Office

BRITISH ASSOCIATION: INVITATION TO LAUNCH NEW JOURNAL: 21 MARCH 1984.

Sir Alistair Pilkington invites Mr Baker to speak at a luncheon at which the British Association will launch a new journal. The British Association had originally approached the Prime Minister who was unable to accept; she had suggested that Mr Baker might take the engagement.

This venture is designed to increase BA's activities in the industrial area and it is coupled with the launch of a scheme for industrial corporate membership. BA has been developing its industrial role recently. It links this emphasis to the Prime Minister's Seminar on Science, Technology and Industry last September.

I understand that Mr Baker has already said that he will accept this invitation. I have provided a Private Secretary reply so that the acceptance can be sent in Mr Baker's absence.

T B Copestake
Head RTP1
Room 823
Bressenden Place

213 4510

27 January 1984

File No. TPU/20/254

DRAFT

Addressed to:

Sir Alistair Pilkington
British Association for the Advancement of Science
Fortless House
23 Saville Row
London
W1X 1AB

Copies to:
PS/Mr Butcher
Mr Roith
Mr Croft
Mr Solomon
Mr Barclay - No. 10
Dr Nicholson - Cabinet Office
Dr Copestake - on File

Enclosures:

Originated by:
(Initials and date)

TBC 27.1.84

Seen by:
(Initials and date)

Type for signature of

PS/Mr Baker

(Initials and date)

DEPARTMENT OF TRADE AND INDUSTRY

Mr Baker has asked me to thank you for your letter of 20 January inviting him to speak at the launch of your new journal on 21 March 1984. He is very pleased to accept and looks forward to meeting you and the British Association's guests on that occasion.

Baker's Office
T Pu 20/25 4

W.04

3 January 1984

TO: MR ROITH, DTI

FROM+ DR NICHOLSON

cc: Dr Copestake ✓
Mr Courtney
Dr Harrison

I hope you will feel that you can encourage Mr Baker to accept this invitation.

In the initial discussions which the BAAS had with Barry Copestake and ourselves, there was some confusion between two events - namely the launch of a new journal and the launch of an industrial subscriber system. It is now clear that the 21 March occasion will be devoted to the launch of the new journal which, as I say in my minute to Neil McMillan, seems to be an entirely worthy initiative following the Prime Minister's seminar.

PBN

W.03

3 January 1984

TO: MR MCMILLAN, DTI

FROM: Dr NICHOLSON, Cabinet Office

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Attached is a copy of a minute which I sent to the Prime Minute before Christmas, and a copy of the reply from her office. As you will see from my minute to the Prime Minister, I believe that this launch of a new journal by the British Association for the Advancement of Science is an excellent follow-up to some of the things which were discussed at the Prime Minister's Lancaster House seminar and that the occasion is worthy of Ministerial support. The BAAS had also been in touch with DTI on this and related issues through Barry Copestake, and although I think it would be fair to say that both of us had some initial doubts about the project, I am now much happier, having had an opportunity to discuss it in detail with Mr Dyer of the BAAS. Incidentally Mr Dyer is a past ICI senior executive.

Before returning to the BAAS with the suggestion that they might invite Mr Baker, I would be grateful if you could let me know whether Mr Baker would be likely to accept such an invitation.

I am copying this minute and the attachments to Oscar Roith and Barry Copestake.

RBN

W.0866

21 December 1983

PRIME MINISTER

THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The British Association for the Advancement of Science (BAAS) is keen to take up some of the more urgent themes of your Seminar on Science, Technology and Industry by fostering closer links between the scientific community and British industry.

2. As you know, the BAAS is an old-established and prestigious organisation which has an excellent track record of achievement with schools and young scientists. It has not previously paid much attention to science and technology in industry although many noted industrialists have held honorary positions in the Association.

3. Now the BAAS has set up a Science and Industry Committee, under the chairmanship of Sir Alastair Pilkington (who is also this year's President of the Association). The Committee also includes Sir Brian Kellett (Chairman of the TI Group), Sir Graham Wilkins (Chairman of the Beecham Group) and Dr Derek Roberts (Technical Director of GEC).

4. The Committee are proposing a number of imaginative ventures: a new journal, a corporate membership scheme, conferences on topics connected with science and the economy, media debates and an exhibition at which scientists display their wares to industry.

5. It is planned to launch the new journal at midday on Wednesday, 21 March in the Cholmondeley Room of the House of Lords. I understand that Sir Alastair Pilkington will be writing to ask if you would be willing to open the occasion. The journal is designed to stimulate the interest of industry in the latest and best science and technology. It is to be published by Home and Law Magazines (publishers of the Law Society journal), will be directed primarily at senior management in industry, but also distributed to universities, schools and BAAS members. It is to be self-financing from advertising revenue, although the BAAS will have a complete control over both advertising and editorial content. The scientific articles are to be written by scientists of distinction, but will make the implications of their work clear to industrialists. The first announcement of the journal (to be called 'Link-up') will be made in January when a brochure will be issued. I attach a copy of the first page, which quotes the concluding sentences of your speech at the Seminar and messages from Sir Alastair Pilkington and Sir Terence Beckett.

6. My view is that the BAAS plan is an ambitious one, but that it is a good example of one type of initiative which we had wanted to follow your Seminar. There is no doubt that a journal of this sort would fill a gap - there is nothing comparable published at present and the need for industrialists to be better informed on science is self-evident.

7. The BAAS intend the audience on 21 March to be British industry at Chairman or Chief Executive level. The occasion and the future prospects for the journal would be enormously enhanced by your presence and I hope you may feel able to accept Sir Alastair Pilkington's invitation. If this is not possible, I suggest that Mr Kenneth Baker opens the occasion, perhaps with a message from you.

8. I am copying this minute to Sir Robert Armstrong.

RBN.

ROBIN B NICHOLSON

"One of the most exciting things about our times is the speed with which science can turn into technology, and technology can turn into valuable and fascinating products. .....
Ours is not only an age of discovery. It is an age of application - devastating in its swiftness; enthralling in its surprises; remorseless in its competitiveness. Our business is to be the leaders of that age - to apply our science and apply ourselves to building the industries of the future."

- Margaret Thatcher : Prime Minister.

"Britain has a proud tradition of scientific achievement which in many fields continues to lead the world. Science, properly applied, will improve the living standards and well-being of us all."

- Sir Alastair Pilkington :
President of the British Association for the Advancement of Science.

"The prosperity of British Industry and of those who work in it is directly related to the efficiency with which we can identify and apply commercially-viable science-based innovation."

- Sir Terence Beckett :
Director-General of the Confederation of British Industry.

10 DOWNING STREET

From the Private Secretary

CABINET OFFICE
W .2231.
29 DEC 1983
FILING INSTRUCTIONS
File No .....

DR NICOLSON

British Association for the Advancement of Science

The Prime Minister was grateful for your minute of 21 December about the new journal being launched by the British Association for the Advancement of Science.

The Prime Minister was interested to hear about this development, but regrets that it will not be possible for her to attend the launch of the journal on 21 March since it comes at a particularly busy time. She agrees that Mr. Kenneth Baker might attend instead, assuming of course that this is acceptable to the BAAS. She is also content with your proposal that she should send a message, and in due course I should be grateful if you could provide a draft.

I am sending a copy of this letter to Richard Hatfield.

David Barclay

David Barclay

23 December 1983

SCI + TECH
Seminar
March 83

W.046

13 January 1984

MR DAVID BARCLAY

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

I refer to your minute of 23 December. I have now heard from Mr Baker's office that he will be happy to speak at the launch of the British Association's journal on 21 March. We expect a formal invitation from the British Association to Mr Baker very shortly. In the meantime we are preparing a draft of the message for the Prime Minister to send to the occasion via Mr Baker.

I am copying this minute to Richard Hatfield.

ROBIN B NICHOLSON

13 JAN 1984

10 DOWNING STREET

From the Private Secretary

DR NICOLSON

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I am sending a copy of this letter to Richard Hatfield.

David Barclay

David Barclay

23 December 1983

PRIME MINISTER

The British Association for the Advancement of Science are to launch a new journal designed to stimulate industrial interest in science and technology. The launch is planned for Wednesday, 21 March, at the House of Lords, and will be attended by heads of major British companies. Robin Nicholson explains in his note attached that Sir Alastair Pilkington will be writing to invite you to attend and, no doubt, to make a speech.

Unfortunately the date proposed is awkward for you, coming as it does between the European Council (which ends the day before) and your speech to the Central Council the following Saturday. What is more, on the day itself you will need to find time to prepare a Statement to the House about the Council.

Agree that for diary reasons we should decline this regretfully, but send a message of support and ask Kenneth Baker to represent the Government?

Regret-

DMB

22 December 1983

W.0866 21 December 1983

PRIME MINISTER

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- Sir Terence Beckett :
Director-General of the Confederation of British Industry.

SCIENCE + TECH: Public Seminars

March 83

for SG + TACCH
seminar file

Hughes International
&
WILLOWBROOK
WORLD WIDE

Would you kindly note that from 12th September 1983 we are moving from London to:-

Hampton Court Castle,
Leominster,
England HR6 0PN

Telephone 056 884/261 Telex 35655 HUGHES G

CONFIDENTIAL

NBPM AT 26/10

Treasury Chambers, Parliament Street, SW1P 3AG
01-233 3000

25 October 1983

Andrew Turnbull Esq
10 Downing Street
LONDON SW1

Dear Andrew,

SEMINAR ON SCIENCE TECHNOLOGY AND INDUSTRY:
FOLLOW-UP

At paragraph 7(a) of the enclosure to Michael Scholar's letter of 3 October, the Treasury was asked to take follow-up action with DHSS on portable pensions. We are assuming that this will in fact be one of the key questions to be addressed by Mr Fowler's forthcoming inquiry into pension issues so unless we hear to the contrary from you or from Steve Godber, to whom I am copying this letter, we shall not be initiating separate consideration of this issue here.

We are looking forward to receiving from Mr Fowler his proposals for the membership, terms of reference and timetable for the inquiry.

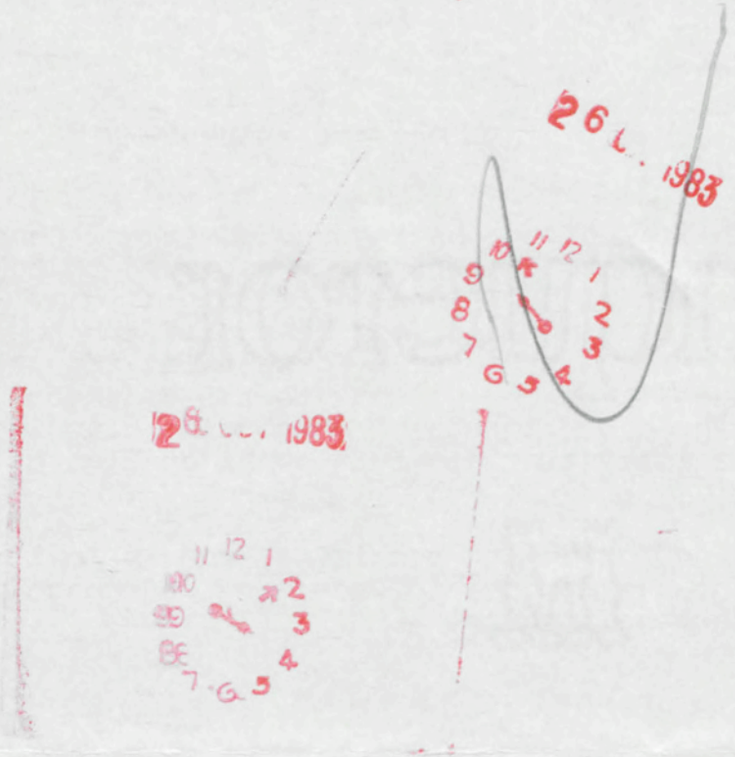
Yours sincerely,

Margaret O'Mara

MISS M O'MARA
Private Secretary

CONFIDENTIAL

Science & Tech
March 83
Seminar



CONFIDENTIAL

NBPM. AT 26/10
DHSS happy to accept remit. They are considering whether and how to announce.
AT 26/10

Treasury Chambers, Parliament Street, SW1P 3AG
01-233 3000

25 October 1983

Andrew Turnbull Esq
10 Downing Street
LONDON SW1

Dear Andrew,

SEMINAR ON SCIENCE TECHNOLOGY AND INDUSTRY: FOLLOW-UP

At paragraph 7(a) of the enclosure to Michael Scholar's letter of 3 October, the Treasury was asked to take follow-up action with DHSS on portable pensions. We are assuming that this will in fact be one of the key questions to be addressed by Mr Fowler's forthcoming inquiry into pension issues so unless we hear to the contrary from you or from Steve Godber, we shall not be initiating separate consideration of this issue here.

We are looking forward to receiving from Mr Fowler his proposals for the membership, terms of reference and timetable for the inquiry.

I am copying this letter to those who received yours.

Yours sincerely,

Margaret O'Mara

Miss M O'Mara
Private Secretary

CONFIDENTIAL

Science & Tech
March '83
Seminar on Science
Tech and Ind

26 OCT 1983

JH 834

NBPM AT 18/10

DEPARTMENT OF TRADE AND INDUSTRY
1-19 VICTORIA STREET
LONDON SW1H 0ET
TELEPHONE DIRECT LINE 01-215 5422
SWITCHBOARD 01-215 7877

Secretary of State for Trade and Industry

14 October 1983

Andrew Turnbull Esq
Private Secretary to the
Prime Minister
10 Downing Street
London SW1

Dear Andrew,

Thank you for the copy of your letter of 3 October to Imogen Wilde in DES.

2 Ministers here have seen Dr Nicholson's summary of the main points raised at the Prime Minister's Seminar on Science, Technology and Industry. This Department has either initiated or already taken action on all the points where action was indicated. It also has an interest in many of the recommendations addressed to other Departments, and has helped with many of them.

3 Ministers agree strongly with Dr Nicholson's last point, namely that the momentum generated by the Seminar should be maintained. All DTI Ministers will ensure that speeches and visits contain appropriate references back to the seminar, and show how the Department is indeed identifying and then building on success.

4 Copies of this letter go to the recipients of yours.

Yours sincerely

Ruth Thompson

RUTH THOMPSON
Private Secretary

Science Seminar on
Sc. & tech March 83

HL

10 DOWNING STREET

From the Private Secretary

DR. NICHOLSON

Seminar on Science, Technology and Industry: Follow-up

We spoke about the follow-up to this seminar and agreed that you would handle further work and I would refer any enquiries to you. We agreed also that it would be useful for the two of us to confer in the first week of December. We would aim to compose a letter which would ask Departments to report progress on the key points circulated with Michael Scholar's letter of 3 October.

AT

6 October 1983

NR

Midland Bank to PM 23/9
Pilkington Bros to PM 26/9

10 DOWNING STREET

Prime Minister ④

Michael replied to these letters in your absence abroad.

AT 3/10

CONFIDENTIAL

file with AT

HL

10 DOWNING STREET

From the Private Secretary

3 October 1983

Dear Imogen,

Seminar on Science, Technology and Industry: Follow-up

The Prime Minister has asked me to circulate to your Department, and to the other Departments concerned, the attached summary, prepared by the Cabinet Office, of key points which arose at the Lancaster House seminar on science, technology and industry.

You will see that the summary lists a series of action points. The Prime Minister hopes that you, and the others concerned, will set in hand the action indicated; no doubt if you have any comments on these points you will let me have them as soon as possible.

I am sending copies of this letter and the attachment to Margaret O'Mara (H.M. Treasury), Michael Reidy (Department of Energy), Richard Mottram (Ministry of Defence), John Ballard (Department of the Environment), Steve Godber (Department of Health and Social Security), Barnaby Shaw (Department of Employment), Jonathan Spencer (Department of Trade and Industry), Robert Lowson (Ministry of Agriculture, Fisheries and Food), Richard Hatfield (Cabinet Office) and Dr. Nicholson (Cabinet Office).

Yours sincerely,

Michael Scholar

Mrs. Imogen Wilde,
Department of Education and Science.

CONFIDENTIAL

C.S PPS 7 NO TRACE
CR in
CF?

With Compliments

NBPM

DEPARTMENT OF EDUCATION AND SCIENCE

Elizabeth House
York Road
London, S.E.1.

Telephone 01-928-9222 ***Extn.***

MLS

3019

slp4

DEPARTMENT OF EDUCATION AND SCIENCE

ELIZABETH HOUSE, YORK ROAD, LONDON SE1 7PH

TELEPHONE 01-928 9222

FROM THE SECRETARY OF STATE

Mr J D Alun-Jones Esq
Managing Director
Ferranti PLC
Millbank Tower
Millbank
London SW1P 4QS

29 September 1983

Dear Mr Alun-Jones.

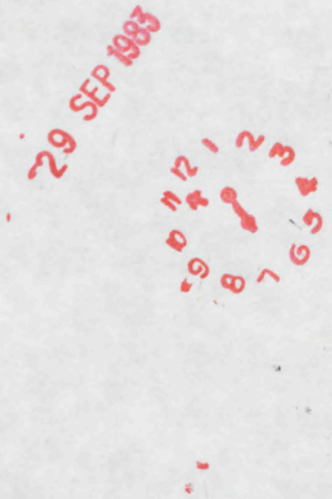
Thank you for your letter of 21 September. My immediate comment is that things are not as bad as you fear. First degree graduate output in science and engineering subjects in 1984 is likely to be over 10% higher than in 1982. Total graduate output will continue to rise for some years after that, and I have indicated to both the University Grants Committee and the National Advisory Body for Local Authority Higher Education that the Government wishes to see continuing emphasis given to subjects of industrial and commercial relevance. In the information technology field in particular additional lecturer posts and undergraduate places are coming into being this October as a result of the Government's IT initiative.

But this is a quick reaction only, and I will let you have a more detailed reply when I have considered your letter fully.

Yours sincerely,

Keith Joseph

SCIENCE + TECH.
Public Services
Nov 83



Copy of Mr. Warnes' letter already sent to Dr. Nicholson.

cc Flow Pol: Venture Capital

10 DOWNING STREET

From the Private Secretary

CABINET OFFICE
W ...1642...
30 SEP 1983
FILING INSTRUCTIONS
FILE No. .....

29 September 1983

Dear Mr. Warnes,

I am writing in the Prime Minister's absence in North America to thank you for your letter of 23 September. I will place your letter before the Prime Minister immediately upon her return to this country.

I know that Mrs. Thatcher will be most interested to read your views and I will ensure that the substance of your letter is conveyed to those who have been charged by the Prime Minister to carry forward work in this most important area.

Yours sincerely,

Michael Scholar

B.C.J. Warnes, Esq.

10 DOWNING STREET

Mr Mount

Do you agree with the approach I am suggesting?

MCS 27/9

Yes

FM 27/9

CP

Pl then put top copy into no 1 folder in box

MCS 28/9

10 DOWNING STREET

(1)

Prime Minister

I do not think we should send this as a fiat or set of instructions to Departments, but should rather invite them to say whether they agree that these are the lessons of the seminar (if there is backsliding on individual points we can deal with that separately); then invite them to set action in train as prescribed.

Agree this approach?

Yes

MLS 27/9

Prime Minister

I have replied indicating your interest in this area and undertaking to convey the substance of the letter to Dr Nicholson's team. MTS 28/9

OXFORD RESEARCH SYSTEMS

Oxford Research Systems Limited
Nuffield Way, Abingdon,
Oxon OX14 1RY,
England.
Telephone 0235 32421
Telex 83356

DATE: 26th September, 1983
OUR REF:
YOUR REF:

The Right Honourable Margaret Thatcher, P.C., M.P.,
Prime Minister of the United Kingdon and Northern Ireland,
10 Downing Street,
London SW1.

Dear Prime Minister,

I was very interested to read of the Government's recent seminar relating to the many issues associated with research and development in the U.K. In particular, I believe that the role played in the U.K. in the application of nuclear magnetic resonance (NMR) to biology and medicine was discussed. I would like to aquaint you with the contributions that Oxford Research Systems Limited (ORS) have already made in this high-technology field and how we intend to capitalise on our own expertise and innovation to address the requirements of the biological research, health care and related markets.

In 1980, the Oxford Instruments Group (OIG) launched ORS to promote and market a new type of NMR spectrometer capable of studying animal and human metabolism in a non-invasive manner. The application areas and instrumental requirements were considered distinct enough from those associated with NMR imaging to merit the introduction of this type of spectrometer. New techniques were required and these were developed in close collaboration with Dr George Radda's group at the Biochemistry Department of Oxford University. During 1980 - 1983, a total of ten instruments were sold in the UK and North America but despite the technical success of the instrumentation, OIG decided to withdraw from the end - user NMR spectroscopy/imaging market. This action allowed OIG to concentrate on building the superconducting magnets that lie at the heart of this type of equipment.

...../2

A BRUKER COMPANY

Directors:
Prof. Dr. G. Laukien (German) Chairman
R.E. Gordon, Ph.D., Managing.
Registered Office: Kirby House,
Little Park Street, Coventry CV1 2JZ
Registered Number: 1701140

In March, 1983, ORS was aquired by the Bruker group which is a German based European consortium of companies that specialise in NMR products for the analytical chemistry market - the traditional market for NMR. With few exceptions, the team of scientists remained in the U.K. with ORS under the new management and has now embarked on continuing our existing product line together with exploiting the new possibilities that exist now that ORS is backed by the world's leading manufacturer of NMR equipment.

NMR is a subject where U.K. trained scientists have made major innovative contributions and are still doing so in many centres throughout the world. In biology and medicine the advantages of NMR imaging are obvious but yet to be fully realised is the possibility of whole body real-time NMR imaging/spectroscopy and also the extent to which NMR spectroscopy can graduate from being clinically interesting to being clinically useful. At present, The technology that we have develpoed and still manufacture is used in biochemistry laboratories, clinical research centres and neonatal units in the U. K., Canada and the U.S.A.

It is our intention to improve and refine our techniques, maintaining our position as leaders in this area. The ORS development programme includes continued cooperation with University departments and with the Department of Trade and Industry under the Support For Innovation scheme.

I hope that this letter conveys that at ORS there is a considerable amount of development and manufacture of technically advanced NMR products being carried out. If you would like further information or details, I will be pleased to provide them.

I have the honour to remain,
your obedient servant,

R. E. Gordon

DR R E GORDON
Managing Director

Pilkington Brothers P.L.C.

c.c Dr. Nicholson 28/9

Prescot Road St Helens Merseyside WA10 3TT Telephone St Helens (0744) 28882

FROM Dr. D. S. OLIVER, C.B.E.

The Rt. Hon. Margaret Thatcher, M.P.
Prime Minister,
10 Downing Street,
LONDON

26th September 1983

R29

Dear Prime Minister.

I greatly appreciated the invitation to your Seminar on Science and Technology. Like many others I found the day stimulating, and left having been unable to contribute to the discussion because of the lively debate which the Seminar encouraged. I left immediately after the Seminar on a visit to the U.S.A. (where, incidentally, I found myself following you when I visited Genex for discussions with their chairman) and this is the earliest opportunity I have had to thank you for the invitation to attend, and to make a contribution to one area of discussion.

You commented that you will shortly be considering the ACARD report on collaboration between HEI's and industry. The report concentrated, understandably, on research inter-linkages, and there cannot be disagreement with the objective of strengthening these. However, if one takes a marketing approach to the role and work of HEI's, their most important products are the qualified men and women they produce. If we do not have this 'commodity' from the HEI's, there is no alternative source of supply. I believe that the research contribution to society by our HEI's is crucial but, in the limit, it is of lesser importance than the supply of adequately trained people.

I am sure you will already have this facet of HEI/industry inter-action in mind when considering the ACARD report in its full context. May I suggest three areas (one only indirectly related to HEI's) where the Government may be able to help.

1. There is a need to improve the inter-change of staff between HEI's and industry with the objective of improving the educating base of the HEI's. It occurs to me that SRC/D. of T. & I. Teaching Company Scheme could well be extended to seek for effective ways of securing this interplay, and to foster the application of ways forward. As the present chairman of the Scheme's Management Committee, I am sure that such a development would be welcomed both by the Directorate and their industrial advisers.

2. We should not fall into the trap of emphasising vocational training in our HEI's at the expense of a more broadly based education. Very often (as you have recognised in your recent SSRC initiative) technological innovation can only take place if there is enabling social innovation. Our graduates who enter industry need to be prepared for the holistic approach that this combined technological/social change requires through a suitably broadly based education, itself being more holistic in character than is often the case. The Government is in a unique position to offer incentives that will stimulate developments in this direction.

3. A part of our cultural problem in the U.K. is that technology and industry do not 'stand high' in the value judgments of many people. Consequently our entrants to HEI technology courses are not of as good a standard as we need, and many of our graduates do not see manufacturing industry as a desirable first choice for employment. To change values we must start at as early an age as possible. This means, pragmatically, starting with schools rather than universities. It is hard to see how a change in values in our schools will come about by internal action, because of the personal histories of those who teach. Thus we need outside influences. One such influence has come from the SATTRO's (of which we have Science and Technology Education on Merseyside - STEM - in my area). The funding and general support for these has come from industry, LEA's and from D. of T. & I. It is my experience that industry cannot at present give the support it has in the past, whilst the LEA's have, in many cases, been of little help with the SATTRO's. The D. of T. & I. support has been limited, essentially, to pump priming! May I suggest that this be extended to longer term aid since I believe this is the only immediate way of obtaining the relatively very small funds required for what I consider is a vitally important activity.

Although I would have liked to comment on many other topics raised at your Seminar, I have restricted my comments to the one broad area which I believe to be important and capable of influence by the Government in the relatively short term. I trust you will find them helpful.

Yours sincerely

Dennis Lewis

cNO.

W.0604 23 September 1983

PRIME MINISTER

SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

Attached is a list of what I felt were the key points which arose at your Seminar on Science, Technology and Industry, together with some resulting actions for Departments. It has been discussed with your Policy Unit.

You may wish to comment on the list, but if you agree, I suggest it is sent from your Office to the Offices of appropriate Ministers with a request to keep you informed of actions taken.

Action 4(a) is the study you have already agreed I should undertake but I have not referred to it as such in order to prevent leaks if the list is sent to Departments.

I am copying this minute and the attachment to Sir Robert Armstrong.

RBN.

ROBIN B NICHOLSON
Chief Scientific Adviser

SEMINAR ON SCIENCE TECHNOLOGY AND INDUSTRY

Key Points

1. Science and Technology Education

Children do not have basic grounding in science or learn 'why things work' - therefore our population is technically illiterate and a poor workforce for modern times. Universities are not responsive to employers' needs and training is too academic.

Action from DES and MSC

(a) Accelerate action on science and technology teaching in schools (eg TVEI), consider "new blood" approach

(b) Devise new incentives for universities to become market-oriented in their graduate output.

2. The Science Base

The strong UK science base is seen as an essential UK asset by industry and there is evidence that the strength is slipping: the unpredictability of future key areas of science makes selection, except by quality, dangerous.

Action from DES

(a) Identify constraints on science base and restore to health by better allocation of public funds and more use of private sector funds.

3. University/Industry Links

University/industry links are improving but more must be done;

substantial resource is better used.

The administrative Civil Service lacks knowledge of science and engineering.

Action from Cabinet Office

(a) Examine long-term future of Government Research Establishments

(b) MPO assess whether current schemes to improve scientific and technological capability in the Civil Service will yield results this century; if not, devise better schemes.

5. Value and Protection of Intellectual Property Rights

Ideas and knowledge must be regarded as tradeable goods: they should be sold, not given away accidentally or deliberately - nationalised industries are particular culprits with the latter.

Action from DTI

(a) Implement Cabinet Office report on Intellectual Property Rights and Innovation when measures are agreed.

6. The Industrial Scene

Small and large companies have complementary roles in innovation which require different assessments of risks and rewards. Compared with other countries, the private sector puts insufficient funds into R & D. Cost-plus contracts from public purchasers stifle innovation.

Identification of markets (especially abroad) and effective marketing are essential for successful innovation. Companies must learn better how to manage innovation. Rapid development of inventions, the use of product champions and the right management attitudes are critical; a better system of MBA training is needed.

The UK must be prepared to import technologies, but internal development

there was a general welcome for the Muir Wood report. The best links are people: there should be more short-term exchange at high levels - academics on boards, industrialists on councils - and more long-term exchange at working level.

Action from DES

(a) Rapid response to Muir Wood

(b) Academic appointments and promotions to reward those who are industrially oriented; abolish system of tenure

(c) Devise 'invention leave' scheme to enable academics to develop their inventions

(d) Grant university and polytechnic staff the right to market their inventions and advice, subject only to a levy paid to their parent institution.

Action from DTI, MoD, DoE, DEn, DHSS, MAFF

(e) Universities are a under-utilised resource; applied research should be commissioned in them by industry and by Government Departments. SERC's moves to become more applied are commendable but neither it nor other research councils should have to fulfill that role.

Action from DoE

(f) Remove planning constraints which are preventing growth of science parks.

4. Government Research Establishments and the Civil Service

Government Research Establishments have static populations and are remote from the market place - the national need requires that this

of certain key technologies is essential. The coherence of Alvey approach for a key technology was commended.

Action from Treasury

(a) Reassess balance between strict accountability of spending public funds and the encouragement of risk-taking which has to have large rewards when successful.

Action from MoD

(b) Review MoD standard conditions of contract; ensure widespread application of results from R & D contracts.

Action from DTI

(c) Monitor success of the "Support for Innovation" programme; ensure inclusion of marketing in innovation packages

(d) Monitor success of Alvey programme and stimulate industry to identify and collaborate in other key technologies

(e) Stimulate CBI and Business Schools to greatly improve the quality of management of innovation.

Action from DES

(f) Devise repayable loan scheme to replace grants for MBA students.

Action from ACARD

(g) Form Working Group to consider how to increase industrial R & D spending.

7. The Financial Scene

There is rapid growth in all types of financing of innovation, but it is not clear (a) whether the fiscal treatment of all these schemes is fair

and balanced, and (b) whether the range of schemes matches the needs of innovation. The financial disincentives of job mobility and risk/reward sharing are thought to discourage innovation.

Action from Treasury

(a) Take action on 'portable pensions' (with DHSS)

(b) Improve tax treatment of share option schemes

(c) Consider the extension of Investment Trust status to Venture Capital companies.

Action from ACARD

(d) Form Working Group on type and balance of financial demands of innovation and financial supply of the City.

8. Morale and Attitudes

There is unanimous agreement from both individuals and the media that the most important fact was that the seminar happened and that the Prime Minister and her senior colleagues, and senior people in industry, finance and academia demonstrated their interest in the subject. There are successes in bringing UK inventiveness to fruition, and the theme of 'identify and analyse success, then build on it' came through clearly. Morale and attitudes were improved on all sides. It is critical that the momentum is maintained.

Action from No 10

(a) Ensure that the Prime Minister's speeches contain references back to the seminar, the 'success' theme, lessons learnt from the seminar and to resulting actions taken.

(b) Ensure that the Prime Minister's visit programme includes examples of successful innovation and reference is made to the seminar.

(c) With Cabinet Office consider programme of smaller follow-up

meetings to better identify specific problems and test reactions to Government proposals.

Action from Private Offices of other Ministers involved

(d) As (a) and (b) above.

Action from Cabinet Office and ACARD

(e) Consider information programme to disseminate 'success' theme more widely.

RBN.

ROBIN B NICHOLSON

Cabinet Office
23 September 1983

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l 28

BCJW/JB

Extn. 1599

23rd September 1983.

c.c. Dr. Nicholson
cc ECON POL: Venture Capital

The Prime Minister,
10 Downing Street,
London. S.W.1.

Dear Prime Minister,

Seminar on Science, Technology and Industry

I have allowed a few days to elapse before writing to thank you for the impeccably organised Conference at Lancaster House on 12th September.

Previous letters have mentioned the need to change British attitudes towards business; and small business in particular. Given that change - a role for which the Government is pre-eminently well placed of course - others, like myself, can begin to make headway in bringing about tangible change on the ground.

I do believe, as you know, that a relatively large perceptual gulf exists between the (few) barrow-boys who really do know how to run business; and the rest. Striking (and most unexpected) confirmation of this comes from Sir Kenneth Corfield, whose remarks are attached.

The importance of a brain-storming event like the Lancaster House Conference was to highlight the nature of this gulf. I thought it did it very well indeed.

One small example. When I saw Ian Hay Davison last December on the merits of the MBVC form of improved financial control (which, in principle, he very much welcomed), he said "the only way to force through such a fundamental change within the timescales needed (months rather than years), would be for the Banks to agree to lend only to companies whose accountants/auditors possess these skills. Small accountancy practices up and down the country would then be compelled to come to grips with the new techniques in order to hold onto their traditional audit and tax work".

cont/d....

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For various reasons the idea was not fully practical, but a version of the same thing has now been successfully achieved (e.g. see attached article from The Accountant). The Banks themselves, particularly the Midland, have moved light-years on this in just the last few months, which is "pulling" the rest of the scene with them.

A year ago an article such as this could never have been published with any hope of success. Now, thanks very largely to you in changing national attitudes, the prospects are rather different. Equally important moves are taking place with the business schools, Aston and Sundridge Park in particular.

On a parallel theme, there is now a rather different explanation for the relatively poor investment record of British Industry. On every page of Professor Alan Hankinson's "Study of Investment Behaviour of South Wessex Small Engineering Firms 1979-82" "confidence" is shown to lie at the root of whether a company expands, invests, takes on more staff; or not. This has always been taken to mean confidence in the Economy, confidence in the buoyancy of the business climate.

But consider whether it might not, instead, really involve the inner confidence of the Managing Director himself, in his own business skills? And that, only where such inner confidence exists - the sureness and confidence of a Sir Kenneth Corfield for instance - does a business really begin to take off.

The Lancaster House Conference was a further step towards putting all this right on a national scale. But it highlighted how very much more needs to be done. For instance Michael Heseltine's admirable initiative in extracting products from Government Research Departments for the benefit of the entrepreneur, will be stillborn unless great pains are taken also to provide facilities needed to re-engineer, and perhaps even re-design, the products themselves and their associated production processes to dovetail specifically with clearly identified and carefully researched market needs.

There is the old saying that business is not to do with products and services but with buying and selling production hours; with buying for £1 and selling for £2 (or £3 or £4). The products and services themselves are only the outward manifestation of this process, which, as people like Sir Kenneth Corfield would undoubtedly have it, goes to the very root of understanding the true nature of business.

This flavour did come across at the Conference, particularly from people like Sir Robert Telford describing the ALFI project, but perhaps not nearly enough. The main business strengths of this country must come from enhancing existing products and services as well as going out on a limb with new products; where, again as mentioned, the success rate can be as little as only 2-3%. The overall potential for business in this country - correctly handled (and the proviso is crucial) - is therefore very much greater than is commonly supposed.

Overall, a very good and a very important Conference. It was a privilege to attend.

With many thanks,

Yours sincerely

Brian Warnes.

B.C.J. Warnes
Managing Director

12th September, 1983

B.C.J. Warnes Esq.,
Managing Director,
Midland Bank Venture Capital Limited,
22 Watling Street,
London, EC4M 9BR

YOUR BOOK

This is a very good and well written treatise.

It happens to express the self same principles that have contributed more to my own modest success than any other single factor of which I am aware.

The importance of break even point and of testing the market value of a product or service by pricing it truly profitably seems so commonplace to us - and yet is so much neglected.

The 'barrow boy' mentality I may have practiced but the phrase was first used in my presence by Mr. Hugh Barker, then Chairman of Parkinson Cowan Limited in the early sixties.

Every year or so another company in my own province displays just the characteristics you so vividly describe. We have to change the management - perhaps your book will help more, otherwise intelligent, people to survive and help the Country.

The various Engineering Institutions (there are 57 altogether) should be approached to review your book, recommend it and make it available from their libraries.

Every good wish for success,

ORIGINAL SIGNED BY
KENNETH CORFIELD

The accountant's role — a banker's view

The British accounting profession is well placed to lead the country into the small business age. It has brilliant minds and abundant skills but many of its techniques are outdated, more suited to an era when 'historic' accounting was the order of the day. In the austere and highly competitive climate of the 80s business needs real time accounting and rapid access to information, says Brian Warnes, managing director of Midland Bank Venture Capital and a chartered accountant. The profession must adapt to take its place at the forefront of business life otherwise others will take its place. MARGARET MARLEY reports.

WHEN a small business goes to the wall and it is happening at the rate of 2000 a week, the receiver prepares a statement of affairs showing assets and liabilities. Sometimes the bank finds that an apparently secure loan is at best a partial recovery and the bank manager who made the loan finds himself on the hook. 'Why did you make such a loan to a company in this state of health,' his superior inevitably asks.

The beleagured manager refers back to the audited accounts, the figures on which he based his decision, but the picture they present often bears too little resemblance to that of the receiver's report, even allowing for the differences between a 'going-concern' and a 'gone' basis.

If the bank manager feels let down in such circumstances, so can the managing director who often looks on an audit as a clean bill of health. For a small business with unacknowledged weaknesses is in no shape to face up to market pressures; whereas given the right kind of information and financial control it might be able to survive.

Between 7-800,000 audits are done in the UK every year, mostly small business audits by small practitioners. Most are never put to the test because the business survives, but with more than 50 per cent of the small business start-ups folding, criticism of the traditional audit is growing. And it is criticism on a fairly significant scale.

It is a criticism that has significance far beyond the accounting profession, because Britain's small businesses contribute less to GNP than do those of the US, Japan or France; and a lot of money and resources are being poured in to make them the spearhead of economic revival. But there is a one-in-five failure rate of small businesses using the Loan Guarantee Scheme, and it is raising fundamental questions about the annual audit, the accountancy profession and the British businessman in general.

The annual audit is the only financial record kept by many UK firms; notable exceptions are the highly efficient, big league companies. A great number do not have any kind of monthly management accounts, they just keep cash books on a day-to-day basis. Then three months after year-end the auditor comes in and takes two to three months to audit the accounts. By the time the management sees the figures some of them are 18 months old, hopelessly out of date and irrelevant to current costs.

Far too late the managing director realises, for instance, that his prices bear no relation to costs. These are much too low, but he has to let his current order book run out for another two or three loss-making months. In today's austere climate, a small firm needs much closer financial control and few can survive this kind of misjudgment.

By contrast there are relatively few collapses among firms with a good financial management system and at the other end of the scale the highly successful, well-run company will have a sophisticated weekly or monthly, real time accounting system.

Take GEC for example, a group which controls 250 companies. A full description of the financial behaviour of the entire group is on Lord Weinstock's desk every Tuesday morning. It is exactly the same for Oxford Instruments and undoubtedly Racal, British companies that have taken world markets apart. They run weekly accounting systems which describe output, orders, manpower statistics, cash-flow and all the information that is necessary to allow the management to keep a finger on the pulse of business life.

'The sophistication of the management information system is usually a mirror image of the business perception of the people running the business. The two seem to go together,' says Brian Warnes.

Unfortunately good business perception is not a natural British characteristic and British success stories are the exception rather than the rule. We produce products of high technical excellence which are commercial flops because we have not mastered the business logic that the commercial benefit of a product must be in proportion to its cost; Concorde for example. 'The British are just not as good as they should be at business; they seemingly lack the barrow-boy instinct that makes pro-

fits out of indifferent products.'

It is a question of culture block, the legacy of empire when the country, with assured wealth and captive markets all over the world, directed its best brains into administration, the civil service, the army, the professions. And business was very much a dirty word.

Traces of these attitudes still remain and the difficulties and challenge of the business world are largely underestimated. A man will decide to go into business overnight, if he can raise the steam. He sees no need to learn the basic ground work and if trouble arises he will push up his prices and hope they stick. It becomes a trial and error process; there is is no scientific method of deciding on the right price at the outset.

In the cold light of the 1980s, British attitudes are changing. The severe and prolonged recession has decimated the number of safe, prestigious jobs, and under the influence of the Thatcher government, the small business is gaining acceptance and respect; it is seen as a key element in the nation's economy.

But the budding businessman is labouring under a tremendous handicap. There is no source of hereditary business wisdom to draw upon; no distilled business knowledge and experience turned into formalised procedures and techniques. While individual companies have excellent real time accounting systems many have been self-developed, worked out empirically, and they remain outside the mainstream of British business life. They have not been codified nor made the basis of teaching.

There is a growing awareness that business needs real time rather than 'historic' accounting and bankers are forcing the pace in this direction. The annual audit is under attack, both as an indicator of a company's creditworthiness and as a relevant tool that will help keep a firm on the straight and narrow path. But in a large number of cases no other figures are available and, in sheer desperation, some banks are launching their own monthly accounting systems.

'It is purely a question of investment protection', says Brian Warnes. 'The banks don't want to pinch the financial services of the accountant, but they know that the information available is not good enough as a basis for seasoned judgment. The motive is to provide the proper background for better investment judgments.'

MBVC, which has investments in about 55 companies, insists that each company adopt MBVC's standard cash-flow plan, a simplified accounting system which monitors a company's progress from month to month. Lloyds has adopted the Carl accounting system and already is handling the monthly accounts of 600 customers.

Barclays and NatWest have powerful computer bureau subsidiaries, Baric and Centre-file, which are rapidly moving into the monthly accounting field. AIDS, the independent computer bureau which specialises in monthly accounting for the 5 to 50 employee firm, plans to establish 225 franchises throughout the country and to develop a 5000-strong client base. 'The banks are giving us every encouragement', says AIDS director Mike Salinger. 'We have been assured of introductions to clients through the branch network.'

But it is really the accountancy profession that should be leading the way and developing simplified, real time accounting systems for every-day business use, says Mr Warnes. Instead, when the accountant is called in to do a formal exercise reams upon reams of paper emerge, a veritable jungle of figures, words and jargon. The audit costs thousands and may be a valuable bench-mark for the professional, but it is incomprehensible to the average managing director. It remains an academic exercise that is irrelevant to the day-to-day running of a business.

There is a desperate need for simple real time systems. 'The engineer who sets up a small business knows all about product development, but he does not understand cash-flow or how to keep a business afloat. He needs a simple system that will cover the key issues, orders, sales, overheads, breakeven point, gross margin, debtors, etc, which will tell him at a glance how the firm is doing.'

But the simpler the system the more sophisticated the thinking behind it. A consultant charging £250 a day will take two or three weeks to design a one-off system for a small firm, but at £6000 to £7000 the cost is prohibitive. 'I can see no reason why the profession, and in particular the Institute, should not step in and develop half a dozen standard systems for different business applications', says Mr Warnes. 'The profession, in intellectual terms, is probably the strongest in the world. It has all the sophistication and skills necessary for the job.'

A whole range of systems might cost £10,000 to £30,000 to develop, but the institute could find the money from the profession at large. It could punt out the systems to 100 firms to operate on a year's trial, get an evaluation and then produce almost a *Which* report. Then, with the systems fully refined, they could be distributed to accountants up and down the country so that the small practitioner need only put his hand into a drawer and pull out a suitable accounting system for his small business client.

'I am highly critical of the profession for not having crossed this frontier', says Mr Warnes. 'These problems are in desperate need of solution. Companies are failing or not growing as they should; they are remaining small and vulnerable, weak and nervous because they are not getting the right kind of business guidance. The profession should be moving into this field very fast.'

Once a real time accounting system is developed, the accountant must then make the best use of it; interpreting it for the managing director, explaining the significance of what is happening, forecasting what is going to happen. The system becomes a sensitive barometer which enables a firm to pick-up the changing pattern of business behaviour and to tailor output and pricing accordingly. 'If the accountant can adapt to the needs of the day and develop a real understanding of business there is an enormous role for him to play in the revival of British industry.'

But at the moment the accountant's advice is often far from accurate; it does not tie-up with what actually is happening and his credibility is prejudiced. A firm about to embark on a major contract will ask the accountant what cash needs are likely to be. He prepares a cash-

flow forecast but six months later the firm runs out of money. 'How come', asks the managing director. 'Well of course the cash-flow prediction is wrong', says the accountant, 'time scales were different six months ago and your sales have not come up to expectations'. 'This is no valid excuse for not achieving forecasting accuracy', says Mr Warnes. 'It highlights a serious deficiency in accountancy training.'

The problem is that both the accountant's training and his conventional tools equip him to deal with static problems, with historic figures. But business life is fast moving and dynamic and what is required is a man trained to cope with changing patterns, to get cash-flow forecasts right in spite of fluctuations in the market-place. There is a great difference between the engineer who understands dynamics and the one who is limited to statics; the first can design a missile to hit a moving target, the second can only hit a stationary one.

'The average accountant is good at statics', says Mr Warnes, 'but he hasn't got the training to enter the world of dynamics. Conventional accounting systems are not suitable. Technically they are just not able to cope with the dynamics of business life.'

MBVC has introduced a simple accounting system to the 55-odd firms that it has invested in, and 'it has had a dramatic effect. Some of MBVC's best investments are light engineering firms, so many of which are in trouble'.

The MBVC cash-flow plan is the distillation of 14 years business experience. 'I started out in company doctoring work, in rescue operations', says Mr Warnes, 'and I had to develop a format of cash-flow to help me understand what exactly was happening in the company. It proved a useful tool for teaching the managing director, for sharpening his business understanding. Now we put a system into every company we touch, explain it to the managing director, watch him while he tries it out, and suddenly realisation dawns and he's on his way.'

The cash-flow plan applies barrow-boy knowledge to a company. It explains that breakeven point is the level of sales needed to cover overheads, shows where it lies and what value-added-per hour a company needs to breakeven. A managing director can tell at a glance whether monthly sales and order levels are running above or below breakeven point and he can adjust output and prices until he gets the equation right.

An electronic components firm, with a good product and full order books, ran into a cash-flow problem and MBVC was called in. The business was analysed and tabulated in the cash-flow format which showed that while running costs amounted to £10 an hour some of the biggest jobs were only earning £5 an hour value added. The managing director saw the point, redesigned the layout of the electronic unit so that assembly took 40 minutes instead of 1½ hours. He effectively doubled output and income through the same cost structure and could now meet customer demand.

'Why didn't you do this in the first place', asked MBVC 'It didn't seem worthwhile. The extra 40 minutes seemed to be merely another £2 in production costs. The cash-flow plan has changed the focus of things and the business operates within a different framework. Six months ago I was an engineer making a loss of £15,000 a month', says the managing director. 'Today I'm a business man earning £30,000 and I can see £50,000.'

George Lingard, managing director of Severn Controls, ran into trouble when a major contract went wrong — due to a sub-contractor's error — and had to be redone. The business cost £10,000 a month to run but while the remedial work was going on nothing was being earned. The cash-flow plan showed that given the orders, sales value, material and labour content the business had huge margins and could afford to double the workforce to keep the main core of work flowing through.

Doubling the workforce while debts mounted seemed to violate common sense but it made good business sense and the firm pulled through. 'We wouldn't be here today without the system', says Mr Lingard. 'I was very sceptical about the extra figure work initially, but now I've got it down to one day a month and it gives tremendous day-to-day control.'

Brian Warnes, managing director of Midland Bank Venture Capital (MBVC). He is a chartered accountant, having qualified with Peat, Marwick and Mitchell. He read physics at Oxford, has worked for the Foreign Office and the Commonwealth Development Corporation. His practical experience in company doctor, rescue operations gives him a sharp insight into the problems of British business.

The Japanese understand this approach and its one of the reasons for their outstanding success. Perhaps it is because nearly all Japanese businessmen are engineers, says Mr Warnes. 'About 77,000 Japanese engineers graduate every year compared with 6000 or so in the UK. They understand about dynamics and the country grafts on a sound business training; and once you have an engineer designing a product in the financial context you have a real business.'

The British business climate is breaking and changing and Mr Warnes is optimistic about the future. He believes that the accountancy profession is pre-eminently well placed to lead the country forward provided it is prepared to adapt to the needs of the day. 'If the accountant can develop a real understanding of business, there is an enormous role for him to play in the revival of British industry.' □

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c Dr. Nicholson

Prime Minister (4)

I have replied on your behalf

MLS 27/9

22nd September 1983

R26

The Right Hon. Mrs. Margaret Thatcher, M.P.
Prime Minister,
Downing Street,
London, SW1

Dear Prime Minister,

Re: Seminar on Science, Technology and Industry

Thank you very much for your kind letter of Saturday, 17th September.

I am sure the very fact that you called that particular group of people together on the 12th September will have done much to make them re-think their attitudes on the development of Science and Technology in Industry in the U.K.

You asked for suggestions about a follow-up. I would prefer this to happen with smaller groups of, say, thirty people. Furthermore, it might be worth using Sunningdale for a meeting starting at, say, 6 p.m. with scene setting and some evening syndicate work, and following through with discussions on the next day.

One possible topic would be the development of a Rothschild system with Industry as a major partner; I do not think an elaborate management mechanism would be necessary for this, but certainly an S.E.R.C. type broker could help to promote the activity between Universities, The Research Councils and Industry, and especially for small companies.

Yours sincerely,

Geoffrey Allen.

Geoffrey Allen

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(2)

Prime Minister

I have replied on your behalf

MLS 27/9

Cogent Limited

A TECHNOLOGY COMPANY WORKING WITH AICRO

324

21st September 1983

The Prime Minister
10 Downing Street
London SW1

Dear Prime Minister,

Seminar on Science, Technology and Industry

Research and Development Limited Partnerships

May I say how very much Sir Ieuan Maddock and I enjoyed the seminar held on Monday 12th September at Lancaster House. We were pleased to have been asked to attend.

The discussion on innovation through research and development and on the maintaining of the strength of the science base covered important ground and the points raised in discussion were valuable. I wonder, however, if I might comment on the Session dealing with financing.

I believe that there is some danger of a misconception arising on the availability of risk capital from private sector sources for support of technological innovation. The misconception I refer to is about the role of venture capital organisations in this area.

Venture capital organisations, as you know, are primarily concerned with equity investment in private companies, either in the form of start-up finance for new companies or development capital for established companies. This implies the existence of developed or nearly developed products selling into identified markets. Although from time to time these institutions back research companies, it is not the general rule; moreover, when they do it is generally in such fasionable areas as biotechnology or fancy electronics and usually on an ad hoc basis. Venture capital organisations fill a very important gap in the market, but they do not have a long term commitment to the 'direct' financing of innovation. This has an important bearing on Michael Heseltine's initiative on the civil exploitation of defence research.

Continued ...

Registered Office: St Helen's, 1 Undershaft, London EC3P 3DQ
Registered in England No. 1629589
Directors
W K Evans (Chairman), P W Simon (Deputy Chairman), A J Gray (Chief Executive)
P B Bell, E G Davis, F S N Falkner, Sir Ieuan Maddock CB, OBE, D.Sc., FRS
J S Rattray, Dr. I P Sword, A B Wyand

I hope you will not think it presumptuous if I enclose a chart which I think demonstrates the existence of a serious financing gap in the supply of funds for the support of innovation. It shows the relationship between various sources of funds, the application of those funds and their ultimate destination. As far as I know, at the present time there are only two purely private sector financially based companies set up and operating with a long term commitment of risk capital for support in this area; they are Cogent and Prutec. The contribution to this sector by these two organistions is still modest compared with that of BTG; in the meantime the financing gap remains a matter of concern to all.

One of the reasons for the lack of enthusiasm by financial institutions and private individuals for investment in the early stages of the innovative process is the perceived unacceptable net risk/reward ratio. Although I do not accept this is the case for certain types of financial institutions, it is a widely held view.

In the case of private investors, the situation is entirely different. It is here that the Government could play a useful role, as it has done recently by introducing measures to encourage private individuals to invest in the start-up of small companies. I refer to the possibility of the introduction in the UK of the research and development limited partnership arrangements which already exist in the US.

By way of example, I would draw your attention to the establishment of CommTech, a research and development limited partnership venture designed to commercialise proprietary technology and know-how offered to it by Stamford Research International. CommTech has a collaboration agreement with SRI which has much in common with the agreement Cogent has with twelve members of AICRO (the Association of Independent Contract Research Organisations). SRI described the new venture as "a milestone in the history of the Institute". It is gratifying to think that the CommTech and Cogent initiatives were going on at the same time and independently, particularly as the US is usually ahead of us in new developments in the risk capital area.

Research and development limited partnerships are probably the most successful source of funding for biotechnology as well as other high technology ventures. Through this mechanism investors buy an interest in a research establishment's or company's specific research and development projects rather than in the research establishment or company itself. Investors becoming limited partners get first year write-offs against taxable income and r & d tax credits. CommTech, using the limited partnership route, raised half its capital from financial institutions and the other half from private individual investors. I have written to the Bank of England asking whether they might take the research and development limited partnership matter up with the Treasury. Your added support would be very much appreciated.

I am at present personally involved with two further initiatives in the Energy and Health Care fields which I hope to structure along the lines of Cogent and CommTech and which will be greatly facilitated by some change in the present fiscal arrangements for the funding of research and development.

Continued ...

Sir Ieuan Maddock and I would very much appreciate the opportunity to organise a short presentation to you of the activities of Cogent and in particular to introduce you to some of the innovative products and processes that have been developed by the group of private sector contract research organisations who collaborate with Cogent.

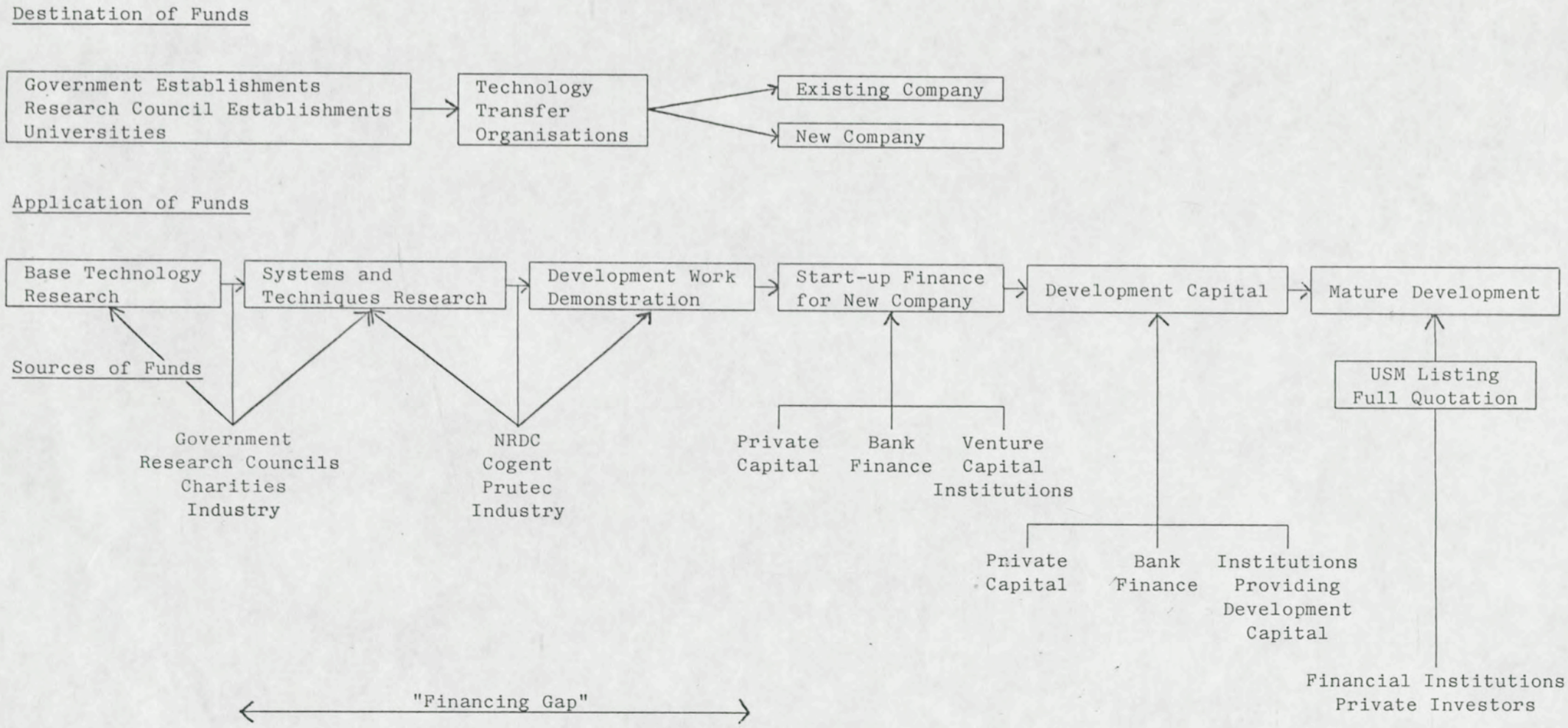
Yours sincerely,

Anthony Gray

Anthony J Gray

Encs.

SOURCES AND APPLICATIONS OF FUNDS FOR PRODUCT DEVELOPMENT



Cogent Limited
August 1983

COGENT

LIMITED

SUPPORT FOR THE NEW TECHNOLOGICAL PROJECT

"British scientific and technological research and development are acknowledged internationally as being among the best in the world. However, the excellence of British innovative and research skills has not always been matched by the successful transfer of technology from our centres of research to the market place. Too often, commercial exploitation of British innovation and research has fallen to foreign companies, with little benefit to the UK economy or UK industry. There is an urgent need to reverse this trend."

April 1982

Anthony J. Gray
Chief Executive
COGENT Limited

THE COGENT AIM

COGENT Limited is a technology company formed by the Commercial Union Assurance Company and the Legal & General Assurance Society. COGENT's aim is to provide a service to British Industry which will speed the transfer of technology to the market place in the form of new products and processes.

The initiative was taken in association with AICRO (the Association of Independent Contract Research Organisations), the largest and most comprehensive concentration of independent UK based research and development skills, offering a worldwide service to industry and governments. AICRO represents COGENT's technical and development arm.

COGENT SUPPORT

COGENT has been set up to support the exploitation of selected research and development projects. With two leading financial institutions as shareholders, the collaboration with AICRO and a highly qualified management team, it is well-placed to do this.

COGENT thus offers companies access to a unique combination of skills and resources to assist them in the development, financing arrangements and commercial exploitation of selected commercially viable projects.

COGENT is concerned with innovation, progress and profit. Whether you are a small business or a multi-national concern, successful growth will depend on retaining a competitive edge in the market. This means obtaining the best practical and financial support and advice. COGENT enables you to keep ahead of the competition.

THE COGENT APPROACH

We will consider projects that would benefit from support by COGENT and an AICRO member; thereby bringing the technology to the market place more quickly.

COGENT, while expecting a commercial return from such projects, recognises that considerable time can elapse between the development of potential applications and final commercial exploitation.

Projects presented to COGENT should be advanced to the stage where the technology is established and an industrial partner can see clearly the benefits and risks of commercial exploitation. The maximum period for development through to exploitation will therefore not normally exceed three years, which leaves room for flexibility in particular cases. The average size of projects is expected to be in the region of £250,000. Programmes comprising more than one project may be considered.

The contractual arrangements between COGENT, the particular AICRO member concerned, the originator and/or the industrial partner will vary depending on the nature of the project. It is COGENT's policy to adopt a flexible approach to the commercial arrangements and thereby create the incentive necessary to secure the maximum commitment by all parties to the successful outcome of the project.

COGENT maintains a close involvement at all stages in the projects which it supports. This involvement is designed to provide a constructive catalyst between those responsible for the development project and those concerned with its commercial exploitation, so as to expedite the process of technology transfer.

THE COGENT PARTNERSHIP

COGENT SHAREHOLDERS

Commercial Union – 50 per cent
Legal & General – 50 per cent

COGENT LIMITED

A technology company with initial capital of £6 million.

Projects are matched to an industrial partner – manufacturer, marketing company or licensee – at an early stage.

AICRO PARTNER

The AICRO Partner will be responsible for carrying out the technical development work involved in any project. AICRO (the Association of Independent Contract Research Organisations) is the largest and most comprehensive concentration of independent UK research and development talents.
The results of AICRO projects supported by COGENT are available for commercial exploitation by selected industrial partners through, for example, licensing arrangements or the formation of joint companies.

INDUSTRIAL PARTNER

The Industrial Partner will be responsible for the commercial exploitation of the project.
It may be a company selected by COGENT and an AICRO member as having the appropriate resources and experience to contribute to the successful outcome and commercial exploitation of a particular AICRO project.
Alternatively, it may be the originator of an idea which it wishes to see developed with an AICRO member participation and COGENT support into a marketable product which it will then manufacture and sell.

THE RESEARCH PARTNER

Members of AICRO are independent research contracting organisations carrying out, in total, £70m per year of contract research. They employ some 5,000 people and their expertise encompasses practically every area of technology and industry. They represent COGENT's technology arm.

A list of those AICRO members who collaborate in the COGENT scheme and a description of their main specialities are given on page 6.

AICRO development projects can arise in an exceptionally wide range of industrial, scientific and technological fields. It is obviously unwise to limit by specification the areas of possibility, and the following list is merely a guide to some of the more important sectors:

Aerospace	Energy	Mining
Automation	Environmental Control	Oil Industry
Automotive Industry	Extraction and Refining	Process Control
Biotechnology	Fluid Engineering	Product Design
Chemicals and Plastics	Foundries	Robotics
Composites	Instrumentation	Software
Computers	Mechanical Engineering	Telecommunications
Electrical Engineering	Medicine	Textiles
Electronics	Metals	Welding

COGENT welcomes direct approaches from potential industrial partners with suitable projects, preferably when such projects are at a fairly advanced stage of development.

AICRO members also submit projects to COGENT arising from their own research or a project on behalf of a client. Submitting projects to COGENT through AICRO members can help speed the appraisal process.

THE INDUSTRIAL PARTNER

Projects supported by COGENT will be matched to an industrial partner—a potential manufacturer, marketing company or licensee—at an early stage. The project should form a significant part of the partner's corporate development plan and not simply be of peripheral interest. The industrial partner may or may not be the originator of the technical idea.

The industrial partner in any COGENT/AICRO project will already be established in the market sector—or in allied activities—in which the innovatory product or process will be applicable, and its management will have a proven commercial and technical track record. The industrial partner may, on occasion, be a company wishing to extend into a new business field by exploiting technology it already possesses in new applications for which there is a market.

COGENT will discuss with an industrial organisation any particular technologically based project it may have, establish which AICRO member could carry out the development work required to advance the project, and assist in the preparation of the proposal. A proposal will cover such matters as a technical appraisal, an assessment of the market data, the finance to be arranged, the establishment of the project and the structure of the commercial arrangements for exploitation.

In whatever way a project arises or the financial package is agreed, the industrial partner must show real commitment, including contributing to the resources necessary to ensure the successful outcome.

THE AICRO PARTICIPANTS

The following members of AICRO participate in the COGENT scheme.

Institute	Research specialities
BCIRA	Foundry and allied industries: design and operation, instrumentation, environmental effects.
BHRA Fluid Engineering	Fluid engineering, including design and development.
BNF Metals Technology Centre	Technology of metals: production, processing, applications.
ERA Technology Ltd.	Electrotechnology, including radio frequency technology, electro-optics, power-engineering, materials sciences and electronics.
Fulmer Research Institute Ltd.	Science and technology of all engineering, building and chemical materials; product and process development; technology transfer.
International Research & Development Co. Ltd.	Mechanical and electrical engineering, instrumentation and control engineering, materials technology and biotechnology.
Inveresk Research International Ltd.	Biomedical science, toxicology and biotechnology.
MIRA	Automotive research, development and general scientific work.
Robertson Research International Ltd.	Exploration and development services to energy and other natural resource projects.
Shirley Institute	Fibres, textiles, polymers: materials technology: product and process development and evaluation.
SIRA Ltd.	Measurement and information technology: electro-optics, electronics, computing, engineering, testing and calibration.
The Welding Institute	Research and development into all aspects of welding.

HOW TO APPROACH COGENT

To speed up the process of appraisal and decision, initial proposals sent to COGENT should contain the following information:

Proposer—

Name

Address

Project description

Amount of finance required

Purpose of finance

Time scales

Market estimates

Patent position

Identity and brief details of Industrial Partner

Strategy for commercial exploitation

COGENT will also be involved in collaborations with other organisations and may be involved in a very similar idea or project developed by someone else. It is not COGENT'S intention to disclose any details of any proposal to anyone else without authority, but COGENT cannot accept any obligations of confidentiality in respect of information submitted.

Initial proposals should be accompanied by the form enclosed with this brochure.

Those seeking further information should write or telephone:

Mr Anthony J. Gray
Chief Executive
COGENT Limited
St. Helens
1 Undershaft
London EC3P 3DQ

01-283 7500 Ext. 2956

COGENT
LIMITED

Directors
W K Evans (Chairman), P W Simon (Deputy Chairman), A J Gray (Chief Executive)
P B Bell, E G Davis, F S N Falkner, Sir Ieuan Maddock CB, OBE, D.Sc., FRS
J S Rattray, Dr. I P Sword, A B Wyand

COGENT
LIMITED
St. Helens, 1 Undershaft, London EC3P 3DQ. Tel: 01-283 7500

Michael Scholar

FERRANTI

R22

21st September 1983

The Rt Hon Sir Keith Joseph Bt
Secretary of State for Education
Department of Education and Science
Elizabeth House
York Road
London
SE1 7PH

SEMINAR.

Dear Sir Keith

While not claiming to leave last week's seminar with "a brilliant speech in my pocket", there was one point that I would have liked to make and I have failed to resist the temptation to do so direct to you.

Much of what was said last week implied that we should be seeking rapid growth of the Science-based industries over the next decade. We are even now desperately short of good science graduates.

If the Industry were to start to expand rapidly, this shortage would be exacerbated and, in practice, a high rate of growth would not be possible, because on present plans the necessary qualified manpower will not be there. To sustain rapid growth we would require very much higher numbers of science graduates than are currently being produced.

Continued /....

Ferranti plc
Millbank Tower, Millbank, London SW1P 4QS.
Telephone 01-834 6611 Telex 264055 Telegrams Ferranti London SW1P 4QS
Registered Office Bridge House, Park Road, Gatley, Cheadle, Cheshire, SK8 4HZ. Regd. in England 83718

77250-212

FERRANTI plc

continuation sheet no. 1

to The Rt Hon Sir Keith Joseph Bt date 21st September 1983

As I understand it there are no plans to greatly increase the availability of places for scientists at universities and polytechnics at the expense of non-science courses, and if this situation is not rapidly corrected, there can be no hope of rapid growth in the Science-based industries. While major change of this nature would no doubt be uncomfortable and difficult for those in education, if it is not done, then pursuit of growth in these industries will inevitably end in failure.

Yours sincerely

J D Alun-Jones
Managing Director

Copy to: The Prime Minister

PA Technology

Corporate Group
Melbourn
Royston
Herts SG8 6DP
United Kingdom

Telephone 0763-61222
Telex 81561

cc Nicholson (CO)

PA Technology

(4)

Prime Minister

I have replied.

MES 22/9

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

20 September 1983

Dear Prime Minister,

Thank you very much for inviting me to your seminar on innovation at Lancaster House last week.

Whilst I was pleased to see two PA innovations included in the visual presentations during the day I was unable to make any points during the discussions and I have therefore invited Mr Baker to visit us for an exchange of views.

I am sure you will be pleased to know that the laboratory which we established in Princeton, North America, five years ago has proved outstandingly successful and is now second largest in our group of five (Cambridge, Brussels, Madrid, Melbourne and Princeton). In terms of revenue from industrial developments we are now at least comparable in size to the largest US groups and size is important to us in our markets as it enables a wider and deeper technology base to be supported within our organisation.

The existence of a significant laboratory in the USA has also helped Cambridge division to increase its own market share in the US directly and we have, for example, been able to develop some important products in the medical field for US companies. A current example is the development at Cambridge division of an expert system controlled pyrolytic mass spectrometer for health screening, which we are undertaking for Warner Lambert. This system will be capable of identifying organisms present in blood samples without human intervention (except to take the blood!).

cont..../

I think that the initiatives which you are taking in stimulating innovation within industry and science in this country are just what is needed and I think they will be successful, though I personally feel that the major opportunity for innovation is in the larger companies rather than the small ones.

Yours sincerely

G M Edge
Group Chief Executive

File

WRO

c. Chief Scientist
CO

10 DOWNING STREET

THE PRIME MINISTER

19 September 1983

Dear Dr Harvey-Jones.

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I should be delighted to hear them.

Yours sincerely

Margaret Thatcher

J. H. Harvey-Jones, Esq.

8 ref

10 DOWNING STREET

THE PRIME MINISTER

19 September 1983

Dear Sir Henry,

I am writing to thank you again for your most skilful summing up of the morning's session at my Seminar on Science, Technology and Industry at Lancaster House on Monday. I was, I know, not the only one present to admire the way you brought out the main themes of the morning and also made the connection with the afternoon's subjects.

I thought the day a success and I hope we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret Thatcher

Sir Henry Chilver

Mr Scholar - as discussed on the telephone this morning

Pl type for PM

DRAFT LETTER FROM THE PRIME MINISTER TO SIR HENRY CHILVER

I am writing to thank you again for your ~~excellent~~ most skilful summing up of the morning's session at my Seminar on Science, Technology and Inustry at Lancaster House on Monday. ~~This not only~~ I was, I know, not the only one present to admire the way you brought out the main themes of the ~~presentations and discussion periods~~ morning and also but made the connection with the afternoon's subjects ~~and suggested ways in which we might take account of the points made at the Seminar.~~

~~As I indicated in my closing remarks,~~ I thought the day ~~was~~ a ~~great~~ success and I hope we can follow it up in a suitable way. ~~Of course,~~ If you have any views on the follow up, I would be delighted to hear them. ~~[Alternative: I would be pleased if you could let Dr Nicholson know.]~~

Sir Henry Chilver
Vice Chancellor
Cranfield Institute of Technology
Cranfield
Bedford
MK43 0AL

RT/84

cc Ch. Scientist
CO

File

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear D. Cooksey.

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret Thatcher

Dr. D.J.S. Cooksey

Bol

File

cc Ch. Scientist
CO

RDJ
STH

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear Arnold.

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret

The Lord Weinstock

Bol.

File

RMSH.

cc Ch. Scientist
CO

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear Sir Rex.

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House of Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret Thatcher

Sir Rex Richards, F.R.S.

BT

file RM/SH

cc Ch. Scientist, CO

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear Sir Clive,

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret Thatcher

Sir Clive Sinclair

BOC

file

R171/84

cc Ch. Scientist, CO

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear D. Duckworth,

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret Thatcher

D. K. Duckworth, Esq.

DOT

file R&T/S&I

cc Ch. Scientist

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear Sir Geoffrey,

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret Thatcher

Sir Geoffrey Allen, FRS

B&L

file

Rog/SH

cc Ch. Scientist, CO

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear Viscount Caldecote.

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret Thatcher

The Viscount Caldecote of Bristol, D.S.C.

BP

file

Rod/BdP

cc Ch. Scientist, CO

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear Professor Kingman.

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours sincerely

Margaret Thatcher

Professor J.F.C. Kingman, F.R.S.

BPT

PERSONAL

file

RG/80P

cc Ch. Scientist, CO

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear Keith,

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your contribution was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours ever,

Margaret

The Rt. Hon. Sir Keith Joseph, Bt., M.P.

SIP

PERSONAL

Rod/SH

file

cc Ch. Scientist, CO

10 DOWNING STREET

THE PRIME MINISTER

17 September 1983

Dear Michael.

Thank you again for your first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

Your paper was not only valuable in itself but also for the way it stimulated other contributions from the floor. Many thanks for all the work you put into it.

I thought the day a success and I shall be giving thought to how we can follow it up in a suitable way. If you have any views on the follow up, I would be delighted to hear them.

Yours ever

Margaret

The Rt. Hon. Michael Heseltine, M.P.

DTC

SMITHS INDUSTRIES
PUBLIC LIMITED COMPANY

Prime Minister (4)

MLS 21/9

W.A. MALLINSON C.B.E., VICE CHAIRMAN
765 Finchley Road, Childs Hill, London NW11 8DS Telephone 01-458 3232 Telex 928761 Telegrams Esseye London Telex

Our ref: WAM/JS

16 September 1983

The Rt. Hon. Margaret Thatcher, F.R.S., M.P.,
Prime Minister,
10 Downing Street,
Whitehall,
LONDON.

We must [illegible]

Dear Prime Minister,

Thank you for inviting me to your Seminar on Science, Technology and Industry last Monday. As one of those unable to catch your eye, I hope it is in order to write to you with a few additional observations which I hope may be helpful.

The Marketing - Development Interface

I agree with the comment made that nationally we are weaker at marketing than we are at technology innovation.

It is very important to keep the marketing and product development functions very close to each other, and not allow them to be separate entities.

No matter how brilliant a technical development may be, it is of no commercial value unless it satisfies the needs of customers willing to buy it. Equally, marketing personnel must be sufficiently familiar with the details of the trends of new technology to make it attractive to the customer and to persuade him of the benefits it will bring.

You asked what can be done to improve the marketing situation. I suggest only by continually dripping the message of the importance of marketing on to the Chief Executives of our Companies and Organisations so that they will recognise this even more and hopefully take appropriate action in their own organisations.

The Creation of Corporate Awareness

We are living in a changing world and if our Companies do not change in step, they will inevitably decline.

I have recently been talking to a number of Research Managers in different companies involved with the application of microelectronics to their own product lines or processes.

The problem uppermost in their minds was how to influence the Company's Senior Executives to be sufficiently sensitive to recognise the effects that changing technology will have on their business and on the skills of the people they will need to employ. In many instances, this would require a change in culture in the organisation and the "creation of corporate awareness" was regarded as a major problem in most companies.

cont'd

The Communication Gap

This is frequently one of the difficulties encountered when trying to influence the creation of corporate awareness referred to above.

Engineers and Scientists often fail to recognise the importance of conveying their ideas and recommendations to non-technical Corporate Executives in ways that they understand. Many non-technical executives find difficulty in understanding the impact of advanced technology if it is a subject in which they have not been trained.

It is understandable that managers are unlikely to become the "enthusiastic Project Champion" if they do not understand the fundamentals of the new business they are being asked to sponsor.

The Calibre of People in Industry

In the end, the relative success of any enterprise is determined by the flair and calibre of its people.

I personally agree with the diagnosis of the Finniston report, in that for generations, parents, schools and universities have regarded Industry as a dirty and undesirable place and have therefore guided their most talented and able children and students towards the medical, legal and other high status professions such as banks and other financial institutions in the City. Indeed, may be this is one reason why our financial services in the City are regarded internationally as being so excellent.

However, it is vital to the future of the nation to ensure that a proper share of our high calibre people do enter our wealth creating sectors.

Again, continually influencing our Chief Executive to employ high calibre people and to be prepared to pay the price, is the best we can do in the short term.

Prime Minister, I believe your Seminar served a very useful purpose in bringing together so many people of influence for one complete day in order to air a naturally important subject. In your next Seminar, how about exploring some practical industrial topics, such as:-

The interface between Marketing and Technical Departments

The Creation of Corporate Awareness

The Communication Gap

The importance of ensuring that an adequate share of our high calibre people go into Industry?

Yours sincerely,

W. A. Mallinson

W A MALLINSON
Vice Chairman

R20

c D Nicholson

Prime Minister (4)

Decline X ?

(You have invited Lord Caldecote here for a drink on October 18).

MLS 20/9

Investors in Industry

Investors in Industry Group plc
91 Waterloo Road London SE1 8XP
Telephone 01-928 7822

Telefax 01-928 0394 Grp 2&3
Telex 917844

Chairman

16th September 1983

The Rt. Hon. Margaret Thatcher, MP,
Prime Minister,
10 Downing Street,
London SW1.

MT

Dear Prime Minister

Thank you very much for inviting me to take part in the seminar on Science, Technology and Industry last Monday, which I thought was a great success. Many important points were made and it is most encouraging to know that you and your colleagues take such a close interest in this important subject. I do feel very confident that there is now no shortage of funds to support viable businesses. The problem is to encourage enough people to come forward to combine good ideas with competent management.

As regards co-operation with universities, as I indicated in my paper, we are giving a lot of attention to this and we are considering sponsoring a conference early next year to discuss the opportunities and problems in exploiting the fruits of academic and laboratory research, and the financial constraints that hamper such exploitation. We will keep your office informed of the progress we make on this.

X Finally, may I say how delighted we would be if you were able to find time in your busy life to come and have lunch with us here. We would so much welcome the opportunity to discuss over lunch some of the points that arose in the seminar.

With renewed thanks for a most stimulating day,

Yours sincerely

Robin Caldecote

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CABINET OFFICE

70 Whitehall, London SW1A 2AS Telephone 01-233

W 0579

15 September 1983

Mr M Scholar
Private Secretary
No 10 Downing Street
London
SW1

Dear Mr Scholar

PRIME MINISTER'S SEMINAR

I think it would be appropriate if the Prime Minister could confirm her generous remarks to the speakers at the Seminar by a short letter of thanks. I enclose a draft, the wording of which largely follows her closing remarks.

I have provided the alternative ending in case she would like subsequent correspondence to come to me. However I imagine that she would want to keep the matter personal to her with some of the speakers, eg Lord Weinstock.

The letter should go to Lord Weinstock, Mr Harvey Jones, Sir Rex Richards, Sir Clive Sinclair, Mr D K Duckworth, Lord Caldecote, Mr D J Cooksey, Sir Geoffrey Allen and Professor Kingman.

+ Michael Heseltine + Keith Joseph

J. Bawden

pp ROBIN B NICHOLSON
Chief Scientific Adviser

Pl type to the people listed in the letter

~~I am writing to~~ Thank you again for your excellent ~~paper delivered at my~~ first-rate contribution to the Seminar on Science, Technology and Industry at Lancaster House on Monday.

for K Joseph "contribution" not "paper"

Your paper was not only valuable ~~for the content~~ itself but also in the way it stimulated other ~~informal~~ contributions from the floor. Many marks for all the work you put into it.

~~As I indicated in my closing remarks~~, I thought the day ~~was~~ a ~~great~~ success and I ~~hope we~~ shall be giving thought to how we can follow it up in a suitable way. ~~Of course,~~ If you have any views on the follow up, I would be delighted to hear them. ~~[Alternative: I would be pleased if you could let Dr Nicholson know.]~~

15 SEP 1983

R149

Confederation of British Industry
Centre Point
103 New Oxford Street
London WC1A 1DU
Telephone 01-379 7400
Telex 21332

From
Sir Terence Beckett CBE
Director-General

CBI
CONFEDERATION OF BRITISH INDUSTRY

c/ D Nicholson

Prime Minister (4)

MLS 14/9

13th September, 1983

MB

Dear Prime Minister,

Thank you for inviting me to the Seminar on Science, Technology and Industry yesterday at Lancaster House. I very much agree with your conclusion at the end of the seminar that the overall picture that emerged was encouraging and the fact that several speakers from the universities, the research councils and industry all agreed that more had to be done was an indication that there was no complacency.

I think we were all most appreciative of your initiative in arranging the seminar. Thank you again.

Yours sincerely,
Terry Beckett.

The Rt. Hon. Margaret Thatcher MP,
Prime Minister,
10 Downing Street,
London, S.W. 1.

10 DOWNING STREET

THE PRIME MINISTER

13 September 1983

Dear R. Nicholson.

May I thank you again for the way in which you organised, almost single-handedly, our Seminar yesterday. The occasion was an enormous success, very largely due to your impeccable arrangements. Moreover, the fact that you assembled such a fascinating list of main speakers is evidence of very considerable powers of persuasion!

We could not have had a better day.

Could you also pass on my thanks to Gerry Spence who I know carried out much of the detailed organisation of the Seminar with great efficiency.

Yours sincerely

Margaret Thatcher

Dr. R.B. Nicholson

2

Prime Minister - to see

LORD ROTHSCHILD

Telephone: 01-280 5000

Telex: 888031

N.M. Rothschild & Sons Ltd.
New Court
St. Swithin's Lane
London EC4P 4DU

12th September 1983

I have telephoned Lord Rothschild and have explained that you would fully understand and that he was not the only person to get such a headache.

Dear Prime Minister,

In case once again the Prime Minister comments adversely on my absence from luncheon and the afternoon session of the Science, Technology and Industry Seminar, I thought I would mention to you that during the morning session I developed a splitting heachache. Whether that was due to the atmosphere or the proximity to Arnold Weinstock after his somewhat mumbling address, I don't know.

In case my absence was observed may I once again tender my apologies and the above explanation.*

Yrs

Victor

* and an arc light specially arranged only to illuminate my face.

NOT FOR PUBLICATION, BROADCAST OR
USE ON CLUB TAPES BEFORE 10-30 hrs. 12-9-83

SEMINAR ON "SCIENCE, TECHNOLOGY AND INDUSTRY"

MONDAY, 12TH SEPTEMBER 1983 : LANCASTER HOUSE

"INNOVATION IN LARGE COMPANIES"

by

JOHN HARVEY-JONES, CHAIRMAN, IMPERIAL CHEMICAL INDUSTRIES PLC

May I first of all thank you, Prime Minister, for the invitation and the opportunity to take part in this extremely important meeting and discussion today.

I believe the subject which we are discussing is crucial to the future of British industry and, indeed, represents far and away the most important single way in which we can increase our world competitiveness. We do not have a large home market, we have lost the tied markets of the Empire, and, with the welcome exception of North Sea Oil and other energy sources we do not have substantial natural resources.

We depend critically for our wealth creation on transforming the brain power and ingenuity of our country into products and services that are saleable in world markets. Only in this way can we earn the profit which is so essential if we are to do the many things we want to as a country.

I am particularly glad of this opportunity because I represent both a chemical company and a large company. In ICI we recognise that we have a special responsibility to ensure

the exploitation of British innovation. I should like to emphasise at this point that while I think it may be helpful to draw the lessons from some of our successes in innovation, we know we still have plenty to learn and are dedicated to improving our record. Britain's chemical industry remains the fourth largest in the world and had a positive trade balance in 1982 of almost £2,000 million, which was four times the rest of British manufacturing industry. Moreover, we are very far from being a "sunset" industry. Indeed, the problems before my Company relate much more to selection between the immense range of chemical opportunities based upon our own and other scientific capabilities in this country, rather than finding ways of breathing a last gasp of life into a dying business.

It is, of course, a truism that all inventions stem in the first instance from the brilliance of one individual. We often fail to recognise the major contribution to our society of those individuals who one could describe as our scientific heroes, many remain unrecognised and almost unknown in a public sense. But the initial invention is only the spark. Other skills are needed to build a fire, and very substantial resources are required if the fire is to warm the world. As a Company we have learnt that if innovation is to succeed and pay off when applying science to keep in mind the market opportunities of the entire world. The test of each opportunity is whether, at the end of the day, a substantial profit can be generated.

Amongst the key resources that the large company brings are those resources of marketing skill. It is seldom appreciated that the perception of market need is just as innovatory as scientific invention and, indeed, in many cases an even rarer specific skill. It gives me, therefore, particular pride when Japanese innovators ask us as a Company to develop their products and sell them in the world marketplace, because they believe that in our own field we are more capable of fast market exploitation than any other chemical company in the world. This has recently happened with a herbicide, which we sell under the tradename of 'Fusilade', which has valuable applications to major crops such as soya and cotton, and here in the UK to potatoes and sugar beet.

But in addition to an ability to read the markets of the world and sell into them, large financial resources are required in our business to bring innovation to the point of making substantial profit. Amongst the many myths surrounding the innovation process is the view that there is a shortage of risk capital in the UK. I was delighted to see this included for discussion later this afternoon. For now suffice it to say that, in our experience, this is not the case, although within our Company availability of finance is directly linked to our overall profitability. Nevertheless, successful exploitation of innovation often requires taking very large risks on very large amounts of money. I hope that when assessing the valuation on Companies, our Financial Institutions pay due regard to the risk investments for the future.

In addition to the resources I have talked of so far, if products are to be made of consistent quality and at world

competitive prices much technical skill needs to be applied. We find increasingly that the development of almost any invention requires multi-disciplinary teams, including the marketing input. Very often the qualities needed to make processes work are quite different from those possessed by the first inventor.

But the area where I believe large companies have a particular role to play is what I would call staying power for the long haul. Frequently in our experience the ultimate use and profit opportunity is not obvious at the start, and is only developed as a result of continued marketing and technical innovation. I do not need to point out that polythene was invented by ICI and found its first application as a radio insulator. It now seems to be used for almost everything. Polyester, another British invention which was developed by my Company, was seen initially as a fibre. Our largest output now is in the form of films, where it has particular application to the development of many fascinating opportunities in electronics, and the fastest growing use of this versatile product is for the manufacture of bottles.

Several of our more revolutionary recent innovations, for example the newer inorganic materials 'Saffil' and 'Lithoplast', electrostatic spraying, aromatic polymers, were invented many years ago. With particular markets in mind and now with product and market development it is by no means clear where they will eventually find their most profitable market

niches. For some of these, such as 'Lithoplast', which is our new cement-based product, where unexpected uses from cement-based springs to fine electrical parts have been developed, and new uses are being developed almost every day. Even when the main use seems obvious, as for example in our development of an anti-misting addition to kerosense for jet fuel, or our revolutionary development f the high "G" distillation still, it takes years of persistence to bring these products to the market and to derive from them the profits which are, for the industrialist and indeed for the country, the justification of all this effort.

If we compare our national position with competitors, I would like speedily to dispose of the myth that the United Kingdom is no good at innovation and lacks skill in developing a good idea. Plainly we would not all be meeting today if we did not believe that we could be still better but, considering the small size and limited economic strength of our country, our innovation successes internationally are considerable. It is not an accident that three out of the world's top six drugs were invented in the United Kingdom: just one example, in a specific field, of our abilities. However, we are not in a position as a country to afford the scattershot approach and profligate use of resource that is the approach of the United States. Nor for a variety of historical and other reasons, are we likely to be able to emulate precisely the laser like commitment and discipline of the Japanese. But we do need to find some method of being selective in the

areas of high technology which we wish to exploit, and to channel our scientific and commercial thinking into these selected areas. The areas have to be very broadly defined, to avoid inhibiting the developments which should ensue, but equally we simply do not have the resource as a country to cover all the areas of opportunity.

A good example of the sort of thing I have in mind has been the actions of the Government in the area of Information Technology, and I believe there may be other similar broad areas which we should be selecting in this way. Partial Government funding in such areas has been shown to help bring innovation more quickly to fruition than might otherwise be possible. However, I believe the prime problem is to open up the channels of communication and the interchange between people so that the perceptions of the opportunities, both scientific and commercial can be more readily shared between the people in the various areas of activity who can contribute.

One of the reasons for my confidence in the ability of both my Company and our country successfully to innovate and to make money from innovation, is the science base which still exists in this country, particularly in the universities. While I accept entirely that the universities' main job is to teach, and I do not wish to see them turning merely into contract houses for ICI, we believe that we have got a wider range of better research contacts with universities than any other company in Europe. I do not say this to boast, but to

suggest that others might find it equally worthwhile to strengthen their links with universities.

There is, of course, great concern about the quality of education in almost every country, but I am sure our starting point in this country is good. I do believe, however, it is important that the Government and Academics should seek some means of assessing the productivity of education on a world comparative basis. We have to be sure that the end product, the educated person, stands up well by comparison with those of our other major world competitors. But on whatever basis one attempts to evaluate this, the United Kingdom is still very good, with an extremely sound, prolific and innovative science base.

I would here like to welcome the joint ACARD/ABRC study on improving research links between higher education and industry, and to pay a special tribute to the SERC who have fostered university/industry links so effectively. I hope very much that the example they have set is being followed by the MRC and the ARC, recognising the immense national importance of the pharmaceutical and agrochemical businesses.

It occurs to me at this rather belated stage of this short talk that I have taken for granted that you will accept ICI's right to speak as an innovative company. Perhaps I should give a couple of examples, so to speak, to reinforce my Company's credentials. Both are, I believe, of interest and relevance because they contain key messages for this conference.

One is the development of our family of beta-blockers, now widely used for the control of heart disease. The basic idea for this totally unique approach to cardiovascular medicine came entirely from one man, Jimmy Black, who, in recognition both of this and his subsequent invention of a totally new approach to the treatment of gastric ulcers, is now, I am pleased to say, honoured and justly admired and renowned. We backed the concept in the early laboratory days in the late 1950's, when the idea was completely new and the risks appeared very high. When we had the first indications of success in the laboratory, we embarked on the costly and lengthy steps of bringing his ideas to trial in the clinic, and then bringing this totally new type of therapy to the attention and use of the world's doctors. It is not going too far to say that this has founded an entirely new area of chemotherapy in which my Company remains world leader in a market worth £1000m.

The other example concerns the pyrethrin insecticides. This is of particular interest perhaps to this meeting because the original concept here was worked out by Michael Elliott in the ARC laboratory at Rothamsted. After twenty-seven years' work, in 1974 the first really stable and potentially useful analogue of the natural materials became available. We saw the opportunity and, despite starting behind world competition, launched a crash programme costing £6m. and have subsequently developed our own families of synthetic pyrethroids. Some idea of the speed at which it is necessary to move in these cases can be given by the fact that our

first sales were made in 1976 in Thailand, only one year after the start of full development, an unprecedented fast rate of progress from laboratory to market for a pesticide. In 1977 ICI received an emergency registration for the same product from the Dutch authorities to deal with the control of a resistant caterpillar pest which was threatening the Dutch glasshouse ornamental plant industry. Our world wide sales of this product in that year reached £7m. Since that time we have developed further pyrethroid insecticides with higher levels of activity and now have a proprietary pyrethroid for the control of livestock pests, especially ticks on cattle, being applied in Australia and Latin America. We are working on the same compound for use in Japan in the agricultural and public health areas.

In 1982 world sales of Agricultural pyrethroid by the industry reached £250m, and in that year alone ICI paid £1m in royalties to BTG.

Our interest in this area of insecticides which have a very high potency led directly to the development of 'Electrodyn' spraying, which enables the application of these products to be made at the level of half a litre per hectare as opposed to 100-200 litres per hectare by conventional application methods.

I believe these two examples demonstrate some of the themes I have been trying to elaborate. The initial invention is invariably made by one man, let us recognise him. The development entails high risk and the ability to recognise

market opportunities throughout the world. Speed and continued risk taking in a financial sense is vital. Further development of the products the recognition, fostering and exploitation of new market opportunities is also essential and involves applying of the minds and skills of a wide range of technically based people. And lastly, I am pleased to say that in both the examples I have given, the demonstration of our success is plain in the profits that are generated, enabling our Company to continue to employ a substantial number of people in the United Kingdom and generate the wealth on which this country depends.

ICI is not cutting its research efforts. Rather we are reinforcing and concentrating into the areas of maximum commercial opportunity.

Obviously I have concentrated in this talk on innovation in a large Company. But like you, Prime Minister, I am acutely interested in innovation in small companies and in releasing more of the great potential for increased national wealth that they contain. I am only too well aware of the difficulty in a large organisation, however hard everyone concerned tries, of the boss getting through to the laboratory bench and the salesman, and ensuring that good ideas are encouraged and developed. I envy the direct links and personal leadership that are possible with a small team. I hope that our experience in ICI has something to contribute to the immensely fertile innovative resource in smaller companies,

and we are taking active steps to see that we help in practical ways.

Prime Minister, thank you again for inviting me to attend this meeting. Let me assure you, if indeed you need any such assurance, that ICI is, and will remain, in the forefront of the application of innovation to markets on a worldwide basis to generate profit and wealth.

JOHN HARVEY-JONES

12th September 1983
JHHJ/SH

Mr Heseltine

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

Prime Minister, in your introduction to the Seminar you referred to the respective roles of Government and industry in developing our national research and development base.

We have heard from Lord Weinstock and Mr Harvey Jones of the ways in wich large companies can foster and stimulate innovation.

I would now like to put the perspective from the MOD.

The MOD is the largest initiator and user of high technology in the country. We take about half the entire output of the electronics industry.

Nearly half of my budget - some £8bn - is spent on the procurement of equipment for the Armed Forces.

Of this almost £2bn will be spent this year on research and development; some 16%, or just over £300M, on research, the rest on specific projects for the Services.

Most of this is spent in industry.

Currently about 70% goes to industrial companies and I expect this percentage to increase.

We therefore support a huge investment in high technology and skilled manpower.

The principal purpose of my Department is to ensure that these assets are used in the most effective way for the defence of this country and its allies.

But there is a very important albeit secondary opportunity in that I must also do all I can to disseminate this skill and knowledge for the benefit of industry at large and the national economy as a whole.

Essentially this means putting those who have the skills and knowledge in touch with those who can exploit it in the market place.

There are a number of ways in which this can be done.

First and most obvious is the direct sale of defence equipment and defence-related products.

Defence sales are now worth over £2bn a year - about 1½% of total UK exports. The sales figures have increased in recent years from £900M in 1978/79 to £2.4bn in 1983/84.

and put Britain into fourth place after the US, France and the Soviet Union. These sales make a very significant contribution to the Armed Forces budgets which reap the benefits of longer production runs and lower prices as a result of sales.

Industry has also for many years exploited defence technologies in a spin off to civil equipment: for example radars for civil aviation, communications, aircraft instrumentation systems and so on.

These direct transfers of defence technology to the market are straight forward.

But we are concerned today with the exploitation of technological innovations which arise in the course of research and development and for which no direct civil market application immediately exists.

Responsibility for exploiting these innovations rests both with MOD and industry. First the MOD.

The Intellectual Property Rights for work which is carried out in MOD R & D Establishments remain in MOD ownership.

The task here is to ensure the best and quickest transfer to the Civil Sector of R & D with possible civil applications.
This can be done in a number of ways.
First the MOD can disseminate information by using the British Technology Group to seek licensees to exploit our technology.
We can also do some licensing ourselves.
Secondly we can contribute to the DTI services which, together, comprise a national industrial data base which industry can call upon.
The maximum possible amount of potentially useful information derived from defence research must be fed quickly into these data bases where it can be tapped by industry.

In addition to the transfer of information we also foster direct contacts between MOD scientists and engineers and their counterparts in industry.
For example there are MOD/industry research committees which monitor technological developments in such areas as aircraft and avionics.
And a significant amount (£40M) of civil work is carried out by the MOD on re-payment from DTI.

As a result of these processes there have been many examples of successful "spin-off" from defence technology to the Civil Sector.
For example:

- the Chemical Defence Establishment at Porton developed charcoal cloth as a lightweight efficient material for respirators.

It is now widely used for medical applications, air filters and contamination monitors;

- the Royal Aircraft Establishment at Farnborough pioneered the use of carbon fibres which are now used extensively in the aerospace and vehicle industries;

- Farnborough's work on improving the performance of military aircraft wings lay behind British Aerospace's success in winning the contract to build wings for the European Airbus;

- The Royal Signals and Radar Establishment at Malvern originated the concept of integrated circuits on a single silicon chip. This led to developments in the semi conductor industry and the proliferation of uses of micro processors for all sorts of civil applications;

- finally the RSRE, in conjunction with Hull University, pioneered the development of liquid crystal displays which are used extensively for digital watches, calculators, and other electronic displays. The world market in these products is now worth £200M a year.

These are outstanding examples of innovative technology, originally designed for defence purposes, which has been translated into successful civil applications.

The problem is that, when it comes to exploitation of the technology, it has too often been foreign firms who have reaped the benefits.

This is true for example in the cases of carbon fibre cloth, the silicon chip and liquid crystal displays.

British scientists and engineers have produced the ideas: and our competitors have produced the commercial applications.
We cannot criticise foreign companies for exploiting research whenever they learn of it.
But it must be important for us to bring our Government financed research results and British industry closer together.
No matter how close the two become there is in the end no substitute for the man or woman who has the eye and the will to see and exploit the opportunities that exist.

We in the MOD are now undertaking an initiative to invite groups of entrepreneurs, with access to venture capital, to organise themselves to seek out marketable inventions within our R & D Establishments.
A pilot scheme is beginning at the RSRE, which is particularly suitable because of the large number of important electronics-based technologies with which it is concerned.
The groups include Cogent, Prutec, Hereford Venturers, the Cranfield Business Institute, Lazards and Barclays Bank.
Current thinking is that these groups will act as a club sponsoring one or two individuals who, with the help of our R & D scientists will produce a portfolio of ideas with commercial potential.
In essence they will act as technology brokers between our Establisments and the hightech industries.
The analogy is with science parks and technology parks, such as that which has been set up at Wavertree, Liverpool.

I intend that this experiment should be followed by similar initiatives at other Establishments, notably the RAE at Farnborough and the Naval Research Establishments. An extension of the idea would be to make space available on site at selected Establishments for the installation of specialist production units to exploit inventions.

Laboratory, computer and other facilities at the Establishments could also be made available on re-payment.

A further area for development is that we must foster more exchanges of people between Government and the private sector.
This applies to the Civil Service as a whole: but a particular objective must be to second Government R & D staff to work on civil exploitation aspects of these research programmes.

Government can also, of course, help with financial incentives.
No doubt these will be covered in detail later in the day but we should bear in mind that a wide range of incentives are available, for example the several schemes that the DTI have for supporting innovation and small firms.

So a lot is being done by Government to make technology available to industry and to produce incentives for it to be taken up. Why, therefore, have we been less successful than we should?

It is no use simply throwing technology at the Civil Sector and expecting it to be picked up.
The odds are that it won't be.
It needs special talents to identify the niche in the market which could be filled by a particular product.
And these are talents which are found in industry rather than in MOD research labs.

I would like to conclude by saying a little about this problem of spin off within industry.

In the case of the electronics industry Sir Ieuan Maddock carried out a very interesting study recently for the Electronics Economic Development Committee.

He was asked to identify what barriers existed to the transfer of technology from MOD-funded contractors to the rest of industry.

He drew a distinction between different kinds of company.

There are the big companies which have been concerned with defence equipment for many years.

The MOD is their dominant customer and their procedures are almost entirely geared to the MOD procurement process.

Sir Ieuan found that there was a feeling in these companies that they did not have the entrepreneurial skills to apply their technology to civil applications.

They tended to believe that this would, in any case, be to the detriment of their main defence business.

There was also a feeling that civil work was of a relatively simple kind and therefore unworthy of their very high quality scientists and engineers.

Sir Ieuan concluded that successful spin off was more likely to be undertaken by other types of company, those which had developed advanced technology for use in the civil area and had then found and exploited a defence application.

These companies tended to be small, entrepreneurial and highly responsive to the market.

Sir Ieuan's analysis was personal and there are no doubt many in this room who would take a different view.

All I would say from personal experience is that I believe that it is the small man who is the most likely to pick up an idea and run with it commercially.
Bigger companies are bound to be cautious about the amount of effort and management time which has to be spent on bringing a good idea to the market because this effort has to be at the expense of the existing parts of the business.
The risks are high and the guarantee of success is not great.
Caution and prudence very often win the day.

One very important issue arises from the question of scale.
Virtually all our Ministry contractors capable of carrying out our development programmes are large companies.
Under long-standing arrangements these companies own the Intellectual Property Rights resulting from this work.
This means that a great proportion of defence derived R & D knowledge is held by the large firms which, in the past, have apparently been rather bad at transferring defence technology even within their own companies, let alone to outsiders.
In other words it is very difficult for the small man to get at the research information which the large companies are not all that likely to exploit except in their direct fields.
Large companies know all too well that it is often better to let someone else carry out the exploitation, a high proportion of which fails and then buy their way into those that succeed.

I shall be looking closely at the rationale for the present system. No doubt I shall be receiving representations on the subject from some of you in this room.

I would conclude by saying that generalisations are dangerous. There are no magic solutions to the problem of spin off. It has proved elusive in other countries as well, including the USA. The UK's particular problems in this area stem from attitudes and institutional structures which are deep rooted and long standing. We can hope for radical change and strive to achieve it but the likelihood is that improvement will be slow and measured in percentage points rather than steep changes. But it is clear that we must make every effort to improve our performance in this area on which our economic and industrial future depends.

I hope I have made it clear that I and my Department take this issue very seriously and stand ready to play our part.

Sinclair Research Limited
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Embargoed until
September 12, 11.45am

PRESS INFORMATION

sinclair

12 September 1983

INNOVATION IN SMALL COMPANIES

(Following is the text of a speech by Clive Sinclair, chairman and chief executive of Sinclair Research Limited, to the seminar on 'Science, Technology and Industry', chaired by the Prime Minister, at Lancaster House, St James's on Monday, 12 September 1983).

We have grown used to change. But the nature of change itself can be variable and so it is that the roads which led to economic growth in the decades after the war no longer carry us there. Then the pursuit of more of what we had, more cars, more 'fridges, more TVs, brought profit to our great companies. Now the Western World is more sated with these goods and, open to supply from all corners, offers less to the producer. Now is a time when the rewards are to the innovator, large or small. Through innovation will come the new products to restore demand and growth to our economies.

Young companies now have a particular advantage. Because they have no large capital investment in a particular technology they have little to fear and much to gain from trying a new course. This is why so much that is new comes from such firms. Older firms with large capital investments are wise to let young companies explore the frontiers following them swiftly once a successful path has been found.

So the new firms may serve the old. In turn they depend upon them and a nation's growth requires strong established firms

Contd../

Contact: Bill Nichols

From:
Sinclair Research Limited, Public Relations Department,
23 Motcomb Street, London SW1X 8LB. Tel: 01-235 9649

as well vigorous young ones. For the latter can often only produce innovative products by drawing on the universities which provide both raw ideas and the source of staff. Britain has produced so many computer firms largely because the universities have produced so many able computer scientists and partly because large firms have been available to provide key components and assembly capacity.

We depend then on vital new companies for much of our innovation but they depend on the strengths of the older companies and the universities. And here lie some problems. Innovation always builds on existing technology and usually on some capital intensive technology inevitably in the hands of large firms. So almost all electronic innovation depends on silicon integrated circuitry and increasingly that has to be imported. In some types of circuit, memory chips, for example, Japan leads the world. She will readily supply us with standard parts but once she develops new types of her own we will find that these are kept for Japanese companies. For this reason we cannot afford to leave the key technologies to other nations. Semiconductors are as crucial to this new industrial revolution as metal foundries were to the last. We just have time to right this position but the window is closing fast.

Education may have served the new firms well, but not as well as it might. It is surely time that everyone received a technical education as well as a literary one, not science archaically divided into physics, chemistry and biology, but technology, the understanding of how things work. It is also time that business studies were made more general at University. Cambridge trains scores of economists to feed the City and not one MBA.

Young firms are much better placed than they were to attract talented staff. Largely, sad to say, because of unemployment. Young people who once were drawn into the then glamorous industries of atomic power and aircraft now find the small firm appealing.

Contd../

Older people with their valuable experiences are less easy to recruit usually because they would lose pension rights. This could and should be solved by making all pensions portable by law.

The attitude of the banks and recent budget changes have transformed the financing of new companies but some changes are still needed. It is now much easier to invest in a new company but it is not easy to profit from that investment unless the company goes public. An end to the illogical discrimination against unearned income would help and so, greatly, would the proposed change in the taxing of staff share options whereby gain would be taxed at the capital gains tax rate. Wouldn't life be simpler though if we just had one flat rate for income no matter how acquired?

It will be years before the new fields explored by young firms regenerate demand sufficiently to restore 'full' employment. Come what may, mature firms will continue to shed staff. Only a plethora of new firms can explore all the opportunities and discover the future. They will exist and flourish if schools and universities provide the right education, if large firms supply the key technologies and if government provides the right fiscal environment.

- ends -

M Baker

THE STIMULATION OF INNOVATION BY GOVERNMENT

The subject this afternoon is "The Stimulation and Financing of Innovation". And that title is important because the role of Government in stimulating innovation doesn't just mean the Government providing financial assistance - cash. Indeed financial assistance is only part of what Government needs to do to encourage a vigorous and innovative industry.

The first, and most important job for Government, is to provide the right economic climate. The Prime Minister has spoken of the excitement of technology, and we need a climate in which that excitement can flourish. It must be a climate in which industry can grow and prosper, and be profitable. A glance at the first graph will show that the country spends about £6 billion per

year on R&D and at least half of that money must come from the profits of industry. Government pays for the other half, and half of the Government's money is necessary for defence research. My Department's epxenditure is the white sector at the bottom of the diagram.

British industry has not found it easy to spend on R&D because of its low profitability. Our competitors have had better record here and as a result they have been capturing our markets. We must have the conditions, and the economic climate, that will enable us to match them - and catch them.

Tax Fiscal. Macroplan.

The second thing which Government can do is to change the climate of regulation. We have given a great boost to innovation in the telecom-munications area by our policy of ending the

monopoly and increasing liberalisation. It has stimulated research and development in large companies like GEC and Plessey, and in BT itself, and in a mass of much smaller companies. Innovation in telecommunications and cable TV should not need Government financing. It flourishes through Government withdrawl.

We have eased the burden of legislation and taxation for the innovative small firm by over 100 Government measures. We have made investment in these companies easier. We can offer them advice and counselling.

The third job for Government is to provide some direct financial support for research and development. I shall, of course, speak mainly of my own Department although many other Departments have significant R&D programmes - MAFF, Department

of Energy, Department of Environment, DHSS and of course the MOD.

My Department's science and technology expenditure has increased steadily since 1979. Now you will know that we run a very tight ship on public spending, and quite rightly so. Nevertheless, the Prime Minister agreed that this was such an important area that there should be a steady increase in cash expenditure. It is a record of which we are proud. We have not only been increasing the total spend but we have been spending much less in our laboratories and much more in industry.

In 1982/3 we spent £268 million. £60 million of that aerospace expenditure was in the space industry, where a vigorous industry is developing. We are making nine satellites in Britain. We are

second only to America in satellite manufacture. We have projects for communication satellites, navigational and meteorological satellites and for remote sensing.

Information technology covers our support for the microchip, and for the application of the microchip.

Chemicals, materials and standards includes expenditure on biotechnology, on composite materials, on engineering ceramics and on the measurements and standards programmes in industry and in our own laboratories.

Mechanical and electrical engineering covers robotics, computer assisted design and manufacture, flexible manufacturing systems and industrial automation.

And we spend on textiles, on paper, on printing research and on a whole range of unglamorous but vitally important technologies.

How do we spend this money?

We recognise that there are three steps. First, by improving the technological base. We provide funds for research into the basic and enabling technologies. Into microelectronics, into computers and communications technology, into materials technology and many others. Much of the work is done in industry.

Second, we need to make companies aware of the possibilities of these technologies. It is no good just getting the message over to the large companies. They understand it already. But the small engineering company, in a town like

Wolverhampton, also needs to know. Because if it is not aware of how it can use these technologies in its business it will be out of business. The choice for British industry is to automate or liquidate. We can help them with our awareness and consultancy programmes. Over 5,000 companies have benefitted from our microprocessor consultancy scheme and 3,500 small companies from our manufacturing advisory service.

And third - and most important is project support. The support we give to companies for research and development. It is under the general heading of "Support for Innovation". And we have a variety of schemes - some may even say too many - but each is targetted on a specific technological area. Biotechnology where we are spending £15 million, Software Products Schemes for companies devising new and innovative applications for software, for

robotics, for computer aided manufacture, for many areas vital for the future of a modern British industry.

And let me give you some examples of what industry has achieved with our help:

- The development by Ferranti of the uncommitted logic array microchip. Ferranti are the leaders in this type of chip. They have 25% of the world's market. But to put them in perspective they are still only number 33 in the list of companies making chips in the world.

- You can see its application in a camera, where it is controlling the exposure.

- We have supported Unimation to set up a plant in Telford. It created 250 new jobs. We must keep abreast of this technology.

- This is the application of microprocessors to a precision grinding machine tool. The project cost us £.35,000 The company is small employing only 260 people.

- Fibre-optics. A technology which Britain invented. We are still in the lead. Our programme supports large companies and small ones. We will have the most extensive fibre-optics network in the world by 1986.

- On a much smaller scale this is a machine that monitors blood sugar for diabetics. We put in £.14,000 The company employs 27.

- A microprocessor controlling the weaving of Cashes name tapes. We put in £11,000 and the company employs about 200 people (5-6 on the process control application).

- At the other end of the scale we have supported a flexible manufacturing system for the 600 Group.

You can see the nature and range of products which we support.

When we provide financial assistance we follow two important principles. First we ask the firm to provide most of the money - at least two thirds and perhaps three quarters. We provide the balance. It is catalytic money. Second the projects are not initiated by Civil Servants or Ministers. There is no Civil Servant or Minister in this room today who has the technical knowledge or the ability to pick this sort of research. It

has to be done by industry. And we rely very heavily on the help and advice that we get from industry through our Requirements Boards and other consultative bodies.

It is essential that industry and Government work together and we have been doing that in many ways. For example in project Universe a group of companies with BT and Research Council laboratories and universities are working together to develop and demonstrate advanced data transmission technology. This technology heralds a future in which the electronic office becomes international. Britain has a lead in Europe in the technology and the work is as advanced as any in the world.

The Prime Minsiter has already spoken of the Alvey programme. It is the most important

collaborative project ever undertaken in this way. Companies which are strong competitors in the market have combined to work on a joint project costing over £350 million. ~~£200~~ £150 million will come from industry. ~~£150~~ £200 million from Government. My Department provides the project management, with most of the team brought in from industry.

More recently I announced a materials applications initiative aimed at achieving similar Government/ industry collaboration in the field of advanced materials technology. The Group will be under the direction of John Collyear, Chairman of one of our Requirements Boards and Chairman of AE. The first job of the new Group will be to find the areas of opportunity for research, development and application.

There is important work done in our own laboratories to support industrial innovation. We have four. There were six and have we have privatised two. They provide important measurements standards without which a modern industrial and trading economy would be impossible. They provide essential technical support to our initiatives - in robotics, in automated manufacture, in microelectronics, for example,. We encourage them to work closely with industry and a very successful method has been to set up co-operative programmes, or clubs, with industry helping to meet the cost and steer the programme.

Here are some examples. At NPL, this last one - the Tokens and Transactions Control Consortium. It sounds a mouthful, but it is very important work on credit card and signature verification.

We are opening up our laboratories so that their skills and expertise are available to industry.

Transferring technology between laboratory and industry is never easy. The recent ACARD/ABRC report emphasises the need for close links between universities and industry. As the Prime Minister said we are considering this report and will be coming forward, together with Keith Joseph, with proposals for improving the liaison between universities and industry.

Hitherto the BTG has been responsible for exploiting the publicly funded research done in universities. We have been reviewing the role of BTG and its old function as a hospital for sick companies is being rundown and the portfolio disposed of. But the technology transfer role of the old NRDC continues. BTG has had a monopoly

on many university discoveries but I do not think it right that all the eggs should go into the same basket and as the Prime Minister announced we are removing this monopoly. Inventors in universities will be free - subject to certain safeguards to the public interest - to develop their own inventions by whatever route they wish.

BTG has had successes. Celltech, for example, which exploits the outstanding work of the Medical Research Council in biotechnology. At the time the private sector was not ready to take on these developments alone but private sector interest is now increasing and BTG has been able to reduce its holding. Recently a company nas been set up with a majority of private sector funding to exploit the work of the Agricultural Research Council in a similar way.

I have talked principally of the DTI, but other Government Departments have R&D programmes too. DHSS for example has supported some outstanding achievements in the vitally important medical electronics area.

The Prime Minister spoke of nuclear magnetic resonance, and here it is. A British invention, and we have a world lead in this equipment. We are supporting companies to make it and develop it. It is important that the technology gets established and that the equipment is available in British hospitals. We are using some public purchasing funds to do that and are helping to equip a factory to manufacture.

We have given support - at the other end of the scale - to a chap in a garage in Swansea to apply

a microcomputer to the frame of this gymnast - Jan Burgess - who broke her neck in an accident. She is able to stand and walk and go back to ner job again.

This is the compassionate face of technology and more than 60 products have reached the market as a result of DHSS support, and we work closely with them.

Innovation is a complex process. It is easy for Government to stifle it by legislation, by bureaucracy, by taxation or by trying to protect the old technologies from the inevitable march of the new. But Government can stimulate it if it works closely with industry and its customers. All the elements of Government must work togetner, as I hope I have shown this afternoon tnat they do. We must be particularly certain to get the

maximum value from the areas of big expenditure such as defence research and basic science. Perhaps above all Government must also be innovative, not just in its laboratories, but also in its policies.

FINANCING OF INNOVATION

by Lord Caldecote,

Chairman, Investors in Industry Group plc.

There are basically three stages in the financing of innovation. First comes the invention, research, conceptual stage; next, the high risk and usually expensive development stage, which includes market research, leads to a clear specification and marketable product or service; finally, the exploitation stage of marketing, production, distribution and after-sales support.

From the standpoint of a financial institution, each stage is characterised by different levels of risk, of cash requirement, and of potential reward. It is perhaps in the assessment of the potential reward that the greatest difficulty lies, and it is, of course, the key question, since it determines the risk that can be taken and, therefore, the type of support, both financial and non-financial, that the institution can provide. But the potential reward is a function of many things: the market opportunity, in size and in time, the ability of management to seize the opportunity effectively; the competitive reaction; and the prospects for upgraded or new products to continue the profitable development of the business. The uncertainties particularly in the earlier stages are daunting; even the most refined analysis cannot hope to predict actual performance more than a few months ahead, and

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the best prepared plans are more statements of intent than firm forecasts. The ability to react intelligently, while never losing sight of the medium-term objectives, is the key to that most difficult of arts, the successful management of innovation.

Some types of innovation are simply not suitable for exploitation by new, small companies, usually for marketing reasons. But even in those areas where small companies can, in principle, grow into big ones, their first product must be so successfully exploited that it does much more than just pay for itself; profits from it must in large part pay for the development of further new products or services which will be needed to maintain the growth of the company. Nobody believes more strongly than we do in the 3i group in the vital role that small companies play in bringing new, innovative products and services to the market, but it is an inescapable fact that, of the hundreds of companies that are formed every year, only a handful stand a real chance of successfully growing into major forces in world markets. It is not just a question of good or bad management, or whether financial backing of the right kind is available; in the majority of cases the realities of the market-place simply will not allow it.

Those companies for which such an innovative opportunity exists need all the help they can get. The managers face a very difficult task and, however good they are, few teams are so well-balanced and experienced in world markets that they are fully self- sufficient. Even in those cases when

they are exceptionally competent, it is, we believe, necessary for success that those members of our staff who are responsible for our investment should be fully capable of forming a view on every aspect of the company's prospects and operations. Opportunities and setbacks always occur; we must fully understand them if we are to play an effective role in backing the company, and achieve the right balance overall between risk and reward.

It is for this reason, to support such companies as well as we possibly can, that we have assembled, in our Ventures Division, a team of first-class managers, with recent and wide-ranging experience of specific technologies and of world markets, and supported them with equally experienced financial executives. It is also partly for this reason that we are making a number of investments abroad, to give us direct experience of the turbulent markets, which are so significant to the development of UK companies.

The staffing costs are, of course, very high by conventional standards. They can only be justified if the rewards for success are commensurate. For failures are inevitable; sometimes the failure takes the form of what American venture capitalists describe as the living dead: a company that survives without achieving the high, very profitable growth that is absolutely essential for commercial and financial success. To give you an idea of the sort of investment performance that is needed to make a viable on-going

business out of this high-risk, high-cost approach, we would need to believe that it was possible for us to obtain a return of up to 70% compound before entering into what amounts to a partnership with the founders. It is encouraging that we have already had some major successes of this kind in the Ventures portfolio.

But, if we were to restrict ourselves solely to this activity, we would only back a handful of companies a year instead of over 300 start-ups last year; as I said earlier, the majority of new companies - and, for that matter, existing ones - simply do not have the opportunity to grow at astronomic rates. For them, the hothouse so called 'hands on' treatment is unnecessary, inappropriate and uneconomic. They are, in no sense, second class; they may take longer to achieve prosperity - not everybody can make £1m profit in their first full year of operation - and their financial backers may have to wait longer for their return, or take it in a different form than purely by way of profit on realisation. But they are sound businesses and good, profitable investments for us. ICFC has demonstrated over the years that the provision of long-term loans and equity capital to small companies, on commercial terms, can be profitable and provide invaluable support to growing, innovative companies. Venture capital has become a vogue term for a particular form of equity finance, characterised by active management support and, usually, no running yield. In fact, the appropriate financial package and the support required varies with each particular

proposition.Although there are difficulties in doing so, our aim is to provide each company with what it wants and needs. But the industrial and commercial input is vital, particularly now when new technology is creating high rates of change and product life is relatively short.

Since it started nearly 40 years ago, ICFC has always had engineers and other commercially experienced people on its staff to help assess propositions and our response to problems. I think we probably have more technical, managerial and commercial expertise than any comparable financial institution. And we have it because we need it, expensive though it is. But such careful investigation does not eliminate risk, which we are in no way averse to taking; failures occur, usually due to over optimistic market assessment or poor financial control.

There is no shortage of money to invest, and in Investors in Industry we never have to restrict investment on this score. The real problem is to find people with ideas capable of translation into viable businesses. Such ideas may originate in a university environment or research establishment where those involved are unaware that the point has been reached when an invention has wider commercial application. Or the inventor could be working in a larger organisation which does not wish to exploit his ideas.

Even if you can find him, he may be reluctant to leave a salaried secure environment, however great the potential reward. There needs to be a clear incentive and willingness to accept risk if he is to be persuaded to leave the secure future provided by a pension. Or he may simply be an individual outside any organisation who has an idea to sell.

Wherever the innovation originates, it is at this initial research stage that it is most difficult to assess its potential to form a viable business.

Within Investors in Industry the staff of our Ventures Division have made positive efforts to establish working relationships with universities, working through the Industrial Liaison Officers, the Committee of Vice Chancellors and the Science and Engineering Research Council. They have shown it is possible to take an embryonic idea and, with added resources of experienced people and money, turn these into real businesses. This has been successfully achieved in four situations to date, at Hull, Imperial College, Sheffield and Warwick - with more to come.

Our particular expertise is to provide the appropriate management support together with a strong equity base to fund each phase in the most suitable way. Here I would like to emphasise how unwise it is for a new company to incur heavy borrowing and interest charges. At this early stage, before profits are being made, a substantial proportion of the capital required should be in some form of equity.

But there remains a real problem in the attitude of the entrepreneur to the sanctity of his share capital. There is a latent suspicion in the mind of the inventor that if he "gives up" any part of the ownership of his business he is selling his birthright cheap. Although there are signs that the outside shareholder is becoming more acceptable, this is inevitably a slow process.

However, we find that we are increasingly being welcomed as partners by companies because we can make a contribution at board level. There is growing recognition that outside shareholders are helpers more than custodians.

The principal purpose of the 3i group is to provide long term and permanent capital on a commercial basis and in so doing to play a significant part in the evolution of the industrial and commercial sectors of the British economy.

There is now growing and healthy competition in this field from a wide variety of financial institutions to provide finance which industry needs for innovation and growth. I believe the main problem is to make these sources of investment more widely known, and this we aim to do as far as our own group is concerned. But are there still gaps in the availability of money to finance innovation as is sometimes asserted?

Certainly there are innovations which will never form the basis of a viable profitable business; many of these will be turned down and inventors will loudly claim that the City's financial institutions are too reluctant to take risks in supporting them. No doubt we shall miss a few good ones, because the judgement of unproven management is very difficult, but with the advent of so many venture capital companies and the generous tax related business expansion scheme, I believe that in future very few deserving ideas will fail to find the money they need, provided that they are well thought out and presented.

There is one other area with its own problems. Those innovative projects, where large sums of money are required and the return is likely to be very long delayed but, with ultimately good potential. In this relatively small niche there is perhaps some requirement for government participation, so that in effect the long term risk and reward is shared by the nation as a whole. This is, I suggest, the principal role that BTG should assume, as the successor of NRDC.

I should like to leave you with this thought: there is no single route to success, since all businesses vary. Of our recent successes, one has taken less than three years to reach a significant position in international technical markets, another has taken no less than 23 years since we first financed it. What is needed is consistent, long-term, industrially-aware support, and I believe this is now available.

September 1983

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12-9-83

FINANCE FOR INNOVATION

By David J S Cooksey
Advent Limited

Several years ago there was much debate in this country concerning the availability of finance for small innovative companies. You would often hear the statement "There's too much money chasing too few good projects". The emergence of the venture capital industry over the last three years has shown that there was a financing gap. In particular those who were most worthy of investment were often unable to obtain finance on the right terms. The fund manager and banker were looking for early returns on what should be a very long term investment. The bulk of such financing was based on secured loans which were the wrong basis on which to start high risk technology driven enterprises. If we are to create fast growing enterprises then financing with the brakes off, true equity financing is vital. It is the core of the explosion of growth in new high technology companies in the United States.

The returns from high technology will come by realising capital gains not from annual running income. The classic example of this is the Digital Equipment Company, formed in Massachusetts, with venture capital over 25 years ago and which has never paid a dividend. Yet it has been an outstanding investment for those who ventured their money in it because of the massive capital gains they have realised.

The reason why too much money was chasing too few good projects was because only rarely did an investment proposal combine exceptional innovation with management talent. Too often it was the scientist pedalling his invention with little understanding of the marketing, manufacturing and financial performance needed to create a business success. Inventors and trained business managers rarely came forward together because the latter had no incentive to risk their careers in new ventures. The risk was too high and the reward too low - particularly after the tax man had had his massive bite.

The role of venture capital is to provide long term patient investment for technology driven enterprises. Since technology changes rapidly products must be exploited quickly in the marketplace. Therefore the size of investment and level of risk are considerably higher than in more traditional businesses. On the other hand successful investment can create a large international business in a relatively short timescale. And in successful brain based industries the total investment is often small compared with the returns generated.

Venture capital directs the majority of its funds into equity investment in unquoted private companies where there is an identifiable product which is ready to be brought to market. Investment will take place at any time between this "greenfields" situation and the last round of financing prior to a public

offering of the company. There are over 30 venture capital companies in the United Kingdom with resources of about £200 million, of which perhaps half is now invested. All of those those funds are inundated with proposals for financing. The proposals are of very variable quality.

The success of venture capital will depend on the availability of good management to work with the technologist to create these future businesses. Government can, and I hope will, act to improve the conditions for growth, namely the flow of funds to the venture capitalist and the flow of able management into entrepreneurial enterprises.

As I have said, venture capital can satisfy the financing requirements of an identifiable business. It will not fund research and development which will not readily develop into a business within two to three years. Therefore there is a major role for government or its agencies such as NRDC to play particularly in the area of funding early product development. Such government support of development is vital in the period between research discovery and the time that the venture capitalists can recognise a business to invest in. I hope that BTG will be encouraged to concentrate on this role. It is an area where BTG and the venture capitalists can work productively together not only to ensure business creation but also to avoid wasteful expenditure on applied research.

The venture capitalist is distinguished from the institutional financier by his "value-added" approach to his investments. The venture capitalist is looking for investments which will have market differentiation due to their technological lead or their ability to assert a dominant position in a particular market. He will look for proprietary protection of the technology - either through patents or an ability in the management team to stay ahead of the competition. He will look for products which command high margins which are vital to fuel the growth of the company and pay for the inevitable growth of R & D and marketing expenses as products age. Above all, he will look for a management team, which is present or can readily be acquired, to grow a substantial company in an exceptionally short time scale. He must also know that he will be able to realise his capital gain in due course.

The venture capitalist spends much of his time analysing the opportunities and problems facing each company prior to making an investment. He researchs and seeks advice concerning the markets and financial projections of the company and the technological strengths of the products involved. He knows that he will rarely find satisfactory answers to all of his questions. He is usually prepared to devote much energy to the company concerned before, during and after the investment is made to improve the marketing technological, financial and above all management capability of the company concerned. As a result he looks for an exceptional level of return in realised capital gains from the investment.

History in the United States has shown that this investment process succeeds and has been the seedcorn of many of today's great American enterprises. It is easy to point to the massive homogenous United States market and claim that life is made easy for the US company. It is true that it is easier for such a company to grow quickly in the U.S. since 50% of the world market for technology based products normally exists in the U.S. The figure here in Britain is more likely to be 5%. It is therefore vital that British companies which are to compete successfully with technology based products must address the US market (and Europe too) very early in their activities. This increases the level of funding required and the level of risk involved, but it also increases the opportunities enormously.

At Advent we have specialised in backing companies that are prepared to take this international approach to their markets and we have put people on the ground in the United States and Europe specifically to assist our companies to achieve rapid market penetration outside the U.K. I would like to examine some examples.

Multispec is a company, based in York, making infra red analysis instruments for quality control in the milk and dairy products industries. It has grown in sales from £720,000 in 1981 to £2 million in 1983 and from profits of £75,000 in 1981 to £800,000 in 1983. It exports 90% of its instruments in particular to the USA and Japan. Total funding of £400,000 was injected by Advent two years ago. This company will continue to grow as it extends its technology into quality control products for the oil and pharmaceutical industries.

Xenotron is a supplier of graphics terminals and associated software to the printing industry. It was started in 1976 in Diss, Norfolk based on computing expertise from Cambridge. Two years ago Advent and another venture capital company invested £500,000 in Xenotron when sales were about £1.5 million. The company now exports to the USA, Europe and Australia in excess of 50% of its products. Its sales will be £5,500,000 in 1983 and its profit before tax should exceed £700,000.

Enterprise is a computer company located south west of London supplying real time trading systems for selling advertising time on commercial television. It supplies its service to 13 of the 15 commercial television companies in the UK. Sales in the year to 31 March 1983 were about £3.5 million. Advent has invested £1 million in the company to enable it to bid for the business of the US TV networks. The company is close to its first contract in the United States. This will enable the company to grow several fold and to sell British software into an American market from which we would expect to be the receiver not the producer of technology.

Finally, I turn to a company called Filtronics. It is the classic university spinout with a team of microwave engineers from Leeds University led by their professor. He set up a

company to exploit their exceptional capability in the field of microwave filters. They are deeply involved in electronic intelligence gathering and in electronic counter measures devices.

Filtronics was funded as a virtual start up two years ago with £0.5 million from Advent. Since then we have injected a further £1.5 million as well as raising £3.8 million for expansion in the United States. Whilst today the companies have sales of less than £3 million per annum we now know that they will receive orders from both sides of the Atlantic amounting to many £million's over the next few years. A large proportion of that business will be manufactured here in the U.K. For Advent it has been a very high risk investment involving an enormous amount of work and heartache - but one which will create a substantial business here in the UK based on a dominant British technology. Historically that business would have ended with a licensing deal whereby our team in Leeds would have received a miniscule royalty flow for a few years from a large US defence contractor. Instead we have created a British business with enormous potential.

Advent has raised £20 million for investment in UK ventures. It now has about 25 investments totalling over £10 million. I have mentioned some examples and there are several more that are giving us cause for excitement. Inevitably there are some that will fail, that is the nature of our business.

We have been encouraged by the relationship we have built up with entrepreneurs and with the Universities as a source of innovation and advice. But that is not enough since it is vital that good managers should come out of larger companies to participate in the formation and growth of venture capital backed companies. The improved quality of the proposals coming to us indicates that this has begun to happen.

The flow of able management would increase dramatically if Government would take steps to ensure that they would have the right to take the full value of their pensions with them from previous employment and that they could participate in share options in the companies they join. It is vital that the benefit of those options is not considered as ordinary income but as capital growth since they must be given the benefit of growing the capital worth of their companies.

A further inhibition to venture capital activity is the need for the venture capitalist to seek his own funds from the tax priveleged institutional funds. Since venture capital funds receive no such tax privileges they have to persuade the institutional fund manager to accept taxation on capital gains that he would avoid by direct investment himself. The institutional manager, who dislikes long term non yielding investment anyway, is finally put off investing by the prospect of being taxed on capital gains unneccessarily. He prefers to stay with gilt edged stocks and property.

The result of this is that venture capital funds are being formed offshore often funded with overseas money. This is unfortunate and could easily be remedied by giving the venture capital funds the same tax treatement as investment trusts, namely to remove them from liability to capital gains tax.

In conclusion, we have a capability in this country to design technology based products which can command high profit margins because of their innovative character. It is those products which will fuel growth in the economy and improve standards of living. The venture capital industry will seek to help exploit the best of innovation that comes from the universities, from government and private research laboratories and as spin outs from larger companies. Given a stable and improving climate for this activity the results will begin to show shortly in terms of competitive new products which will create wealth for the nation and real new jobs.

RICARDO
CONSULTING ENGINEERS

Seminar on "Science, Technology and Industry"
12th September, 1983

TECHNOLOGY TRANSFER

by D. Downs
Chairman & Managing Director, Ricardo Consulting Engineers plc

My subject is 'technology transfer', or, more properly, perhaps, 'the marketing of technology', because one of my themes is that technology is a product, no less so than manufactured goods, and one for which the customer should expect to pay the appropriate market price. You buy technology if you get good value for money, not otherwise. Of course, before you can market something, you must make it or create it, and so I shall also be dealing with the subject of innovation and the creation of a marketable technology package.

My Company's ability to provide just such a technology package sprang from an exceptional man, Sir Harry Ricardo, growing up with an important new engineering product, the internal combustion engine. Sir Harry came from a comparatively well-to-do professional family with connections in engineering, in industry, in banking and in the City, and so his interest in the internal combustion engine having been aroused when he was at Cambridge, he seems to have had comparatively little difficulty in raising the finance required to set up his own design and research establishment. Other men of similar background at that time, such as Sir Charles Parsons, did likewise. There was a climate which encouraged bright young men of good family

to follow their own innovative instincts in engineering. This contrasts with the present cultural climate, particularly amongst the young at school and at university, which is anti-industry, even when it is not anti-technology. It contrasts also with the situation even in this Country in the immediate post-War period, with the Wartime developments in aircraft and in radar fresh in our minds, and with the manifest need to rebuild our Country, everyone could see the importance of developing our industry, and the rewards of our endeavours were immediately obvious in the form of improved living standards. While Britain seems largely to have lost this urge to improve material standards, it can be observed most strongly in the Socialist countries of Eastern Europe, in China and, of course, in Japan, where there is an excitement about technology and the improvement in living standards it can bring. The first necessity to my mind, therefore, is to increase our stock of innovation by creating a climate wherein more of our bright young boys and girls will be encouraged to take up applied science, technology or engineering as their career. I believe that exceptional men, such as Parsons, Ricardo and, to mention one in this room, Sinclair, have the potential to emerge. We must do our best to provide a climate within which they can prosper. Unless we do our Country will never regain its place in the front rank of industry and technology.

It is, of course, not sufficient to produce innovative ideas. The ideas must be within a field which is ripe for development and exploitation. Sir Harry Ricardo found just such a field in the internal combustion engine, as Parsons did in the steam turbine. Engineering products such as these, important at the turn of the century, have continued

to find a market, while others have declined and new ones have emerged. This is natural evolution and, while we hope that the UK will play a leading part in a respectable number of new developments, it is unrealistic in the modern world to expect any one country to lead in every field. We must concentrate on those technological fields where we perform best and be prepared, if necessary, to import technology from abroad in other cases. The Japanese are an object lesson here, for their open-mindedness to new ideas from no matter what source; the British, maybe because of what we take to have been our earlier technical leadership, still display a certain arrogance towards others' ideas.

In the same way that no one country can now lead in every technical field, so no industrial Company, however large, can generate all the technical expertise it requires in-house, and it would be uneconomic for it to attempt so to do. They should and do make use of specialist consultant and R & D organisations, thus effectively spreading the cost to them of the technology they buy. It can also be argued that innovation is easier for the smaller Companies. Larger Companies should recognise this, should encourage it, and be prepared to pay realistically for it, instead of (as they sometimes do) attempt to make use of their greater economic power to browbeat their smaller collaborator. It is, of course, very costly for R & D organisations such as ours to keep up to date with a growing technology, let alone provide the technical lead their customers rightly expect. The Government, which has shown its willingness to help manufacturing industry to fund its research, must, I believe, exhibit an equal willingness to help the independent R & D organisation whose efforts

not only benefit British manufacturing industry, but also contribute substantially to our invisible exports. Farseeing governments overseas, particularly it would seem in countries where our technological rivals are situated, provide just such help and, unless the UK Government is prepared to do likewise, our technology transfer companies will be operating at a substantial disadvantage.

I spoke at the beginning of marketing technology, and I believe that our attitude to the sale of technology should be no different in principle to our approach to the sale of any other product or service. In fact, the operations in an organisation like Ricardo in many respects parallel those in manufacturing industry. First, you must have a product to sell, ie. you require a strong engineering/research department to produce new and improved products, and Ricardo ploughs back some 12% of its turnover into internally-funded research. Then you must produce the goods which the customer requires efficiently, which means examining your methods of design (including the use of CAD), your prototype production and your conduct of experimental work, to ensure that they are the most effective for their purpose. Then you must sell. At one time Consultants and Contract Research Organisations were inclined to adopt what was seen to be the gentlemanly way of selling, to sit back and wait for the work to come to them. This is no longer possible in the modern world where potential customers need to be constantly reminded of your existence and of the services you have to offer. The final and one of the most important elements in the total operation is finance and accounting. Accurate estimating and cost and performance monitoring, together with well-designed legal agreements, are as essential to technology transfer as to manufacturing industry, and it is particularly important

that a high technology Company, most of whose principals will be engineers and scientists, has a financial man with a strong accounting background as an equal partner in the team.

While most of Ricardo's work is done for industrial Companies of the developed world, of Western Europe (including, of course, the United Kingdom), the United States and Japan, we also work in the Socialist economy countries of Eastern Europe and The People's Republic of China, as well as with developing countries. Some six years ago, we were, I believe, the first British Company to sign an agreement with China purely for technology transfer, unassociated with the supply of goods. They recognised that the employment of an organisation such as ours enabled them to improve the level of their technology with the least expenditure of foreign currency. While we have been similarly successful in selling our services in Yugoslavia, Poland and Czechoslovakia, we have not so far been so successful in Russia. Countries having Socialist economies, and this applies particularly to Russia itself, are unused to the idea of paying for advice or for technology transfer. Such activities in their own country are normally carried out in State Institutions, and, when they sign a trade agreement with a Western Country, say on diesel engines, there often seems to be an expectation that technology exchange will take place between State Institutions as part of the agreement. It comes as a nasty shock to the Soviets to learn that most Institutions of that nature in the UK are in private hands, and that they expect to be paid for any advice they offer. I think that it is important that State Corporations in the UK offering consulting services overseas, such as BR, BSC, CEGB, and others, should not do so without proper recompense. Otherwise, apart from losing

potential revenue for the Country, they are merely confirming some overseas government in their bad habits.

I think there needs to be a greater recognition in this Country of what a valuable export we could have in technology. Britain has a thriving group of contract R & D organisations covering a wide range of technologies. We are better served in this respect than most of our industrial rivals. Historically, the export of manufactured goods has been followed by the export of capital equipment to enable the overseas countries themselves to manufacture consumable goods. We are now entering a third phase in which, increasingly, it is the technology itself which we shall be exporting, together, of course, with specialised capital equipment and quality goods. In their great emphasis on UK manufacture, there was a tendency at one time for government to minimize the importance of technology export. This situation has changed, but still within UK manufacturing industry there is sometimes a view expressed that this technology should be used only at home and not exported. I believe that this is short-sighted. Where our Country is strong in a particular technology, we should not hesitate to export it and, of course, to ensure that we are paid for it as part of our total effort/reward package. In addition, the activities of a Company like Ricardo in the export field serve to keep UK industry up to date through the feedback of information from overseas and, where necessary, can serve as a channel for the importation of technology. In any case, there is now one world of technology; the UK cannot expect to excel in every field; there must be 'give and take', export and import, as I have mentioned earlier. Technology transfer Companies, operating internationally, can ensure

that Britain derives maximum advantage from this situation and, in that way, play a part in securing the future prosperity of our Country.

(The Prime Minister is expected to speak at 10.00am)

OPENING ADDRESS BY THE

PRIME MINISTER, THE RT HON MARGARET THATCHER FRS, MP.

AT THE ONE-DAY SEMINAR ON

'SCIENCE, TECHNOLOGY AND INDUSTRY'

AT

LANCASTER HOUSE, LONDON.

ON

MONDAY, SEPTEMBER 12, 1983.

Press Office
10 Downing Street
LONDON SW1
Tel 01-930 4433

MAY I EXTEND A WARM WELCOME TO EVERYONE HERE TODAY,

- TO THE 100 FROM INDUSTRY
- 60 FROM THE UNIVERSITIES
- 40 FROM THE CITY
- AND THE 50 FROM GOVERNMENT AND CIVIL SERVICE.

MAY I ALSO THANK THOSE WHO HAVE AGREED TO PRESENT PAPERS TO THIS OUR FIRST SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY.

/ EVERYONE

EVERYONE WHO WAS ASKED TO SPEAK AGREED,

AND MANY MORE THAN WE COULD ACCOMMODATE

ASKED TO COME.

THIS DEMONSTRATES THE IMPORTANCE OF THE SUBJECT, AND THE ENTHUSIASM TO GET TOGETHER TO DISCUSS IT.

THE PURPOSE? - TO USE OUR SEVERAL ABILITIES TO INCREASE THE WEALTH AND WELL-BEING OF THE SOCIETY OF WHICH WE ARE ALL A PART.

/ WE SHALL

WE SHALL ONLY OVERCOME OUR DIFFICULTIES IN POSITIVE WAYS.

IF WE ARE ABLE TO CREATE NEW AND SUCCESSFUL BUSINESS ON A SUFFICIENT SCALE, WE SHALL BE WELL ON THE WAY TO SOLVING MANY OF THE MATERIAL PROBLEMS WHICH ASSAIL OUR COUNTRY, AND SOME, BUT NOT ALL, OF THE OTHER PROBLEMS TOO.

/ WE ARE CONCERNED

WE ARE CONCERNED NOT ONLY WITH THE GREAT NEW SCIENCE-BASED INDUSTRIES, BUT WITH MOST TRADITIONAL BUSINESS AND COMMERCE AS WELL.

THE APPLICATION OF NEW TECHNIQUES TO THEIR PROCESSES, DESIGNS AND ADMINISTRATION IS VITAL TO SURVIVAL AND EXPANSION.

IF THEY DON'T EMBRACE THE LATEST TECHNOLOGY THEIR COMPETITORS WILL.

/ WE TAKE GREAT PRIDE

WE TAKE GREAT PRIDE IN THE BRILLIANCE OF OUR RESEARCH.

BUT WE HAVE A FEELING THAT OTHER COUNTRIES

SOMETIMES MAKE MORE PROFITS OUT OF THE

DISCOVERIES OF OUR SCIENTISTS THAN WE DO.

WE APPLAUD THE EFFORTS OF MANY OF OUR COMPANIES,

LARGE AND SMALL.

UPON THEIR SUCCESS DEPENDS OUR FUTURE.

/ I BELIEVE THAT

I BELIEVE THAT THERE IS MORE CO-OPERATION THAN EVER

BEFORE BETWEEN THOSE IN UNIVERSITY AND

INDUSTRY.

BUT IT IS NOT ENOUGH.

AND TODAY WE WANT TO SEE HOW WE CAN DO

BETTER.

OF COURSE YOU WILL ASK ME,

"WHAT IS GOVERNMENT DOING?"

/ <u>ROLE OF GOVERNMENT</u>

ROLE OF GOVERNMENT

OVER THE PAST FOUR YEARS, THE GOVERNMENT HAS SPENT £12.7 BILLION OF TAXPAYERS' MONEY ON RESEARCH AND DEVELOPMENT - AN INCREASE IN REAL TERMS OF NEARLY 8 PER CENT OVER THE PREVIOUS FOUR YEARS.

FIRST, MOST OF THIS MONEY GOES ON THE KIND OF RESEARCH WHICH ENSURES THAT GOVERNMENT BUYS THE BEST PRODUCTS AND SERVICES -

/ FOR EXAMPLE

FOR EXAMPLE, THE BEST ROADS, THE BEST MEDICAL, DEFENCE AND OFFICE EQUIPMENT. AND THE GREATER PART IS SPENT IN INDUSTRY: TWO-THIRDS OF OUR DEFENCE RESEARCH AND DEVELOPMENT BUDGET IS PLACED WITH INDUSTRY.

SECOND, WE SPEND MONEY TO STIMULATE THE DEVELOPMENT OF NEW SCIENCE-BASED PRODUCTS, AND TO HELP BRING THEM TO THE MARKET-PLACE.

/ SPENDING ON

SPENDING ON THIS HAS INCREASED BY NEARLY 20 PER CENT IN REAL TERMS OVER THE PAST FOUR YEARS.

AND, THIRD, OF COURSE WE SPEND A HUGE AMOUNT TO SUPPORT FUNDAMENTAL RESEARCH. THIS YEAR, ABOUT £500 MILLION THROUGH RESEARCH COUNCILS AND ABOUT THE SAME AMOUNT FOR UNIVERSITY RESEARCH THROUGH THE U.G.C.

/ NOW YOU ALL KNOW

NOW YOU ALL KNOW THAT GOVERNMENTS CAN MAKE MISTAKES. ONE MISTAKE WAS TO GIVE THE BRITISH TECHNOLOGY GROUP A MONOPOLY POWER OVER THE APPLICATION OF GOVERNMENT-FUNDED RESEARCH. THIS MONOPOLY WAS VERY RESTRICTIVE AND WIDELY CRITICISED, NOT LEAST BY SCIENTISTS WANTING TO EXPLOIT THEIR WORK. WE HAVE DECIDED TO ABOLISH THAT MONOPOLY. I AM SURE THAT MANY OF YOU WILL WELCOME THIS STEP AND THE NEW OPPORTUNITIES WHICH CAN NOW BE PURSUED.

/ THESE ARE SOME

THESE ARE SOME OF THE SPECIFIC THINGS THAT GOVERNMENT IS DOING, AGAINST THE BACKGROUND OF ITS GENERAL POLICY TO CREATE THE CONDITIONS IN WHICH ENTERPRISE AND INNOVATION CAN FLOURISH.

BUT GOVERNMENT CAN NEVER SUBSTITUTE FOR THE INSPIRATION OF THE SCIENTIST, THE GENIUS OF THE INVENTOR, THE ACUMEN OF THE INDUSTRIALIST, OR THE JUDGEMENT OF THE FINANCIER.

FOR THESE, WE LOOK TO YOU.

/ SCIENCE IN THE UNIVERSITIES

SCIENCE IN THE UNIVERSITIES

THIS COUNTRY HAS A LONG AND BRILLIANT RECORD IN SCIENCE AND ENGINEERING.

NEWTON, FARADAY, DARWIN AND FLEMING:

STEPHENSON, BRUNEL, ROYCE AND BARNES WALLIS.

MANY OF THEIR MODERN COUNTERPARTS ARE SITTING IN THIS HALL TODAY.

WE MUST BE AS SUCCESSFUL AS OUR FORE-FATHERS IN SUSTAINING YOUR GENIUS AND TURNING IT TO THE BENEFIT OF THE NATION AS A WHOLE.

/ MANY OF YOU

MANY OF YOU CARRY OUT YOUR RESEARCH IN UNIVERSITIES AND RESEARCH COUNCILS.

FUNDAMENTAL RESEARCH IS VITAL, ALTHOUGH WE DON'T KNOW WHAT ITS COMMERCIAL RESULTS WILL BE OR IF OR WHEN THEY WILL COME.

/ IN MY DAY,

IN MY DAY, AS A SCIENCE UNDERGRADUATE, NEW WORLDS WERE OPENING UP IN PLASTICS, PENICILLINS AND ISOTOPES BECAUSE OF EARLIER RESEARCH IN CHEMISTRY, BACTERIOLOGY AND NUCLEAR PHYSICS; TODAY, ASTONISHING DEVELOPMENTS IN BIOTECHNOLOGY AND MICRO-ELECTRONICS HAVE COME UNEXPECTEDLY FROM FUNDAMENTAL RESEARCH IN MOLECULAR BIOLOGY AND SOLID-STATE PHYSICS.

/ BUT I HOPE

BUT I HOPE THAT THOSE DOING FUNDAMENTAL RESEARCH WILL
THEMSELVES BE ALERT TO ITS POSSIBLE
APPLICATIONS.
IF NOT, WHOLE INDUSTRIES MAY BE STILL-BORN.

TO MAKE FULL USE OF OUR DISCOVERIES, WE MUST STRENGTHEN
THE LINKS BETWEEN THOSE WHO WORK IN
UNIVERSITIES AND THOSE WHO WORK IN INDUSTRY.

/ ATTITUDES

ATTITUDES ARE MUCH HEALTHIER NOW THAN
EVEN FIVE YEARS AGO.
WITNESS THE GROWTH IN SCIENCE PARKS.

BUT I AM NOT ONLY TALKING ABOUT ATTITUDES <u>WITHIN</u>
UNIVERSITIES.
I AM ALSO TALKING ABOUT INDUSTRY'S
ATTITUDE <u>TOWARDS</u> UNIVERSITIES.

/ MANY FOREIGN FIRMS

MANY FOREIGN FIRMS MAKE THE EFFORT TO "NOSE AROUND" OUR CENTRES OF SCIENCE AND ENGINEERING.

I KNOW THAT SOME OF OUR OWN COMPANIES ARE RIGHT ON THE BALL.

I HOPE THAT MANY OTHERS WILL FOLLOW THEIR EXAMPLE.

/ PRIVATE SECTOR INDUSTRY

PRIVATE SECTOR INDUSTRY

WE ARE OFTEN ASKED WHETHER WE HAVE GOT THE BALANCE RIGHT BETWEEN RESEARCH FUNDED THROUGH THE GOVERNMENT, AND RESEARCH FUNDED BY PRIVATE SECTOR INDUSTRY.

TO PUT IT ANOTHER WAY,

- IS OUR INDUSTRY, AS A WHOLE, SPENDING ENOUGH ON RESEARCH AND DEVELOPMENT?

/ COMPARISONS

COMPARISONS WITH OUR MAJOR INDUSTRIAL COMPETITORS SUGGEST NOT: PRIVATE INDUSTRY'S OWN SPENDING ON RESEARCH AND DEVELOPMENT FORMS A SMALLER PROPORTION OF NATIONAL INCOME IN BRITAIN THAN IN JAPAN OR GERMANY: AND OF COURSE, IN ABSOLUTE TERMS, WE ARE SPENDING CONSIDERABLY LESS THAN EITHER COUNTRY.

WE IN GOVERNMENT NEED CONSTANTLY TO REMIND OURSELVES THAT THE PRIVATE SECTOR FUNDS ITS ALL-IMPORTANT RESEARCH OUT OF ITS PROFITS.

THE MORE INROADS MADE BY THE GOVERNMENT INTO THOSE PROFITS THE SMALLER THE FUNDS / AVAILABLE

AVAILABLE FOR PRIVATE SECTOR RESEARCH AND DEVELOPMENT.

THAT IS WHY IT IS VITALLY IMPORTANT THAT THIS GOVERNMENT SHOULD MAKE EVERY EFFORT TO REDUCE THE BURDEN OF TAXATION AND CONSEQUENTLY TO LIMIT OUR EXPENDITURE COMMITMENTS.

INTELLECTUAL PROPERTY

FURTHER, FEW COMPANIES COULD AFFORD TO EMBARK ON EXPENSIVE PROGRAMMES OF RESEARCH AND DEVELOPMENT WITHOUT THE ASSURANCE THAT OWNERSHIP OF THE

/ FRUITS

FRUITS OF THIS RESEARCH AND DEVELOPMENT WILL BE SAFEGUARDED.

THAT MEANS TAKING VERY SERIOUSLY INDEED THE PROTECTION OF THESE IDEAS - OF INTELLECTUAL PROPERTY, AS IT IS CALLED - THROUGH PATENTS, COPYRIGHT AND REGISTERED DESIGN.

FINANCIAL SECTOR

NOR CAN PRIVATE INDUSTRY MAKE THE OPTIMUM USE OF SCIENCE AND ENGINEERING WITHOUT A SUPPORTIVE AND INTELLIGENT FINANCIAL SECTOR.

OUR BANKS AND INSTITUTIONS NEED

- TO SPOT

- TO SPOT THE OPPORTUNITIES FOR PROFITABLE INVESTMENT IN NEW TECHNOLOGY;
- AND TO PLACE THEIR FINANCIAL SKILLS, DEVELOPED OVER CENTURIES OF SUCCESSFUL FINANCING OF MANUFACTURING AND TRADE, AT THE DISPOSAL OF THE YOUNG SCIENTISTS AND ENGINEERS WHO HAVE A NEW PRODUCT AND SERVICE TO DEVELOP.

ACHIEVEMENTS

BUT LET US LOOK AT WHAT HAS BEEN ACCOMPLISHED BY SCIENCE AND INDUSTRY TOGETHER.

/ IT IS

IT IS NOT THE BIONIC MAN OR EVEN WONDER WOMAN ON THE TELEVISION THAT ARE THE MARVELS OF OUR AGE. IT IS THE POWER THAT WE HAVE ADDED TO ORDINARY HUMAN FACULTIES.

THINK OF THE MIRACLE OF THE SCANNER AND OF THE DEVELOPMENT OF NUCLEAR MAGNETIC RESONANCE; THE DOCTOR WHO USED TO LISTEN TO HIS PATIENT TRYING TO DESCRIBE HIS SYMPTOMS CAN NOW SEE THROUGH SKIN AND BONE TO DIAGNOSE AND TREAT.

/ THE OLD

THE OLD VISION OF X-RAY EYES IS NOW REALITY.

REMEMBER WHAT SWIFT SAID:

"WHOEVER COULD MAKE TWO EARS OF CORN OR TWO BLADES OF GRASS TO GROW UPON A SPOT OF GROUND WHERE ONLY ONE GREW BEFORE WOULD DESERVE BETTER OF MANKIND THAN THE WHOLE RACE OF POLITICIANS PUT TOGETHER."

TODAY MODERN TECHNOLOGY ENABLES THE FARMER TO GROW NOT TWO EARS OF CORN, BUT TEN OR TWENTY EARS.

/ ONE OF THE

ONE OF THE MOST EXCITING THINGS ABOUT OUR TIMES IS THE SPEED WITH WHICH SCIENCE CAN TURN INTO TECHNOLOGY, AND TECHNOLOGY CAN TURN INTO VALUABLE AND FASCINATING PRODUCTS.

ELECTRON BEAM TECHNOLOGY MAKES MORE POWERFUL SILICON CHIPS AND A FURTHER STARTLING ADVANCE IN AUTOMATION IS UPON US.

THE COMPUTER FLOODS IN EVERYWHERE - FROM THE CONTROL OF THE STOCK IN THE WAREHOUSE TO PATTERN RECOGNITION FOR EARLY DIAGNOSIS OF CANCER.

THE TECHNOLOGICAL MIND IS EVER MORE RESTLESS AND FERTILE IN APPLYING THE GREAT GIFTS OF PURE SCIENCE. / OURS

OURS IS NOT ONLY AN AGE OF DISCOVERY.

IT IS AN AGE OF APPLICATION - DEVASTATING IN ITS SWIFTNESS; ENTHRALLING IN ITS SURPRISES; REMORSELESS IN ITS COMPETITIVENESS.

OUR BUSINESS IS TO BE THE LEADERS OF THAT AGE - TO APPLY OUR SCIENCE AND APPLY OURSELVES TO BUILDING THE INDUSTRIES OF THE FUTURE.

OVER TO YOU, LADIES AND GENTLEMEN.

Return to CIF.

CONCLUDING REMARKS

OF THE

PRIME MINISTER, THE RT HON MARGARET THATCHER FRS, MP.

AT THE ONE-DAY SEMINAR ON

'SCIENCE, TECHNOLOGY AND INDUSTRY'

AT

LANCASTER HOUSE, LONDON.

ON

MONDAY, SEPTEMBER 12, 1983.

Press Office
10 Downing Street
LONDON SW1
Tel 01-930 4433

MRS.THATCHER: THAT BRINGS US TO THE END OF OUR FIRST SEMINAR ON SCIENCE TECHNOLOGY AND INDUSTRY: MAY I, ON YOUR BEHALF, THANK ONCE AGAIN ALL OF THOSE WHO LED OUR DISCUSIIONS WITH PREPARED PAPERS, I DON'T THINK WE'VE EVER HAD A MORE DISTINGUISHED GROUP OF PEOPLE IN ONE DAY ON THIS SUBJECT OR INDEED ON ANY OTHER SUBJECT. WE'RE VERY GRATEFUL TO THEM FOR COMING AND FOR GIVING THEIR TIME IN PREPARING THOSE PAPERS TO LEAD OUR DISCUSSIONS. CAN I ALSO THANK THOSE WHO'VE CONTRIBUTED FROM THE FLOOR AND APOLOGISE TO THOSE WHO ARE GOING AWAH WITH BRILLIANT SPEECHES IN THEIR PO CKETS - BETTER LUCK NEXT TIME' MAY I ALSO THANK DR. NICHOLSON, FOR ORBGANISING THIS WHOLE OCCASION. HE HAS DONE IT MAGNIFICENTLY WITH A VERY SMALL STAFF. (APPLAUSE)

I THINK THE GENERAL FEELING PERHAPS WITH ONEOR TWO EXCEPTIONS BUT THE GENERAL FEELING HAS BEEN ONE OF OPTIMISM BUT NOT COMPLACENCY AND I THINK THAT'S RIGHT, THE GOVERNMENT WHICH I LEAD HAS TRIED VERY HARD TO REMOVE THE OBSTACLES TO SUCCESS AND TO RESTORE SOME OF THE INCENTIVES. OF COURSE WE COULDN'T DO IT ALL IN ONE TERM AND OF COURSE IT TAKES TIME FOR THOSE THINGS TO SHOW IN RESULTS BUT WE'VE MADE A START AND I BELIEVE WE'RE BEGINNING TO SEE A RISING OPTIMIS M BECAUSE THE THINGS WE HAVE DONE ARE ENABLING PEOPLE OF GREAT TALENT AND ABILITY THE BETTER TO DEVELOP THE RESOURCES THAT WE HAVE IN THIS COUNTRY. I HOPE YOU'LL AGREE WITH ME THAT THE DAY HAS BEEN A GREAT SUCCESS, AS WELL AS BEING ENJOYABLE AND REWAFDING. I HOPE YOU WILL AGREE THAT WE SHOULD FOLLOW IT UP, I BELIEVE WE HAVE THE RIGHT INSTITUTIONS AND ORGANISATIONS BUT OF COURSE THEY WON'T WORK UNLESx INDIVIDUALS TAKE ADVANTAGE OF ALL THE MANY OPPORTUNITIES THEY REPRESENT. I THINK THIS VERY SEMINAR ITSELF HAS BEEN JUST SUCH AN OPPORTUNITY AND THAT MANY PEOPLE MAY HAVE MET HERE TODAY WHO HAVE NOT MET BEFORE. WE WILL THEREFORE TRY TO GET TOGETHER AT MY LEVEL AND WITH DR. NICHOLSON, TO SEE HOW WE CAN HAVE, IF NOT ANOTHER ONE OF THESE ₹UICKLY, HAVE PERHAPS SMALLER GROUPS TO FOLLOW UP THE MANY POINTS WHIC H YOU'VE GIVEN US. I STRESS THE POINT OF THE SEMINAR IS POSITIVE FROM THE BEGINNING TO ENABLE US ALL TO DO TWO THINGS, TO CREATE NEW BUSINESS AND INDUSTRY AND TO EXPAND EXISTING BUSINESS AND INDUSTRY AND AS PROFESSOR KINGMA N SAID, ALWAYS, BECAUSE MANY OF US ARE SCIENTISTS, TO REACH OUT TO THE UNKNOWN, TO TRY TO UNLOCK THE SECRETS OF NATURE WHICH WE HAVE NOT YET SOLVED AND TO TRY ALWAYS TO MEET THE CHALLENGE OF OUR TIMES WHICH IS THE CREATION OF NEW WEALTH AND NEW BUSINESS.

THANK YOU VERY MUCH ALL FOR COMING AND A SAFE JOURNEY HOME.

W.0577 9 September 1983

PRIME MINISTER

SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

The origin of this seminar was the biassed and doom-laden BBC Horizon programme broadcast earlier this year. Of course this is not known to delegates although probably some have guessed.

2. Following the election, the seminar was deliberately aimed at the creation of wealth from science and technology in order to "create an economy which provides stable prices, lasting prosperity and employment for our people". This information was sent out with all invitations.

3. The response to requests to speak has been 100 per cent and the response to invitations about 90 per cent with most of those refusing having unavoidable commitments abroad. There have been many requests for invitations and, on advice from Departments, these have been met up to the limit of the accommodation in Lancaster House.

4. There has been real enthusiasm for the subject of the seminar from industry and from the city although some delegates have ideas which are different from those of the Government as to how to achieve the common aim. These differences of opinion will come out in the formal papers and, probably to a greater extent, from the floor in the discussion periods.

5. Many of the academics will arrive at the seminar in a less enthusiastic frame of mind as a result of the UGC cuts and the financial problems of some of the Research Councils. There is unlikely to be much sympathy with their perceived problems from industry or the city and a lively discussion could ensue.

6. There has been some comment on the difficulty of having a serious discussion on wealth creation from science and technology in the presence of the press and TV. Inevitably there will be different approaches to the need to balance serious discussion with PR but I doubt that any major problems will arise.

7. The attendance comprises roughly 100 industry, 40 city, 60 academics and 50 government and civil service. There is a good spread of age, experience and background and plenty of people with something to say in discussion.

8. In the handling notes, I have given you some names of people who have been warned you may call on them in discussion. On the whole, though, my advice would be to have an unscripted discussion and if one of the sectors, eg the academics criticise another eg industry, to call on the attacked sector to reply.

9. Attached are:

Programme of the Seminar	(Flat A)
Top Table Seating Plans	(Flag B)
Handling notes	(Flag C)
List of Participants	(Flag D)
Summary of relevant reports	(Flag E)

RBN

ROBIN B NICHOLSON
Chief Scientific Adviser

cc: Mr Flesher
PS/Mr Parkinson
PS/Sir Keith Joseph
PS/Mr Heseltine
PS/Mr Baker
Sir Robert Armstrong

Flags B & C only

Cabinet Office
9 September 1983

10 DOWNING STREET

SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY
AT LANCASTER HOUSE, ST JAMES'S
ON MONDAY, 12 SEPTEMBER 1983

Please find enclosed a parking permit, Seminar programme, guidance notes and floor plan of Lancaster House for the above Seminar.

You will also require the admission ticket already issued to you at the time of invitation.

SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY:

12 SEPTEMBER 1983 AT LANCASTER HOUSE

NOTES FOR ATTENDEES

Car Parking

Enclosed is a car parking permit to the Mall Horse Ride which should be displayed on the front windscreen of your vehicle. Instructions on how to approach Lancaster House are printed on the reverse of the permit. If you are to be collected by chauffeur at the close of the Seminar your vehicle will be paged in the parking area when you report to the front hall.

Admission and Registration

On arrival please present your admission ticket (issued with invitation) to the security officer at the main entrance and report immediately to the registration desk in the main hall.

The Seminar

All sessions will be held in the Long Gallery on the first floor of the building. Please allow sufficient time before the start of the opening address to locate the seat number allocated to you at the time of registration.

Although some speakers will make use of visual aids we regret it is not possible to offer this facility to contributors from the floor during the discussion.

Refreshments

Coffee and Tea will be served in the State Dining Room on the ground floor of Lancaster House. A buffet style luncheon will be provided in the garden marquee, and access to this is through the State Dining Room. The timing of these events is shown on the enclosed programme.

First Aid

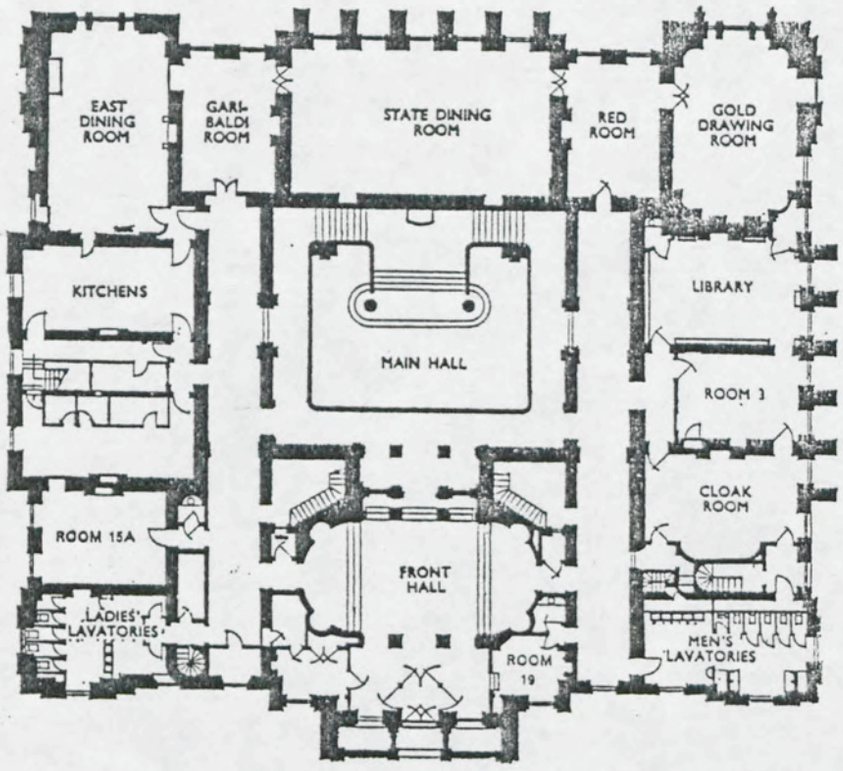
Qualified medical assistance will be available in the first aid room adjacent to the Ladies Cloakroom on the ground floor. In the event of difficulty please contact the Conference Liaison Officer (Mr Spence) in the East Ante Room on the First Floor.

Telephones

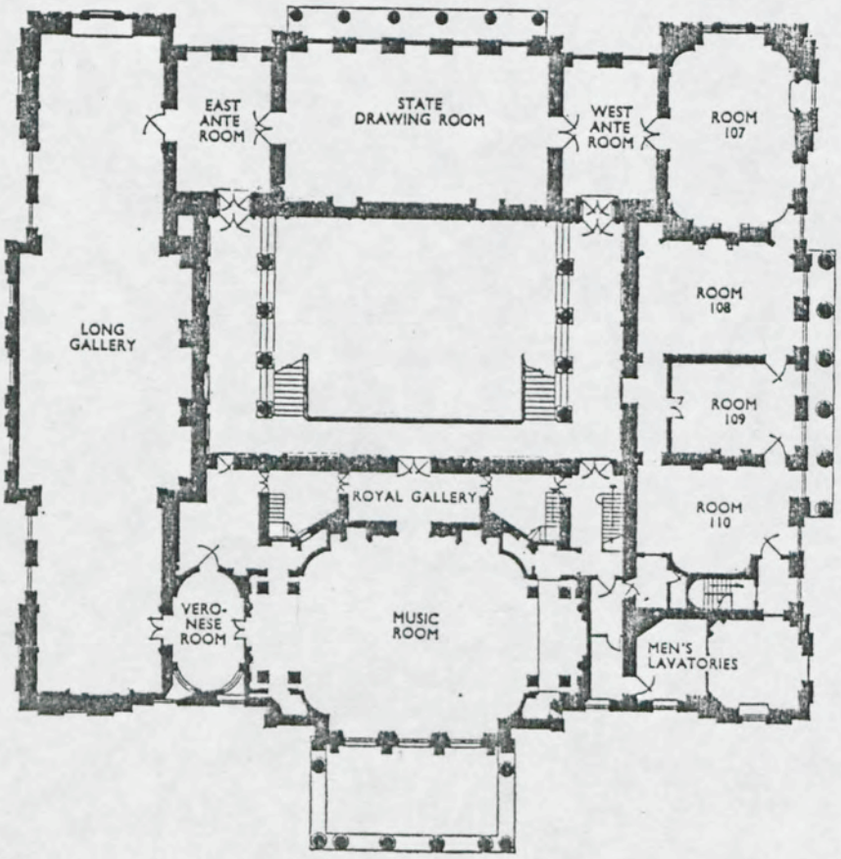
Four telephone booths are situated in the corridor between the Veronese and Music rooms. However, you are asked to restrict use of this facility to genuinely important calls.

LANCASTER HOUSE, ST JAMES'S

GROUND FLOOR



FIRST FLOOR



SEMINAR ON "SCIENCE, TECHNOLOGY AND INDUSTRY"

Monday, 12 September 1983: Lancaster House

Chairman: THE PRIME MINISTER

09.15 - 10.00 Registration and Coffee

10.00 Introduction: The Prime Minister

SESSION I: INNOVATION THROUGH RESEARCH AND DEVELOPMENT

10.20 INNOVATION IN LARGE COMPANIES

Lord Weinstock, Managing Director, General Electric Company plc
Mr J H Harvey-Jones, Chairman, Imperial Chemical Industries plc

10.50 PROCUREMENT AND INNOVATION

The Rt Hon Michael Heseltine MP, Secretary of State for Defence

11.05 Discussion

11.30 THE ROLE OF THE UNIVERSITY IN INDUSTRIAL INNOVATION

Sir Rex Richards, Warden, Merton College, Oxford

11.45 INNOVATION IN SMALL COMPANIES

Sir Clive Sinclair, Chairman, Sinclair Research Ltd.
Mr D K Duckworth, Chairman and Chief Engineer, Cosworth Engineering Ltd.

12.15 Discussion

12.40 SUMMARY

Sir Henry Chilver, Chairman, Advisory Council for Applied Research and Development

12.50 Lunch

SESSION II: STIMULATION AND FINANCING OF INNOVATION

14.00 STIMULATION OF INNOVATION BY GOVERNMENT

Mr Kenneth Baker MP, Minister of State for Industry and Information Technology

14.15 TECHNOLOGY TRANSFER

Mr D Downs, Chairman and Managing Director, Ricardo Consulting Engineers plc

14.30 FINANCING OF INNOVATION

Lord Caldecote, Chairman, Investors in Industry plc
Mr D J S Cooksey, Managing Director, Advent Ltd.

15.00 Discussion

15.25 Tea

SESSION III: MAINTAINING THE STRENGTH OF THE SCIENCE BASE

15.40 THE ROLE OF GOVERNMENT

The Rt Hon Sir Keith Joseph MP, Secretary of State for Education and Science

15.55 THE ROLE OF INDUSTRY

Sir Geoffrey Allen, Technical Director, Unilever plc

16.10 THE ROLE OF THE RESEARCH COUNCIL

Prof J F C Kingman, Chairman, Science and Engineering Research Council

16.25 Discussion

16.50 SUMMARY

The Rt Hon Cecil Parkinson MP, Secretary of State for Trade and Industry

17.00 CONCLUDING REMARKS: The Prime Minister

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11.05 Discussion

11.30 THE ROLE OF THE UNIVERSITY IN INDUSTRIAL INNOVATION

Sir Rex Richards, Warden, Merton College, Oxford

11.45 INNOVATION IN SMALL COMPANIES

Sir Clive Sinclair, Chairman, Sinclair Research Ltd.
Mr D K Duckworth, Chairman and Chief Engineer, Cosworth Engineering Ltd.

12.15 Discussion

12.40 SUMMARY

Sir Henry Chilver, Chairman, Advisory Council for Applied Research and Development

12.50 Lunch

SESSION II: STIMULATION AND FINANCING OF INNOVATION

14.00 STIMULATION OF INNOVATION BY GOVERNMENT

Mr Kenneth Baker MP, Minister of State for Industry and Information Technology

14.15 TECHNOLOGY TRANSFER

Mr D Downs, Chairman and Managing Director, Ricardo Consulting Engineers plc

14.30 FINANCING OF INNOVATION

Lord Caldecote, Chairman, Investors in Industry plc
Mr D J S Cooksey, Managing Director, Advent Ltd.

15.00 Discussion

15.25 Tea

SESSION III: MAINTAINING THE STRENGTH OF THE SCIENCE BASE

15.40 THE ROLE OF GOVERNMENT

The Rt Hon Sir Keith Joseph MP, Secretary of State for Education and Science

15.55 THE ROLE OF INDUSTRY

Sir Geoffrey Allen, Technical Director, Unilever plc

16.10 THE ROLE OF THE RESEARCH COUNCIL

Prof J F C Kingman, Chairman, Science and Engineering Research Council

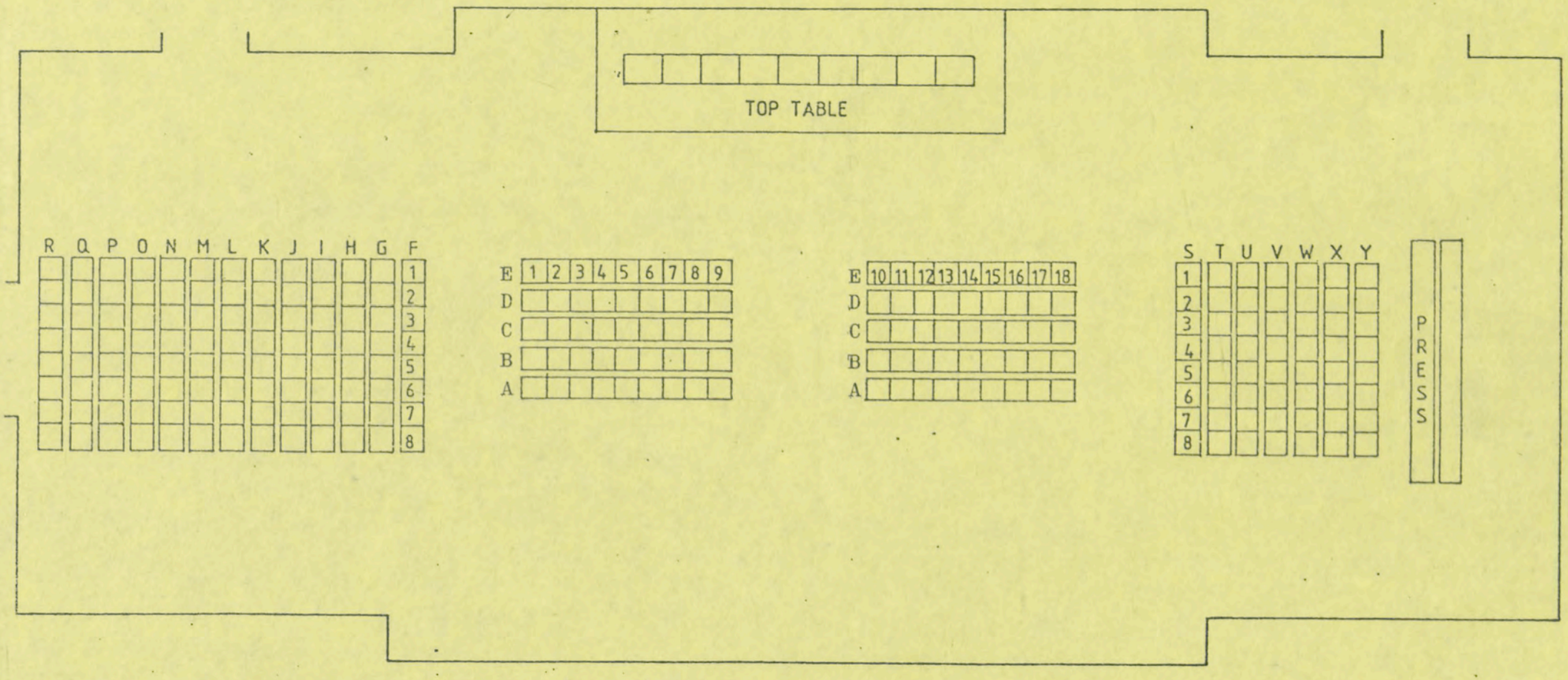
16.25 Discussion

16.50 SUMMARY

The Rt Hon Cecil Parkinson MP, Secretary of State for Trade and Industry

17.00 CONCLUDING REMARKS: The Prime Minister

LONG GALLERY LANCASTER HOUSE



JOURNALISTS ATTENDING SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY ON 12 SEPTEMBER 1983

JOURNALISTS ATTENDING ALL DAY

NAME	PAPER
TIM BEARDSLEY	NATURE
ADRIAN BERRY	DAILY TELEGRAPH
RICHARD BROOKS	SUNDAY TIMES
IAN CARSON	THE ECONOMIST
CLIVE COOKSON	THE TIMES
JOHN DELIN	SUNDAY TELEGRAPH
DAVID FISHLOCK	FINANCIAL TIMES
PAUL FLATHER	THE TIMES HIGHER EDUCATIONAL SUPPLEMENT
MIKE HARRISON	ENGINEER MAGAZINE
ROS HERMAN	NEW SCIENTIST
ANTONIA HIGGS	IRN/LBC
PETER LARGE	THE GUARDIAN
LAWRENCE MCGINTY	ITN
ROBIN MCKIE	THE OBSERVER
MICHAEL SCHWARZ	FREELANCE CORRESPONDENT
DAVID THOMAS	NEW SOCIETY
GEOFFREY WAREHAM	BBC RADIO
JAMES WILKINSON	BBC TV
RICHARD WOODMAN	PRESS ASSOCIATION

JOURNALISTS ATTENDING PRIME MINISTER'S ADDRESS

NAME	PAPER
JOSEPHINE ADAMS	EDUCATIONAL COMPUTING
IAN AITKEN	THE GUARDIAN
RONALD BEDFORD	DAILY MIRROR
CYRIL BIRKS	FOREIGN PRESS ASSOCIATION
GEORGE BLACK	COMPUTER WEEKLY
DAVID BUCHAN	DAILY STAR
ROBERT CARVILL	THE STANDARD
TREVOR CAVANAGH	THE SUN
JOHN DESBOROUGH	DAILY MIRROR
CLAIRE DOVER	DAILY EXPRESS
JACK ENSOLL	POLITICAL CORRESPONDENT, COI.
MIKE FARISH	DRAFTING AND DESIGN
JOHN FISHER	SHEFFIELD TELEGRAPH
JOHN HEFFERMAN	UNITED NEWSPAPERS
PETER HILL	BRITISH TECHNOLOGY GROUP
JEREMY KENYON	MICRO FORECAST
SIMON KEYS	ECONOMIST INTELLIGENCE UNIT
WILFRED KRATZ	DIE WELT
SUSAN LLOYD	VENTURE ECONOMICS
CHRIS MONCRIEFF	PRESS ASSOCIATION
STELLA MUMMERY	COI
JAMES NAUGHTIE	THE SCOTSMAN
ROBIN OAKLEY	DAILY MAIL
TONY OSMAN	SUNDAY TIMES MAGAZINE
MARGARET PARK	COMPUTER TALK
PETER RIDDELL	FINANCIAL TIMES
MARTIN SHERWOOD	CHEMISTRY AND INDUSTRY
JON SPIVAK	WALL STREET JOURNAL
REX MALIK	INTERMEDIA

NAME	PAPER
RICHARD STEVENSON	CHEMISTRY IN BRITAIN
PAT SWEET	COMPUTING
ANDREW TANK	TECHNOLOGY MAGAZINE
JOHN WARDEN	DAILY EXPRESS
JAMES WIGHTMAN	DAILY TELEGRAPH
ALAN WILLIAMS	BRITISH BUSINESS
FRITZ WORTH	DIE WELT

SUPPORT, TECHNICAL STAFF AND PHOTOGRAPHERS

PAUL BEACHCROFT	MPO PRESS OFFICE
DENNIS BRENNAN	LOCATION LIGHTING
E HAMILTON WEST	PHOTOGRAPHER, THE GUARDIAN
JOHN HILTON	SENIOR PRESS OFFICER, MPO
DAVID JONES	PHOTOGRAPHER, PRESS ASSOCIATION
BARRY LANCHESTER	BBC TV
MICHAEL PATTISON	PHOTOGRAPHER, DAILY TELEGRAPH
JOHN PERRY	PHOTOGRAPHER, COI
TOM PHILLIPS	CAMERA, ITN
JOHN SHARMAN	SOUND, ITN
CLIVE STEVENS	BBC TV
JOHN STUBBS	HEAD OF INFORMATION, MPO
JOHN VOOS	PHOTOGRAPHER, THE TIMES
SHEENAGH WALLACE	PRESS OFFICE, NO.10 DOWNING STREET
	PHOTOGRAPHER, FINANCIAL TIMES

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

LANCASTER HOUSE, ST JAMES'S

Monday, 12 September 1983

LIST OF PARTICIPANTS

ADLER, A G F	Director, BHRA Fluid Engineering
ALDRICH, M J	Managing Director, Rediffusion Computers Ltd.
ALEKSANDER, Professor I	Brunel University
ALLAM, Dr D	Chief Executive, Prutec
ALLEN, Sir Geoffrey	Director of Research, Unilever plc
ALUN JONES, D	Managing Director Ferranti plc
ALVEY, J	Engineer in Chief Development and Procurement, British Telecom
ANSON, J	Deputy Secretary HM Treasury
ARMSTRONG, Sir Robert	Secretary of the Cabinet Cabinet Office
ASH, Professor E A	Department of Electronics and Electrical Engineering, University College, London
ASHWORTH, Professor J M	Vice Chancellor, University of Salford
ATKINSON, Dr H H	Director, Science, Science and Engineering Research Council

BAKER, Kenneth MP	Minister of State, DTI
BARRON, Professor Iann	Director, Inmos Ltd
BATISTE, Spencer MP	Member of Parliament
BECKETT, Sir Terence	Director-General, CBI
BEESLEY, I	Cabinet Office
BEEVOR, J	Managing Director, Industrial Finance Division, Midland Bank
BIDE, Sir Austin	Chairman, Glaxo Holdings plc
BIRCHALL, Dr J D	Senior Research Associate, Imperial Chemical Industries plc
BIRKS, Dr J	Chairman, NMI Ltd
BISHOP, Professor R E D	Vice Chancellor, Brunel University
BLACKWELL, Sir Basil	Chief Executive, Westland Group of Companies
BONDI, Sir Herman,	Chairman, NERC
BRABEN, Dr B	Head of Venture Research Unit, British Petroleum Group
BRENNER, S	MRC Laboratory of Molecular Biology Cambridge
BRISCOE, E	Managing Director, Doulton Industrial Products Ltd
BROADBENT, Dr D	Department of Phychology, University of Oxford
BROOKE, Hon Peter MP	Parliamentary Under Secretary of State, DES
BRYANT, Professor S J	Department of Physics Hull University
BULLOCK, M	Corporate Finance Director Barclays Bank International Ltd
BURGESS, Dr G H O	Chief Scientist (Agriculture) MAFF
BURNETT, Professor J	Vice Chancellor University of Edinburgh

BUTCHER, Dr J B

Head of Electronics
Micro Electronics Centre
Middlesex Polytechnic

BUTLER, Sir Clifford

Vice Chancellor
University of Technology
Loughborough

CADBURY, P G	Corporate Finance Director Morgan Grenfell & Co Ltd
CAINES, J	Deputy Secretary, DTI
CALDECOTE, Viscount	Chairman, Investors in Industry plc
CAMPBELL CLOUSTON, D	Director, Science Parks Ltd
CARMICHAEL, P	Head of Small Businesses Division Scottish Development Agency
CASTLE, Dr	Chief Executive, MTI Managers Ltd
CHALLIS, Dr A A L,	Chief Scientist Department of Energy
CHAPPELL, E P	Vice Chairman, Morgan Grenfell Holdings Ltd
CHIENE, J	Senior Partner, Wood Mackenzie & Co
CHILVER, Sir Henry	Chairman, Council for Applied Research and Development
CHORLEY, F	Deputy Chairman and Managing Director The Plessy Co Ltd
CLEREHUGH, G	Director, Research and Development Division British Gas Corporation
CLIVE, C	Joint Managing Director, Thompson Clive & Partners Ltd
COHEN, I H	Managing Director, Mullard Ltd
COHEN, R	Managing Director Alan Patricof Associates
COLBURN, O H	Chairman, Consultative Board, Joint Consultative Organisation, MAFF
COLE, Professor R	Deputy Chief Scientist, DHSS
COLLYEAR, J G	Chairman, AE plc
COOKSEY, Dr D J S	Managing Director, Advent Management Ltd
COPESTAKE, Dr B	Deputy Chief Scientific Officer DTI
CORFIELD, Sir Kenneth	Chairman, Standard Telephones and Cables plc

COTSON, Dr S	Deputy Director Leicester Polytechnic
COURTNEY, R	Deputy Chief Scientific Officer Cabinet Office
COWGILL, A	Director, British Management Data Foundation
CRAWFORD, Professor F W	Vice-Chancellor University of Aston in Birmingham
CROFT, R	Deputy Secretary DTI

DAINTON, Sir Frederick	Chairman, National Radiological Protection Board
DAVIDSON, Professor J F	Department of Chemical Engineering University of Cambridge
DAVIES, C A	Managing Director Information Technology Ltd (ITL)
DAVIES, Dr D	Consultant with DTI, ex Chief Scientist and Engineer, DOI
DAVIES, Professor D E N	Department of Electrical and Electronic Engineering, University College, London
DAVIES, Dr G A O	Department of Aeronautics, Imperial College of Science and Technology
DAVIES, Professor G J	Department of Metallurgy University of Sheffield
DAVIES, Dr P	Adviser Cabinet Office
DILLAMORE, Dr I L	Director of Technology, Inco Alloy Products Ltd
DOLLIMORE, G	Chairman Hunting Engineering Ltd
DOWNS, D	Chairman, Ricardo Consulting Engineers plc
DREW, D	Sales Director Norman Magnetic Ltd
DUCKWORTH, D K	Chairman and Chief Executive, Cosworth Engineering Ltd
DUCKWORTH, W E	Managing Director, Fulmer Research Institute
DURHAM, K	Chairman, Unilever plc
DYKE, J R	Director, Sension Ltd

EDELMAN, DR J	Director, Research Centre Rank Hovis McDougall
EDGE, G	Chief Executive P A Technology
EDWARDS, Sir Sam	Department of Physics, University of Cambridge
EGGINTON, A J	Director, Engineering, Science and Engineering Research Council
ELTON, Dr G A H	Chief Scientist (Fisheries & Food) MAFF

FAIRCLOUGH, J W	Director, IBM(UK) Ltd
FAIRTLOUGH, G	Managing Director Celltech Ltd
FIELDING, C C,	Controller R & D Establishments MOD
FINNISTON, Sir Monty	Chairman, Future Technology Systems
FLESHER, T	Private Secretary 10 Downing Street
FORD, Professor Sir Hugh	Chairman, Ford & Dain Partners Ltd
FORREST, Professor A P M	Chief Scientist, Scottish Home & Health Department (Prof. Clinical Surgery, Univ of Edinburgh)
FOWDEN, Sir Leslie	Director Rothamsted Experimental Station

GAMBLING, Professor W A	Department of Electronics University of Southampton
GIBB, F	Chairman and Managing Director Taylor Woodrow Construction
GIROLAMI, P	Chief Executive Glaxo Holdings plc
GODFREY, M	Second Secretary MRC
GOTLEY, P	Managing Director Neotronics Ltd
GOWANS, Sir James	The Secretary Medical Research Council
GRANT, K	Director, The Design Council
GRAY, A J	Chief Executive, Cogent Ltd
GREGSON, Lord	Director, Fairey Holdings plc

HALL, A V	Investment Manager Shell Pension Fund
HALL, G R	Director, Brighton Polytechnic
HAMMOND, E A B	Executive Councillor, EETPU
HANCOCK, D J	Permanent Secretary, DES
HARRISON, Sir Ernest	Chairman, Chief Executive Racal Electronics plc
HARTLEY, Professor B S	Director, Centre for Biotechnology, Imperial College of Science and Technology, London
HARVEY JONES, J	Chairman, ICI plc
HAUSER, Dr H	Managing Director, Acorn Computers Ltd
HAYES, Sir Brian,	Permanent Secretary, DTI
HESELTINE, Rt Hon Michael	Secretary of State, MOD
HILLS, Dr G J	Principal, University of Strathclyde
HILSUM, Dr C	Chief Scientist, GEC Laboratories
HIRSCH, Sir Peter	Chairman, UKAEA
HOARE, Professor C A R	Computing Laboratory University of Oxford
HOLDGATE, Dr M,	Chief Scientist, DoE
HOLLAND, Professor I B	Director of Bio-Centre University of Leicester
HOLROYDE, G V	Director, Lanchester Polytechnic, Coventry
HORLOCK, Dr J H	Vice Chancellor, Open University
HOWARTH, Dr E A	Director Management Control Systems
HUGHES, Dr J E	Chairman, Johnson Matthey plc
HUGHES, P	Chairman, Logica plc

JAMES, Dr A T	Head of Bioscience Research Division Unilever Research Laboratory
JEFFERSON, Sir George	Chairman, British Telecom
JELLICOE, Rt Hon Earl	Chairman Medical Research Council
JOHNSTON, Dr T L	Principal, Heriot-Watt University
JONES, CS	Chief Manager, Lloyds Bank Business Advisory Service
JOSEPH, Rt Hon Sir Keith	Secretary of State DES

JAMES, Dr A T	Head of Bioscience Research Division Unilever Research Laboratory
JEFFERSON, Sir George	Chairman, British Telecom
JELLICOE, Rt Hon Earl	Chairman Medical Research Council
JONES, CS	Chief Manager, Lloyds Bank Business Advisory Service
JOSEPH, Rt Hon Sir Keith	Secretary of State DES

KELLY, Dr A	Vice Chancellor University of Surrey
KIMBERLEY, M J	Managing Director Lotus Cars Ltd
KING, C S	Deputy Chairman, BL Technology
KINGMAN, Professor, J F C	Chairman, Science and Engineering Research Council
KORNBERG, Professor Sir Hans	Dept of Biochemistry, University of Cambridge

LANG, H	Chairman P E International Ltd
LAW, Dr H D	President Portsmouth Polytechnic
LAWRENSON, Professor P J	Department of Electrical and Electronics Engineering, University of Leeds
LEE, J MP	PPS Secretary of State for DTI
LEONARD, Dr J	Chairman, Joint Managing Director Eurotherm International Ltd
LETWIN, O	Policy Unit 10 Downing Street
LEWIS, Professor Sir Jack	Department of Chemistry University of Cambridge
LIGHTHILL, Sir James	Provost, University College, London
LILLY, Professor M D	Department of Chemical and Biochemical Engineering University College
LINDLEY, Dr B C	Technical Director, Dunlop Holdings plc
LYGO, Admiral Sir Raymond	Managing Director British Aerospace plc

McCASKIE, J C	Technical Director, Baker Perkins Ltd
McCULLOCH, Dr J S G	Director Institute of Hydrology
MACDONALD, K C	Deputy Secretary (Policy) Procurement Executive, MOD
MACFARLANE, Sir George	Board Member, British Telecom
McGREGOR, P	Industrial Director NEDO
MACKENZIE, J	Managing Director, BSC Plates
MADDOCK, Sir Ieuan	Chairman, Fulmer Research Institute
MALLINSON, W	Managing Director, Smiths Industries plc
MANZIE, A G,	Deputy Secretary DTI
MARSHALL, Sir Walter	Chairman, Central Electricity Generating Board
MASON, Sir John	Director, Meteorological Office
MASON, Professor Sir Ronald	Dept. of Chemistry, University of Sussex
MATHIAS, Professor P	Chichele Professor of Economics All Souls College, Oxford
MAUNDER, Professor L	Department of Mechanical Engineering University of Newcastle upon Tyne
MAWSON, A	Director, Innvotec Ltd
MELLOR, C I	Director, Metal Box plc
MELLOR, R W	Vice President, Power Engineering Ford of Europe
MERCER, Dr F B	President, Netlon Ltd
MERRISON, Sir Alec	Vice Chancellor, University of Bristol

MICHAEL, P C	Deputy Chairman, United Engineering Industries plc
MILLER, Dr K A G	Director-General, Engineering Council
MOFFIT, J	E Moffit & Son
MOORE, J MP	Economic Secretary HM Treasury
MORRIS, J R S	Chairman, Brown & Root (UK) Ltd
MORRISON, The Hon Sara	Director, GEC plc
MOWAT, J F	Managing Director, Anderson Strathcyde Ltd
MUIR WOOD, Sir Alan	Senior Partner, Sir William Halcrow & Partners

NEEDHAM, Professor, R M	Computer Laboratory University of Cambridge
NEWTON, A	Engineering Director Rolls Royce Ltd
NEWTON, Antony MP	Parliamentry Under Secretary of State, DHSS
NICHOLSON, Dr R B	Chief Scientific Adviser Cabinet Office
NOBLE, A S	Managing Director Debenhams plc
NORMAN, Professor R O C,	Chief Scientific Adviser MOD

OAKLEY, B W	Alvey Directorate DTI
OLIVER, Dr D S	Technical Director Pilkington Bros plc
OTTON, Sir Geoffrey	Second Permanent Secretary DHSS

PARKINSON, Rt Hon Cecil	Secretary of State DTI
PASCALL, D	Policy Unit, 10 Downing Street
PEARCE, Sir Austin	Chairman, British Aerospace plc
PERRY, D H	Chief of Defence Procurement MOD
PETERS, R	Director, Murray Johnstone Ltd
PHILLIPS, Professor Sir David	Chairman, Advisory Board for the Research Councils
POPE, Dr G G	Deputy Controller and Adviser (Research and Technology), MOD
PORTILLO, M	Adviser to the Secretary of State for Trade and Industry
POSNER, M	Chairman Social Science Research Council
POUNDS, Professor K A	Director X-ray Astronomy Group Department of Physics University of Leicester

RAINGER, P	Deputy Director of Engineering, BBC
RAWLINSON, Sir Anthony,	Permanent Secretary DTI
REASBECK, Dr P	Chief Scientist and Director of Research, Lucas Group Services Ltd
REECE, Dr C H	Technical Director, Imperial Chemical Industries plc
RICHARDS, Sir Rex	Warden, Merton College, Oxford
RICHMOND, Professor M	Vice Chancellor University of Manchester
RILEY, Dr R	Secretary Agricultural Research Council
ROBERTS, D H	Director of Research, General Electric Company plc
ROBERTS, Dr L E J	Director, Atomic Energy Research Institute
ROBERTSON, Dr A	Chairman, Agricultural Genetics Company
ROITH, O	Chief Engineer and Scientist DTI
ROTHERHAM, Dr L	Wolfson Foundation
ROTHSCHILD, Lord	Director, N M Rothschild & Sons Ltd

SALLABANK, L	Director, George Wimpey plc
SALTER, S H	Department of Mechanical Engineering University of Edinburgh
SCANLON, Lord	House of Lords
SCHOLAR M	10 Downing St.
SCHOLEY, D	Joint Chairman, S G Warburg & Co Ltd
SEGAL, N S	Partner, Segal Quince & Organisation
SELBORNE, Lord	Chairman Agricultural Research Council
SELSDON, Lord	Group Adviser for EEC Affairs, Midland Bank International (Finance)
SHARP, E	Chairman, Cable & Wireless
SINCLAIR, Sir Clive	Chairman, Sinclair Research Ltd
SMALL, B	Managing Director, Ingersoll Engineers Ltd
SMART, A	Director Royal Signals and Radar Establishment
SMITH, A E	Group General Manager, Management Services, Cable & Wireless
SMITH, Professor D C	Dept of Agricultural Science & Forest Science, University of Oxford
SMITH, Professor D	Director, Queen Mary College Industrial Research Ltd
SPACKMAN, Dr J	Director, Social Security Operational Strategy, DHSS
SPARROW, J	Director, Morgan Grenfell & Co Ltd
SPENCE, G B	Conference Officer Cabinet Office
SPICKERNELL, Admiral D G	Director General, British Standards Institution
SPREADBOROUGH, Dr J	Director John Spreadborough & Co Ltd
STERLING, J	Special Adviser to the Secretary of State for Trade and Industry

STEWART, Professor W D P	Department of Biological Sciences University of Dundee
STEVENSON, D	Partner, Specialist Research Unit Ltd
STREET, B	Managing Director, Air Products Ltd
SUGDEN, Sir Morris	Master, Trinity Hall, University of Cambridge
SUGGETT, Dr A	Managing Director, Smith & Nephew Research Ltd
SWINNERTON-DYER, Prof Sir Peter	Master, St Catherine's College, University of Cambridge

TAYLOR, G	Divisional Director, Investors in Industry plc
TELFORD, Sir Robert	Director, GEC plc
THATCHER, The Rt Hon Margaret MP	Prime Minister 10 Downing Street
THOM, I R M	Assistant Secretary DES
THOMAS, Professor J M	Department of Physical Chemistry, University of Cambridge
TODD, Lord	Past President The Royal Society
TOMBS, Sir Francis	Director, N M Rothschild & Sons Ltd

VANE, Dr J R	Group R & D Director, Wellcome Research Laboratories
VARMA, P	Chairman Greenfax Ltd

WADE, K R	Chairman PACTROL Electronics plc
WALDEGRAVE, Hon W MP	Parliamentary Under Secretary DoE
WALKER, D A	Executive Director, Bank of England
WARNER, P	Director Northern Engineering Industries plc
WARNES, B	Managing Director, Midland Bank Venture Capital Ltd
WEBB, T	National Officer, ASTMS
WEINSTOCK, Lord	Managing Director, General Electric Company plc
WHITMORE, Sir Clive	Permanent Secretary MOD
WILLIAMS, A	Under Secretary DTI
WILLOTT, W B	Chief Executive, British Technology Group
WILMOT, R W	Managing Director, International Computers Ltd
WOOD, Sir Frederick	Chairman, British Technology Group
WOOD, M	Deputy Chairman, Oxford Instruments Group Ltd

YOUNG, D	Chairman, Manpower Services Commission
YOUNG, R	Policy Unit, 10 Downing Street

ZUCKERMAN, Lord

Wolfson Foundation

SUPPORT STAFF

ABBOTT, Miss J	-	PSA Cleaner
ABBOTT, Mrs M	-	Government Hospitality (GH) Domestic
ADCOCK, M G	-	PSA Custody Guard
ADCOCK, M	-	GH Domestic Staff
ANDREWS, Graham	-	COI
ARMSTRONG, I	-	GH Butler
BALDWIN, Mrs M	-	GH Domestic Staff
BALL, D C	-	PSA Conference Section
BAWDEN, Miss J	-	Cabinet Office (Registration Clerk)
BEATIE, Mrs U	-	GH Caterer
BEER, Mrs June	-	GH Caterer
BIRD, Mrs Chris	-	GH Caterer
BOND, Mrs Doreen	-	GH Caterer
BOYCE, Mrs L	-	GH Domestic Staff
BOYCE, L V	-	GH Domestic Staff
BREARLEY, J	-	GH Butler
BURKE, J	-	GH Porter
BURNETT, Mrs Jean	-	GH Caterer
BUTLER, L	-	GH Delivery Driver
BYFORD, Tony	-	COI

Support Staff (cont'd)

CANNON, L	-	PSA Cleaner (Male toilets)
CARTER, Mrs Ruby	-	GH Caterer
CAWTHORNE, Gordon	-	Superintendent (No 10 Security)
CHAMPION, L	-	Fire Patrolman
COLES, J	-	PSA Cleaner (Male toilets)
COOPER, Raymond	-	GH Caterer
CUBITT, F	-	British Telecom engineer
DARNBROUGH, Dr Monica	-	Department of Trade & Industry
DAVIS, R	-	Fire Officer
DEAL, D J	-	PSA Custody Guard
DOY, Miss Judith	-	Civil Service Medical Advisory Service
DRAKE, Mrs Marie	-	GH Caterer
DUNKLEY, Gerry	-	COI
DYBALL, C	-	British Telecom engineer
EAST, Nigel	-	Department of Trade & Industry
EASTON, Mrs Barbara	-	GH Caterer
EASTON, Leslie	-	GH Caterer
EDGAR, Derek	-	Chief Inspector (No 10 Security)
EDWARDS, D	-	Fire Patrolman

Support Staff (cont'd)

FINLAYSON, W	-	Fire Patrolman
FOWLER, Mrs Doris	-	GH Caterer
FROST, A	-	PSA Supplies
FROST, P	-	British Telecom engineer
GAIR, Bob	-	COI
GILL, J	-	PSI Supplies
GILLESPIE, A	-	GH Domestic staff
GILLESPIE, Miss D	-	GH Domestic staff
GILLESPIE, H	-	GH Butler
GILLESPIE, Mrs M	-	GH Domestic staff
GINN, Ken	-	COI
GRACE, Trevor	-	COI
GREEN, A	-	PSA District Works Office
GREEN, F	-	GH Domestic staff
GREEN, F J	-	PSA Custody Guard
HANDLEY, D	-	GH Caterer (Management)
HARDING, Ulrich	-	COI
HARRIS, Mrs Pat	-	GH Caterer
HEMMINGTON, J	-	GH Office
HOOD, W	-	British Telecom engineer
JELLEY, Miss M	-	Prime Minister's Office

Support Staff (cont'd)

JOCE, Peter	-	No 10 Security
JOHNSON, Mrs Yvonne	-	GH Caterer
JONES, Mrs R	-	GH Caterer (Management)
KEANE, Mrs Anne	-	GH Caterer
KELLY, Mrs Eunice	-	GH Caterer
KINGSTON, Robert	-	Detective Constable (No 10 Security)
LEDWITH, Mrs Pat	-	GH Caterer
LOCKYER, C G	-	British Telecom engineer
MANSFIELD, J	-	GH Domestic staff
MARSH, M A	-	GH Caterer
MASON, Mrs Maria	-	GH Caterer
MILLER, S	-	PSA Messenger
MORGAN, Mrs Nancy	-	GH Caterer
MORGAN, R	-	GH Caterer (Management)
MORTONSON, Mrs Betty	-	GH Caterer
MOSCATIELLO, M	-	Florist
NEVARD, D	-	GH Butler
OAKDEN, Instructor J	-	London Ambulance Service
O'BRIAN, Mrs D	-	GH Domestic staff
O'CALLAGHAM, Mrs Evelyn	-	GH Caterer
PEARSE, John	-	Inspector (No 10 Security)
PHELAN, Miss C	-	PSA Cleaner
PORT, L	-	Florist

Support staff (cont'd)

RAGGOTT, S	-	British Telecom engineer
RENDALL, Instructor G	-	London Ambulance Service
ROBERTS, Mrs Sue	-	GH Caterer
ROLPH, Mrs Doris	-	GH Caterer
RUSSELL, Mrs E	-	PSA Messenger
SHARPE, R	-	GH Caterer
SIMPSON, A	-	COI
SMITH, A	-	PSA Conference Section
SMITH, Mrs J	-	Cabinet Office (Registration Clerk)
SMITH, Martin	-	COI
SMITH, T	-	GH Delivery Driver
SNELL, M E W	-	GH Office
SPENCE, G B	-	Cabinet Office (Conference Officer)
STEED, Mrs D	-	PSA Cleaner
STERLING, Miss Helen	-	GH Caterer
STILES, Reg	-	COI
TAYLOR, Mrs Eileen	-	GH Caterer
TAYLOR, K B	-	Fire Officer
TEAGUE, R	-	PSA Custody Guard
THOMAS, Derek	-	COI
THOMAS, Pat	-	COI
TURNER, J	-	GH Caterer

Support staff (cont'd)

UFFINGTON, Mark	-	COI
WAKEFORD, Alan	-	COI
WALTERS, Mrs Julie	-	GH Caterer
WARD, Mrs W	-	GH Caterer
WHARRAM, Mrs C G	-	Cabinet Office (Registration Officer)
WHEELER, Mrs Carol	-	GH Caterer
WILLIAMS, Gordon	-	GH Caterer
WILLIS, L F	-	PSA District Works Office
WILSON, Robert	-	GH Caterer
WRIGHT, Mrs E	-	PSA Cleaner
YOUNG, Miss G	-	GH Domestic Staff

N.B.

A further 2 porters from Government Hospitality will be present on Monday; their names are not yet available.

Vehicle registration numbers:

GH Delivery vehicle:	XND 589X
Caterers' vehicles:	KWP 562X MUU 291X EPU 40X - with trailer TEL 5X

Hired freezer van reg. number not yet known

Florist's vehicle: NGX 96W

SUMMARY OF RELEVANT REPORTS

1. Chilver/Merrison report published as Cmnd 8957 stressed the importance of choice in both basic and applied research and drew attention to the need to apply foreign R & D effectively as well as our own, the need for a receptive market for innovation and the need for an education system suited to a technological age.

2. Georgala report on Food Industry and Technology published by ACARD stressed market switch to processed food as distinct from agricultural materials. Expressed concern whether UK food processing industry is competitive in its technology. Criticised Joint Consultative Organisation (JCO) which consists of MAFF, ARC and DAFS) for not listening to the market needs for research.

3. JCO Consultative Board report criticised JCO organisation as costly, cumbersome and unsuited to modern research needs. Lord Rothschild wrote to you, agreeing with report.

4. H.C. Select Committee on Agriculture report rushed out before election and recommended a 'national strategy' on agricultural R & D. Repeated criticism of JCO Consultative Board on JCO organisation.

Government responses on 2,3 and 4 are being prepared by MAFF.

5. Gregson report (H.L. Select Committee on Science and Technology) emphasised the need for UK to have a vigorous and successful manufacturing sector. Recommended (a) more strategic guidance and financial assistance from Government (b) more managerial commitment to innovation (c) better University/industry links.

Government response to 5 is about to come out from Mr Parkinson. It agrees with Gregson's aims but disagrees with many of his methods especially more Government intervention.

6. Kelly report commissioned by DTI from the Fellowship of Engineering

looked at innovation in materials, stresssed the importance of materials as an enabling technology and the long time scale of innovation.

7. Maddock report from NEDO on civil exploitation of defence technology recommends use of 'brokers', more awareness and greater involvement of sub-contractors in defence projects.

8. Merrison report on University research concluded that UGC cuts had disproportionately affected research and Universities should redress the balance, also set up research committees to direct money to best areas of research in each University.

Government response was 'new blood' scheme for fresh academic posts.

9. Morris report on balance of Research Council research 'in-house' and in Universities recommended closer liaison between RC Institutes and Universities and the setting up of any new Institutes on University campuses.

10. Muir Wood report on University/Industry Links gave Universities the principal responsibility of better marketing of their skills with industry. It recommended an industrial 'seed corn' fund to reward Universities which win industrial research support with a greater share of UGC and Science Vote funds.

11. Strathcona report recommended that MoD research establishments should concentrate on research and MoD should place development work in industry.

MoD response accepted Strathcona which is being implemented.

12. Versailles Working Group report on Technology, Growth and Employment published as Cmnd 8818 originated with the 1982 Economic Summit. It stresses the importance of international links in science and the role of technology in providing new growth and new employment.

PR[redacted] MINISTER

SEMINAR: 'SCIENCE, TECHNOLOGY AND INDUSTRY'

The media will be well represented at Monday's seminar.

BBC and ITN camera crews will be present all day to cover for both news and feature programmes.

The leading specialist correspondents attending all day, including lunch, are listed at Annex A.

Several Lobby, technical and foreign correspondents will be present for your opening address, and can subsequently listen to a live audio relay of the proceedings in a nearby room.

About six still photographers will be present for your opening speech. During the day a COI photographer will take shots of the other main speakers.

We will give copies of your speech to the Lobby and to all the speakers, guests and press at the seminar.

On arrival at Lancaster House, Dr. Nicholson will meet you at the front entrance and conduct you up the main staircase and along to the Long Gallery on the first floor. A room has been set aside for your personal use.

At the entrance to the Gallery you turn left and take up your seat at the top table, with Mr Heseltine on your right and Dr. Nicholson on your left.

You may recall that the Gallery is decorated in cream and gilt. The large mirror above the ornate fireplace behind you will be covered with white net.

You will have a table top lectern and microphone. Six roving microphones will pick up the questions from the floor. The recording of the full proceedings will be transcribed later.

Three of the afternoon speakers will use two large projection screens, set at a height of 7 feet on either side of the top table.

Radio 4 'Today' would like to interview you, for their Monday morning programme, asking you what you hope the seminar will achieve. Bernard advises that you should not anticipate your opening speech which should stand alone as your exposition of the purpose of the exercise.

Sheenagh Wallace

SHEENAGH WALLACE
9 September 1983

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY
LANCASTER HOUSE - 12 SEPTEMBER 1983

SPECIALIST CORRESPONDENTS ATTENDING ALL-DAY SEMINAR

Peter Large, The Guardian
David Fishlock, Financial Times
Richard Brooks, Sunday Times
Robin McKie, Observer
John Delin, Sunday Telegraph
James Wilkinson, BBC Television
Lawrence McGinty, ITN/C4
Geoffrey Wareham, BBC Radio
Ros Herman, New Scientist
Tim Beardsley, Nature
David Thomas, New Society
Richard Woodman, Press Association
Antonia Higgs, IRN
Alan Massam, The Standard
Clive Cookson, The Times
Paul Flather, Times Higher Education Supplement
Ian Carson, The Economist
Michael Schwarz, Freelance Dutch correspondent
Michael Beckett, Daily Telegraph
Mike Harrison, The Engineer

cc: Mr Flesher

CABINET OFFICE

~~Central Policy Review Staff~~

70 Whitehall, London SW1A 2AS Telephone 01-233 7089

W.0576

9 September 1983

PS/Secretary of State for Education
and Science

DES
Elizabeth House.

PRIME MINISTER'S SEMINAR, 12 SEPTEMBER - LUNCHEON ARRANGEMENTS

I give below the names and organisations of the delegates who have been allocated to your Secretary of State's luncheon table on 12 Sept. Please note that there is no pre-set arrangement of individual seats at each table. Please also note that after a first course served at table, the remainder of the meal is obtained from a buffet table.

Copies with relevant table allocations go to the Private Secretaries of Mr Heseltine, Mr Parkinson, Mr Moore, Mr Baker, Mr Brooke and Mr Waldegrave; and to Sir Robert Armstrong, Sir Brian Hayes, Sir Anthony Rawlinson, Sir Clive Whitmore, Mr Hancock, Sir Geoffrey Otton, Mr Roith, Prof. Norman, Dr Holdgate, Dr Challis, Dr Elton, Prof. Cole and Sir David Phillips.

Table 1

Prime Minister	
Prof. J M Ashworth	University of Salford
Sir Henry Chilver	Cranfield Institute of Technology
Prof. J F C Kingman	SERC
Sir Alec Merrison	Bristol University
Lord Rothschild	
Sir Clive Sinclair	Sinclair Research
Dr J R Vane	Wellcome Research

RBN

ROBIN B NICHOLSON
Chief Scientific Adviser

W.0574 6 September 1983

MR T FLESHER, 10 Downing St.

PRIME MINISTER'S SEMINAR: LUNCHEON ARRANGEMENTS

The GHF has decided that the luncheon arrangements on Monday, 12 September will consist of 30 tables seating 9 at each table except for the Prime Minister's table which will seat 8. It seems sensible to allocate delegates to tables and I am therefore writing to ask whom you would like to have at the Prime Minister's table.

I enclose a copy of the up to date list of delegates. I envisage Government Ministers, Permanent Secretaries and Chief Scientists also "presiding" over tables and hence I am copying this letter to their Private Offices with a request for 8 names for people they would like sitting at their table, plus (to cater for any overlap) 3 reserves.

I would be grateful to have this information, by phone if necessary, by close of play on Wednesday, 7 September.

RBN

ROBIN B NICHOLSON
Chief Scientific Adviser

List of "tables":

The Prime Minister
Sir Keith Joseph
Mr Heseltine
Mr Parkinson
Mr Baker
Sir Brian Hayes
Sir Anthony Rawlinson
Mr Hancock
Sir Clive Whitmore
Mr Waldegrave
Mr Brooke
Mr Newton
Sir Robert Armstrong
Mr Roith
Dr Holdgate
Dr Challis
Prof. Norman
Prof. Cole
Dr Elton
Sir David Phillips

ADLER, A G F	Director, BHRA Fluid Engineering
ALDRICH, M J	Managing Director, Rediffusion Computers Ltd.
ALEKSANDER, Professor I	Brunel University
ALLAM, Dr D	Chief Executive, Prutec
ALLEN, Sir Geoffrey	Director of Research, Unilever plc
ALUN JONES, D	Managing Director Ferranti plc
ALVEY, J	Engineer in Chief Development and Procurement, British Telecom
ANSON, J	Deputy Secretary HM Treasury
ARMSTRONG, Sir Robert	Secretary of the Cabinet Cabinet Office
ASH, Professor E A	Department of Electronics and Electrical Engineering, University College, London
ASHWORTH, Professor J M	Vice Chancellor, University of Salford
ATKINSON, Dr H H	Director, Science, Science and Engineering Research Council

BAKER, Kenneth	Minister of State, DTI
BARRON, Professor Iann	Director, Inmos Ltd
BATISTE, Spencer	Member of Parliament
BECKETT, Sir Terence	Director-General, CBI
BEEVOR, J	Managing Director, Industrial Finance Division, Midland Bank
BIDE, Sir Austin	Chairman, Glaxo Holdings Ltd
BIRCHALL, Dr J D	Senior Research Associate, Imperial Chemical Industries plc
BIRKS, Dr J	Chairman, NMI Ltd
BISHOP, Professor R E D	Vice Chancellor, Brunel University
BLACKWELL, Sir Basil	Chief Executive, Westland Group of Companies
BONDI, Sir Herman,	Chairman, NERC
BRABEN, Dr B	Head of Venture Research Unit, British Petroleum Group
BRENNER, S	MRC Laboratory of Molecular Biology Cambridge
BRISCOE, E	Managing Director, Doulton Industrial Products Ltd
BROOKE, Hon Peter	Parliamentary Under Secretary of State, DES
BRYANT, Professor S J	Department of Physics Hull University
BULLOCK, M	Corporate Finance Director Barclays Bank International Ltd
BURGESS, Dr G H O	Chief Scientist (Agriculture) MAFF
BURNETT, Professor John	Vice Chancellor University of Edinburgh

BUTCHER, Dr J B	Head of Electronics Micro Electronics Centre Middlesex Polytechnic
BUTLER, Sir Clifford	Vice Chancellor University of Technology

CADBURY, P G	Corporate Finance Director Morgan Grenfell & Co Ltd
CALDECOTE, Viscount	Chairman, Investors in Industry plc
CASTLE, Dr Paul	Chief Executive, MTI Managers Ltd
CHALLIS, Dr A A L,	Chief Scientist, DEn
CHAPPELL, Philip	Vice Chairman, Morgan Grenfell Holdings Ltd
CHIENE, John	Senior Partner, Wood Mackenzie & Co
CHILVER, Sir Henry	Chairman, Council for Applied Research and Development
CHORLEY, F	Deputy Chairman and Managing Director The Plessy Co Ltd
CLEREHUGH, G	Director, Research and Development Division British Gas Corporation
CLIVE, C	Joint Managing Director, Thompson Clive & Partners Ltd
COHEN, I H	Managing Director, Mullard Ltd
COHEN, R	Managing Director Alan Patricof Associates
COLBURN, O H	Chairman, Consultative Board, Joint Consultative Organisation, MAFF
COLE, Professor R	Deputy Chief Scientist, DHSS
COLLYEAR, J G	Chairman, AE plc
COOKSEY, Dr D J S	Managing Director, Advent Management Ltd
COPESTAKE, Dr B	Deputy Chief Scientific Officer DTI
CORFIELD, Sir Kenneth	Chairman, Standard Telephones and Cables plc
COTSON, Dr S	Deputy Director Leicester Polytechnic

COURTNEY, R	Deputy Chief Scientific Officer Cabinet Office
CRAWFORD, Professor F W	Vice-Chancellor University of Aston in Birmingham
CROFT, Roy	Deputy Secretary DTI

DAINTON, Sir Frederick	Chairman, National Radiological Protection Board
DAVIDSON, Professor J F	Department of Chemical Engineering University of Cambridge
DAVIES, C A	Managing Director Information Technology Ltd (ITL)
DAVIES, Dr Duncan	Consultant with DTI, ex Chief Scientist and Engineer, DOI
DAVIES, Professor D E N	Department of Electrical and Electronic Engineering, University College, London
DAVIES, Dr G A O	Department of Aeronautics, Imperial College of Science and Technology
DAVIES, Professor G J	Department of Metallurgy University of Sheffield
DAVIES, Dr P	Adviser Cabinet Office
DILLAMORE, Dr I L	Director of Technology, Inco Alloy Products Ltd
DOLLIMORE, G	Chairman Hunting Engineering Ltd
DOWNS, D	Chairman, Ricardo Consulting Engineers plc
DREW, D	Sales Director Norman Magnetic Ltd
DUCKWORTH, D K	Chairman and Chief Executive, Cosworth Engineering Ltd
DURHAM, K	Chairman, Unilever plc
DYKE, J R	Director, Sension Ltd

EDELMAN, DR J	Director, Research Centre Rank Hovis McDougall
EDGE, G	Chief Executive P A Technology
EDWARDS, Sir Sam	Department of Physics, University of Cambridge
EGGINTON, A J	Director, Engineering, Science and Engineering Research Council
ELTON, Dr G A H	Chief Scientist (Fisheries & Food) MAFF

FAIRTLOUGH, G	Managing Director Celltech Ltd
FIELDING, C C,	Controller R & D Establishments MOD
FINNISTON, Sir Monty	Chairman, Future Technology Systems
FLESHER, T	Private Secretary 10 Downing Street
FORD, Professor Sir Hugh	Chairman, Ford & Dain Partners Ltd
FORREST, Professor A P M	Chief Scientist, Scottish Home & Health Department (Prof. Clinical Surgery, Univ of Edinburgh)
FOWDEN, Sir Leslie	Director Rothamsted Experimental Station

GAMBLING, Professor W A	Department of Electronics University of Southampton
GIBB, Frank	Chairman and Managing Director Taylor Woodrow Construction
GIROLAMI, P	Chief Executive Glaxo Holdings Ltd
GODFREY, M	Second Secretary MRC
GOTLEY, Paul	Managing Director Neotronics Ltd
GOWANS, Sir James	The Secretary Medical Research Council
GRANT, Keith	Director, The Design Council
GRAY, A J	Chief Executive, Cogent Ltd
GREGSON, Lord	Director, Fairey Holdings plc

HALL, A V	Investment Manager Shell Pension Fund
HALL, G R	Director Brighton Polytechnic
HAMMOND, E A B	Executive Councillor, EETPU
HANCOCK, D J	Permanent Secretary DES
HARRISON, Sir Ernest	Chairman, Chief Executive Racal Electronics plc
HARTLEY, Professor B S	Director, Centre for Biotechnology, Imperial College of Science and Technology, London
HARVEY JONES, J	Chairman, ICI plc
HAYES, Sir Brian,	Permanent Secretary, DTI
HESELTINE, Rt Hon Michael	Secretary of State, MOD
HILLS, Dr G J	Principal, University of Strathclyde
HILSUM, Dr C	Chief Scientist, GEC Laboratories
HIRSCH, Sir Peter	Chairman, UKAEA
HOARE, Professor C A R	Computing Laboratory University of Oxford
HOLDGATE, Dr M,	Chief Scientist, DoE
HOLLAND, Professor I B	Director of Bio-Centre University of Leicester
HOLROYDE, G V	Director, Lanchester Polytechnic, Coventry
HORLOCK, Dr J H	Vice Chancellor, Open University
HOWARTH, Dr E A	Director Management Control Systems
HUGHES, Dr J E	Chairman, Johnson Matthey plc
HUGHES, Philip (Afternoon arrival)	Chairman, Logica plc

JAMES, Dr A T	Head of Bioscience Research Division Unilever Research Laboratory
JEFFERSON, Sir George	Chairman, British Telecom
JELLICOE, Rt Hon Earl	Chairman Medical Research Council
JONES, CS	Chief Manager, Lloyds Bank Business Advisory Service
JOSEPH, Rt Hon Sir Keith	Secretary of State DES

KELLY, Dr Anthony	Vice Chancellor University of Surrey
KIMBERLEY, M J	Managing Director Lotus Cars Ltd
KING, C S	Deputy Chairman, BL Technology
KINGMAN, Professor, J F C	Chairman, Science and Engineering Research Council
KORNBERG, Professor Sir Hans	Dept of Biochemistry, University of Cambridge

LAW, Dr H D	President Portsmouth Polytechnic
LAWRENSON, Professor P J	Department of Electrical and Electronics Engineering, University of Leeds
LEE, J MP	PPS Secretary of State for DTI
LEONARD, Dr Jack	Chairman, Joint Managing Director Eurotherm International Ltd
LEWIS, Professor Sir Jack	Department of Chemistry University of Cambridge
LIGHTHILL, Sir James	Provost, University College, London
LILLY, Professor M D	Department of Chemical and Biochemical Engineering University College
LINDLEY, Dr B C	Technical Director, Dunlop Holdings plc
LYGO, Admiral Sir Raymond	Managing Director British Aerospace plc

McCASKIE, J C	Technical Director, Baker Perkins Ltd
McCULLOCH, Dr J S G	Director Institute of Hydrology
MACDONALD, K C	Deputy Secretary (Policy) Procurement Executive, MOD
MACFARLANE, Sir George	Board Member, British Telecom
McGREGOR, P	Industrial Director NEDO
MACKENZIE, J	Managing Director, BSC Plates
MADDOCK, Sir Ieuan	Chairman, Fulmer Research Institute
MALLINSON, W	Managing Director, Smiths Industries plc
MANZIE, A G,	Deputy Secretary DTI
MARSHALL, Sir Walter	Chairman, Central Electricity Generating Board
MASON, Sir John	Director, Meteorological Office
MASON, Professor Sir Ronald	Dept. of Chemistry, University of Sussex
MATHIAS, Professor P	Chichele Professor of Economics All Souls College, Oxford
MAUNDER, Professor L	Department of Mechanical Engineering University of Newcastle upon Tyne
MAWSON, A	Director, Innvotec Ltd
MELLOR, C I	Director, Metal Box plc
MELLOR, R W	Vice President, Power Engineering Ford of Europe
MERCER, Dr F B	President, Netlon Ltd
MERRISON, Sir Alec	Vice Chancellor, University of Bristol

MICHAEL, P C	Deputy Chairman, United Engineering Industries plc
MILLER, Dr K A G	Director-General, Engineering Council
MOFFIT, J	E Moffit & Son
MOORE, J MP	Economic Secretary HM Treasury
MORRIS, J R S	Chairman, Brown & Root (UK) Ltd
MOUNT, F	Head of Policy Unit 10 Downing Street
MOWAT, J F	Managing Director, Anderson Strathcyde Ltd
MUIR WOOD, Sir Alan	Senior Partner, Sir William Halcrow & Partners

NEEDHAM, Professor, R M	Computer Laboratory University of Cambridge
NEWTON, A	Engineering Director Rolls Royce Ltd
NEWTON, Antony	Parliamentry Under Secretary of State, DHSS
NICHOLSON, Dr R B	Chief Scientific Adviser Cabinet Office
NOBLE, A S	Managing Director Debenhams plc
NORMAN, Professor R O C,	Chief Scientific Adviser MOD

OAKLEY, B W	Alvey Directorate DTI
OLIVER, Dr D S	Technical Director Pilkington Bros plc

PARKINSON, Rt Hon Cecil	Secretary of State DTI
PEARCE, Sir Austin	Chairman, British Aerospace plc
PERRY, D H	Chief of Defence Procurement MOD
PETERS, Ross	Director, Murray Johnstone Ltd
PHILLIPS, Professor Sir David	Chairman, Advisory Board for the Research Councils
POPE, Dr G G	Deputy Controller and Adviser (Research and Technology), MOD
POSNER, Michael	Chairman Social Science Research Council
POUNDS, Professor K A	Director X-ray Astronomy Group Department of Physics University of Leicester

RAINGER, P	Deputy Director of Engineering, BBC
RAWLINSON, Sir Anthony,	Permanent Secretary DTI
REASBECK, Dr P	Chief Scientist and Director of Research, Lucas Group Services Ltd
REECE. Dr Charles H	Technical Director, Imperial Chemical Industries plc
RICHARDS, Sir Rex	Warden, Merton College, Oxford
RICHMOND, Professor Mark	Vice Chancellor University of Manchester
RILEY, Dr Ralph,	Secretary Agricultural Research Council
ROBERTS, D H	Director of Research, General Electric Company plc
ROBERTS, Dr L E J	Director, Atomic Energy Research Institute
ROITH, O	Chief Engineer and Scientist DTI
ROTHERHAM, Dr L	Wolfson Foundation
ROTHSCHILD, Lord	Director, N M Rothschild & Sons Ltd

SALLABANK, L	Director, George Wimpey plc
SALTER, S H	Department of Mechanical Engineering University of Edinburgh
SCANLON, Lord	House of Lords
SCHOLEY, D	Joint Chairman, S G Warburg & Co Ltd
SEGAL, N S	Partner, Segal Quince & Organisation
SELBORNE, Lord	Chairman Agricultural Research Council
SELSDON, Lord	Group Adviser for EEC Affairs, Midland Bank International (Finance)
SHARP, E	Chairman, Cable & Wireless
SINCLAIR, Sir Clive	Chairman, Sinclair Research Ltd
SMALL, B	Managing Director, Ingersoll Engineers Ltd
SMART, A	Director Royal Signals and Radar Establishment
SMITH, A E	Group General Manager, Management Services, Cable & Wireless
SMITH, Professor D C	Dept of Agricultural Science & Forest Science, University of Oxford
SMITH, Professor Derek	Director, Queen Mary College Industrial Research Ltd
SPACKMAN, Dr John	Director, Social Security Operational Strategy, DHSS
SPARROW, John	Director, Morgan Grenfell & Co Ltd
SPENCE, G B	Conference Officer Cabinet Office
SPICKERNELL, Admiral D G	Director General, British Standards Institution
SPREADBOROUGH, Dr J	Director John Spreadborough & Co Ltd
STERLING, J	Special Adviser to the Secretary of State for Trade and Industry

STEWART, Professor W D P	Department of Biological Sciences University of Dundee
STEVENSON, D	Partner, Specialist Research Unit Ltd
STREET, B	Managing Director, Air Products Ltd
SUGDEN, Sir Morris	Master, Trinity Hall, University of Cambridge
SUGGETT, Dr Alan	Managing Director, Smith & Nephew Research Ltd
SWINNERTON-DYER, Prof Sir Peter	Master, St Catherine's College, University of Cambridge

TAYLOR, Geoffrey	Divisional Director, Investors in Industry plc
TELFORD, Sir Robert	Director, GEC plc
THATCHER, The Rt Hon Margaret MP	Prime Minister 10 Downing Street
THOM, I R M	Assistant Secretary DES
THOMAS, Professor J M	Department of Physical Chemistry, University of Cambridge
TODD, Lord	Past President The Royal Society
TOMBS, Sir Francis	Director, N M Rothschild & Sons Ltd

VANE, Dr J R	Group R & D Director, Wellcome Research Laboratories
VARMA, P	Chairman Greenfax Ltd

WADE, K R	Chairman PACTROL Electronics plc
WALDEGRAVE, Hon W MP	Parliamentary Under Secretary DoE
WALKER, D A	Executive Director, Bank of England
WARNER, Philip	Director Northern Engineering Industries plc
WARNES, Brian	Managing Director, Midland Bank Venture Capital Ltd
WEBB, T	National Officer, ASTMS
WEINSTOCK, Lord	Managing Director, General Electric Company plc
WHITMORE, Sir Clive	Permanent Secretary MOD
WILLIAMS, A R	Under Secretary DTI
WILLOTT, W B	Chief Executive, British Technology Group
WILMOT, R W	Managing Director, International Computers Ltd
WOOD, Sir Frederick	Chairman, British Technology Group
WOOD, Martin	Deputy Chairman, Oxford Instruments Group Ltd

YOUNG, David — Chairman, Manpower Services Commission

ZUCKERMAN, Lord

Wolfson Foundation

4a. Other opportunities arise from the use of new technologies. In the world of commerce: modern computing and communications technology allow the exploitation of our skills in the provision of information - financial reports, text books and reference works, technical specifications - as a valuable commercial product attractively and conveniently packaged. Recently I handed over the millionth teletext set - up from 100,000 sets only 2 years ago and the highest market penetration in the world. The demand for these and other services will be further stimulated by the arrival of multi-channel cable systems.

13a. Of course Government must fund some research in support of its regulatory functions, some research in support of its procurement programmes (although not to the extent that supplies neglect their R & D responsibilities), and some basic science and engineering reseach at our Universities and Research Councils (but not to the exclusion of funding from industry and private foundatons).

22. Many of these people work in our Universities which is one of the reasons why I want to encourage closer collaboration between Universities and industry. Attitudes are much healthier than even five years ago, as the growth in science parks shows. We were not slow starters; the Heriot Watt Ricarton campus was the first of its kind in Europe and the Cambridge Science Park has drawn major companies as well as providing a home for new ones. However only recently have parks been begun elsewhere in any numbers. The need to speed up this improvement in attitudes is why I asked ACARD together with ABRC to look at collaboration between Universities and industry and we are now actively studying Sir Alan Muir Wood's recommendations.

23a. Too often those developing new ideas believe that starting the exploitation process is someone else's task. This attitude is found in universities, Government research establishments and even in some large industrial laboratories. As a result some major British inventions have been exposed, without protection, and have in effect become a free gift to our competitors.

23b. A vital step in securing a return on our ideas is the ability to claim ownership. That means taking seriously the protection of intellectual property through patents, copyrights, registered designs etc. The system is there to be used; the Government can encourage awareness, but the first responsibility lies with the individual research workers.

23c. I want to encourage scientists in industry to take an interest and responsibility in their exploitation of their ideas. They should leave their laboratory benches, develop new products from their ideas, and champion them through their companies and into the market place. We need more scientists and engineers in production, in marketing and in senior management in industry generally. Their places at the laboratory bench can be filled by the fresh generation of young people coming out of the science and engineering Departments of our Universities and Polytechnics.

FILE

CF

10 DOWNING STREET

From the Principal Private Secretary

DR. NICHOLSON
CENTRAL POLICY REVIEW STAFF

I enclose a copy of a letter which Sir Kenneth Alexander handed to the Prime Minister in Edinburgh, together with an advance copy of the Scottish Council Development and Industry report on the relationship of industry and business with the universities and colleges of Scotland.

I know that you are considering with the Scottish Office whether Dr. Johnston or someone else who has been involved in the preparation of this report should be invitedto the Prime Minister's seminar on 12 September. Could I also ask that, if you think it useful, you should include in the briefing for the Prime Minister, a brief summary of this report with any comments you may have on it.

I am copying this minute to Mr. Russell (Scottish Office).

F. E. R. BUTLER

5 September 1983

10 DOWNING STREET

From the Principal Private Secretary

5 September 1983

I am writing on behalf of the Prime Minister to thank you for your letter of 31 August which you handed to me in Edinburgh, together with the forthcoming report sponsored by the Scottish Council Development and Industry on the relationship of industry and business with the universities and colleges of Scotland. This is directly relevant to the seminar which the Prime Minister is holding on 12 September, and she is glad to have a sight of the contents of the report in advance of that seminar. You may like to know that we have made arrangements for an invitation to attend the seminar to be addressed to Dr. Tom Johnston, in the hope that he will be able to contribute on the basis of the work which went into the preparation of this report.

The Prime Minister was also grateful to you for enclosing a copy of the earlier report on industry and Scottish schools and for your good wishes for the seminar.

E. E. R. BUTLER

Sir Kenneth Alexander

DEPARTMENT OF ENERGY
Thames House South, Millbank, LONDON, SW1P 4QJ
Telephone: Direct Line 01-211 4137
Switchboard 01-211 3000

Dr R B Nicholson FRS
Cabinet Office
70 Whitehall
SW1A 2AS

2 September 1983

CABINET OFFICE
W 1437
- 5 SEP 1983
FILING INSTRUCTIONS
FILE No.

Dear Robin

PM's SEMINAR

We spoke about the Weir down-hole pump, and I promised to let you have a little background information, enclosed herewith.

Yours ever

Robert

J A CATTERALL
Head, Energy Technology Division

A.D.C.O PUMPSET PERFORMANCE SUMMARY

Downhole Pump

Pumped fluid	-	Highly Saline Water Total dissolved solids 260,000 PPM
Flow	-	405 GPM (16,600 BPD)
Generated Head	-	1485 ft
S.G.	-	1.14
B.H.P.	-	315
Pump Stages	-	7
Speed	-	9200 RPM
Setting Depth	-	3340 ft below surface

Downhole Turbine

Power fluid	-	Produced Water
Flow	-	310 GPM (12,700 BPD)
Turbine Δ H	-	4545 ft
Turbine Stages	-	7

from Weir house magazine
Summer 1982

and Oil: 2

BIRTH OF A PUMP

A million pounds is a nice round sum. Weir's new pump could save it in a year.

One day in 1979 the Offshore Supplies Office suggested that Weir Pumps Ltd. might care to get in touch with BP. It seemed they had problems. The downhole pumps they were experimenting with were failing at an alarming rate, and they needed something better. Perhaps Weir Pumps could help.

This is what emerged when the two companies met.

All North Sea wells were delivering their oil to the surface naturally, by their own pressure; but this would not continue indefinitely. As pressures dropped, water injection would have to be used, possibly followed by enhanced recovery techniques; but the day was bound to come when nothing would work but direct pumping. The trouble was that the pumps BP had been trying broke down in as little as two months. Could Weir Pumps please go away and think about it; and if they came up with something promising, BP might be prepared to underwrite part of the development costs.

The facts facing Weir Pumps' designers were formidable.

First of all, no pump working from the surface by suction could raise anything more than one atmosphere, say around 30 feet, so whatever pump was devised would have to work from the bottom of the hole and push the oil upwards. The logical way of doing this appeared to be the conventional way — lower an electric pump to the bottom and power it by a cable running down the hole. Yet, as the spate of breakdowns showed, this was a method with a great deal against it. By their very nature the facts added up to failure. The argument went like this.

The oil had to be raised anything from 2,000 to 5,000 feet, *therefore* comparatively high pressure would be needed, *therefore* the pump would have to be multistage, each stage pushing the oil on to the next until the required pressure was achieved. How many stages? That depended on two things, the diameter of the pump and its speed. Neither could be increased: the well was $9\frac{5}{8}$ inches in diameter and that was that; and the 60 cycle generators on most production platforms meant that the speed of the downhole electric motors was restricted to 3600 RPM and no faster. *Therefore* there would have to be a great many slow impellers. How many? Anything from 100 to 300, depending on the well pressure.

Therefore the pump would have to be a skinny monster, sometimes as much as 60 feet long connected by a 20 foot sealing section to a motor 60 feet long, a flexible contraption with sensitive insulation and an easily damaged cable which would somehow have to remain waterproof thousands of feet under the sea at temperatures of 100 degrees C or over, with sand wearing the seals and salt water constantly threatening the motor.

Furthermore, such a pump would be too long to transport in one piece, *therefore* it would have to be assembled on the platform, which meant risk of damage; *and* because there might be a dozen or more wells drilled from the same platform, all splaying outwards to cover the biggest possible area, the entire 140 foot assembly would have to be manoeuvred down a slanting hole.

This was conventional thinking. All electric submersibles worked like that. Could there be a different solution?

Two months later Weir Pumps came back with an answer BP were prepared to support. In the end they and Weir were joined by the Offshore Supplies Office and the British National Oil Corporation in a four-way partnership, all contributing equally to a £$1\frac{1}{2}$ million development programme. The prototype ran in Weir Pumps' Alloa

Right: Fitting the suction adaptor at the Alloa plant of Weir Pumps Ltd.

laboratory a little over a year later, in March 1981. It was a complete success.

The basis of Weir Pumps approach was to abandon electricity with all its problems of insulation, power and speed limitations and water-proofing. A very high pressure hydraulic motor, volume for volume, could be designed to produce at least 30 times as much power as an electric motor, so why not use one? There would be no need to make the pump bigger in order to get more work out of it. With virtually unlimited hydraulic power, easily installed on a production platform, downhole output could be boosted simply by making the motors run much faster. Indeed, if they could be made to work at over three times the speeds of electric motors, they would spin so fast that only eight pump stages would be needed instead of over 100 in an electric pump doing the same work.

Admittedly it had never been done before: it was equivalent to powering a hydro-station with a 12,000 foot waterfall. No high speed hydraulic motor had ever worked at such a pressure. But if it could be done, then most of the difficulties would vanish. There would be no need to waterproof the motor. The fluid powering it would just be drawn from the well and pumped back down through the hydraulic motor into the well again. And the length of the whole assembly would be reduced from 140 feet to around 10 feet.

That was the proposal put to BP. The prototype ran at Alloa for 450 hours and was so problem-free that no modifications were found necessary. The next step was to test it in the field.

No one wanted to stop oil production while a test was carried out, but Weir Pumps were lucky. The Department of Energy were running trials on a geothermal well at Marchwood near Southampton, and though it was producing hot water instead of oil, the characteristics were similar. The pump was tried 2000 feet below ground level in the Marchwood well, in 73 degrees C brine three times saltier than the sea, and when it was pulled out 2,000 working hours later and taken apart for examination, it was found to have no significant wear and no loss of performance. This same prototype has since been modified for raising water from an underground aquifer for re-injection into an oil well and is now to be installed in the Middle East.

One of the satisfactory results emerging from the tests has been the pump's freedom from start-up problems, the commonest cause of failure in electric submersibles, and one of especial importance in fields where the oil is loaded directly from the well into tankers and stopping and starting is frequent. During the Alloa and Marchwood trials the pump was placed in various positions from vertical to horizontal and then stopped and started nearly 500 times. It did not fail once.

Failures mean lost time, and in the North Sea time is very big money. Even in the case of a relatively small well, stopping for a few days to replace a pump can cost £250,000 in crew wages and engineering costs, with another £250,000 in lost revenue. Existing pumps sometimes have a life of only a few months. In such cases the new Weir pump, with a life measurable in years, can save at least £1 million a year on every well. And the average North Sea production platform has around 15 wells.

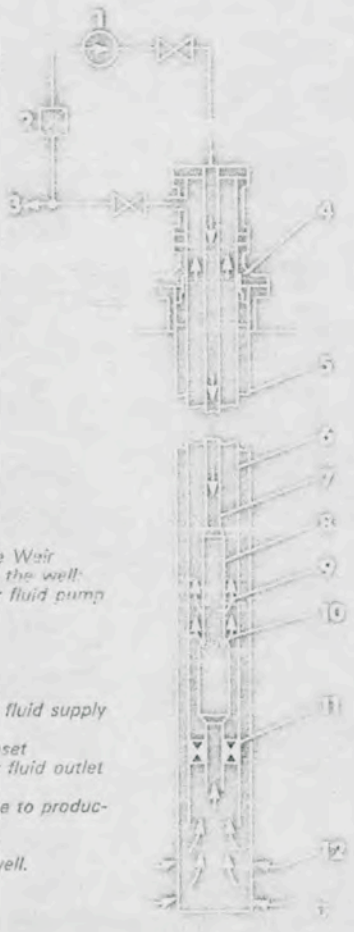
The implications are important both in the short and long term. The pump will not be used only to raise oil. It is customary, for example, to think of water injection in terms of an oil production platform pumping sea water down into its wells; but there are wells in desert regions which have no water available unless they pump for it. This could be a useful market for Weir Pumps. Most Middle East oilfields have a water-bearing layer over the oil-bearing layer, and the new pump is ideally designed to tap it.

The biggest growth market, however, will almost certainly lie in the direct pumping of oil from depleted fields, which is only now beginning. Pumping has always been used in slow-flowing wells (see, for example, the "nodding donkey" pumps scattered over the U.S.A.); but in the old days of cheap oil it was worth no one's while to tackle the fast-flowers. Today the oil companies want every barrel they can extract, and throughout the world there are fast-flowing wells which sooner or later will yield only by a resort to direct pumping. In Saudi Arabia it will be sooner rather than later (they are talking in terms of three years) and in the background are the rest of the Middle East countries, the North Sea, North Africa, Alaska, perhaps Russia, all fast producers, all with high-speed downhole pumping as the ultimate solution.

Weir Pumps have an answer to a problem which grows with every barrel taken out of the world's oilfields today. They have a pump backed by proved results and a hundred years of experience. It has come at exactly the right time.

Above left: The impeller assembly of a Weir downhole pump is examined at Alloa by some of those concerned in its development and manufacture. *Left to right:* A. M. Smith and W. McGregor (Alloa), M. L. Ryall (Cathcart) and T. Michie (Alloa). *Left:* Building up the impeller assembly.

The Weir Hydraulic-Drive Downhole Pump



Arrangement of the Weir downhole pump in the well:
1) Hydraulic power fluid pump
2) filter
3) well output
4) well head
5) casing
6) production tube
7) hydraulic power fluid supply tube
8) downhole pumpset
9) hydraulic power fluid outlet to production tube
10) pump discharge to production tube
11) sealing packer
12) oil flow into well.

The pump is designed for oil production, water lift for re-injection, water supply and geothermal reservoirs.
Performance range: Well output, 2000 - 1000000 b.p.d. Turbine power, 50 - 750 kw (65 - 1000 h.p.). Nominal speed 5000 - 10000 r.p.m.
Reliability. With the conventional downhole electric motor eliminated, there are no cables, sealing joints or insulation problems.
The short, rugged pumpset is typically only one-tenth the length of an equivalent electrical pumpset and much less susceptible to handling and installation damage.
It operates in deviated or curved wells with its axis from vertical to horizontal. It is manufactured from high chromium duplex alloy steels and stellite to resist abrasion, erosion and corrosion. All bearings are lubricated by filtered power fluid. There are no mechanical seals. The pumpset is unaffected by high well temperatures and repeated stopping and starting.
Variability. The pump can be operated down to 10% well output with valve control. The speed is infinitely variable down to 35% for continuous reduced well output by control of the power fluid. It has a reduced power requirement at low well output.
The output can be increased without withdrawing the pumpset, by increasing the pressure/flow from the topside pump.
Minimum installation time. The short, compact pumpset is easily transported and needs no site assembly.
It is run into the well on the end of the power fluid supply tube. When it is withdrawn it leaves the production tube and sealing packer in place. The setting depth is not dependent on the production tube length.
Chemical dosing through the power fluid supply tube protects the production tubing and associated equipment.

* Ran for 6 months with numerous stops & starts. In 'new' condition when pulled.

APPENDIX 2

شركة ابوظبي للعمليات البترولية البرية

(اذكو)

Abu Dhabi Company for Onshore Oil Operations

(ADCO)

22nd March, 1983

TO WHOM IT MAY CONCERN

NOT FOR PUBLICATION PURPOSES !

SUBJECT: WEIR HYDRAULIC DOWNHOLE PUMPING SYSTEM

With respect to the 6 month trial of Weir Pumps Ltd's 16,700 Barrel/day hydraulic downhole pump (hereinafter referred to as the "pumpset") in one of ADCO's water source wells, we certify the following information as being correct:-

PERIOD OF TRIAL

The trial commenced on 22nd August 1982 and finished on 10th March 1983.

PERFORMANCE

During the above period, the pumpset gave its required performance in terms of output flow and pressure. In addition the pumpset was operated at approximately 4000 barrels per day for a short period.

RELIABILITY

The pumpset proved 100% reliable in the trial period, and was stopped and restarted 38 times during the trial (for field operational reasons) without any difficulty.

INSTALLATION/RETRIEVAL

Installation and retrieval of the pumpset was performed without any problem.

Contd....2/-

STRIP DOWN AFTER TRIAL

Strip down of the pumpset in the WESCO Service Centre was witnessed by ADCO and the following was recorded:-

Outer Casing	-	As new condition
Main Thrust Bearing	-	No wear evident and no scoring
Start-up Thrust Bearing	-	Very slight wear evident, no scoring
Impellers	-	As new - no erosion
Impeller Wear Rings	-	Negligible wear and slight scoring
Chamber Wear Rings	-	Negligible wear and slight scoring
Balance Drum - Turbine	-	No wear and no scoring
Balance Drum Bush-Turbine	-	No wear and no scoring
Balance Drum - Pump	-	No wear and no scoring
Balance Drum Bush - Pump	-	No wear and no scoring
Pump Bearing Sleeves	-	Negligible wear and slight scoring
Pump Bearing Bushes	-	Negligible wear and slight scoring
Turbine Stages	-	No erosion and no wear observed

GENERAL

1) When corrosion products from other components in the well were removed by light rubbing, no corrosion on any of the pumpset's components was seen.

2) The condition of the components of the pumpset after strip down indicated very long potential life downhole.

PRODUCTION OPERATIONS MANAGER

JRG.NK

PRIME MINISTER

c. Mr. Butler

Science & Technology Seminar

I attach Robin Nicholson's first draft of your speech for this occasion which is on Monday week. The speech will be between 15 and 20 minutes long.

I imagine that you will want to work on the speech during the course of next week and with this in mind I have asked the Policy Unit to look at it with a view to developing some more ideas. Is there anything which at this stage you would like us to produce?

Perhaps we could have a word on your return from Balmoral about drafting sessions next week.

T. FLESHER

2 September 1983

Science & Technology

W.0565

1 September 1983

MR FLESHER

DRAFT SPEECH FOR THE PRIME MINISTER

Attached are three copies of a draft speech I have prepared for the Prime Minister to deliver at her Seminar on 12 September.

The speech is designed to take the offensive at the Seminar by stating the Government's track record in support of science and technology for industry and posing questions for industry, the city and academia as to their performance. In this way I hope to avoid the Seminar developing into bleating from the audience for more help from Government.

I have also limited the number of examples of success quoted in the speech since the subsequent speakers have been briefed to do this from their first-hand experience.

I am copying this minute and the attachment to Sir Robert Armstrong.

RBN.

ROBIN B NICHOLSON
Chief Scientific Adviser.

The University of Stirling.
31st August 1983,

Dear Prime Minister,

Knowing of your September 12th conference on University research etc I thought I should take the opportunity provided by the Secretary of State's dinner party this evening to let you have the enclosed report on industry - academic collaboration in Scotland.

This report was initiated by B.P, and has been produced under the auspices of the Scottish Council - Development and Industry (of which I am Deputy Chairman). There copies are advance 'rushes', which I secured for you this afternoon; we apologise for the binding (which has to be removed to make easy reading'). The Report will be made public on September 13th.

I also enclose an earlier report (1981) on Industry and Scottish Schools. It is encouraging to note that changes recently introduced by the Scottish Education Department - (in curriculum + in assessment and certification) will now help forward the objectives set out in this report.

May I wish the September 12th Conference every success. Harnessing & developing the research resources of higher education is - in my view - the most important change now required in that sector.

Yours sincerely,
Kenneth Alexander

10 DOWNING STREET

From the Private Secretary

30 August 1983

The Prime Minister has asked me to thank you for your letter of 25 August. She too is sorry that you cannot attend her meeting on science, technology and industry at Lancaster House on 12 September. I will draw your comments to her attention.

(TIM FLESHER)

J.B.H. Jackson, Esq.

R2718 CF? pps.

ARUNDEL GREAT COURT
8 ARUNDEL STREET
LONDON WC2R 3DT
Telephone 01-689 2166

The Rt. Hon. Margaret Thatcher, MP, PC,
10 Downing Street,
London, S.W.1.

25th August, 1983.

Dear Prime Minister,

It is with great regret that I have had to decline your invitation to attend the Seminar on Science, Technology and Industry at Lancaster House on 12th September. However, I am writing to say to you direct what I would have said at that Seminar.

In my judgement the most important single factor inhibiting the creation in the U.K. of wealth from science and technology is the effect of high interest rates. I am not talking about the direct cost of finance for new or established industries. I am talking about the effect a high interest rate environment has on the attitudes of the managers of venture capital funds. To take a crude example: After a long period in which it has been possible to obtain, on average, a return of some 10% on money at no risk, venture capital will only be available to a high risk "greenfields" enterprise if there is a prospect of a return (interest and capital growth together) over 5/7 years at the rate of some 30% per annum compound. If the rate of no risk return, to which fund managers were accustomed, was only 5%, then the high risk return looked for would not be halved at 15% but could well be nearer to that than to 25% - i.e. 30% less 5%.

The present expectations of venture capital fund managers with regard to rates of return on a short time-scale present a barrier to new enterprises which is extremely formidable. These barriers must be much lower if we are to generate in this country sufficient new enterprises based on new technologies in sufficient time.

Cajolery would not - and indeed should not - help in this. Substantially lower interest rates would help - and quickly.

Yours sincerely,

J.B.H. Jackson

4313.035.93041 Bin No. 1355 G679

ADVENT LIMITED
25 BUCKINGHAM GATE, LONDON SW1E 6LD. TELEPHONE 01-828 4792. TELEX 296923.

ADVENT

pm.
MH 22/8

19 August 1983

Timothy Flesher Esq.,
Private Secretary,
10 Downing Street,
London, SW1

Dear Mr Flesher

Thank you very much for your letter of 9 August inviting me to participate in the Seminar on "Science, Technology and Industry" on September 12. I have great pleasure in accepting that invitation.

As requested I will submit a copy of my paper for inclusion in the press briefing material not later than 5 p.m. on Thursday 8 September.

Yours sincerely

David Cooksey

D J S Cooksey

SCOTLAND 48 MANOR PLACE, EDINBURGH EH3 7EH. TELEPHONE 031-225 5784. TELEX 72349.
USA 111 DEVONSHIRE STREET, BOSTON, MASSACHUSETTS 02109. TELEPHONE (617) 725 2328. TELEX 200114 (VIA RCA).
DIRECTORS DAVID J S. COOKSEY, MICHAEL J MORAN, PETER A BROOKE (USA).
REG. OFFICE 33 CHARLOTTE SQUARE, EDINBURGH EH2 4HF. REGISTERED NO. 74009 SCOTLAND.

Investors in Industry

Investors in Industry Group plc
91 Waterloo Road London SE1 8XP
Telephone 01-928 7822

Telefax 01-928 0394 Grp 2&3
Telex 917844

Chairman

PM.
WH 22/8

19th August 1983

Timothy Flesher, Esq.,
Private Secretary to the Prime Minister,
10 Downing Street,
London SW1.

Dear Mr Flesher

Many thanks for your letter of 9th August. I am delighted to accept the Prime Minister's invitation to participate in the seminar on "Science, Technology and Industry" on September 12th and to speak in Session II on the Financing of Innovation. I am quite happy with that title.

Yours sincerely

Caldecote

Investors in Industry Group plc is owned by
nine London and Scottish clearing banks and the Bank of England
Registered office as above Registered in England No 1142830

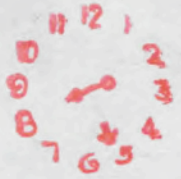
H4

24 AUG 1983

As from:

From
[redacted]HE WARDEN

Merton College
Oxford
OX1 4JD
Telephone (0865) 249651



18-8-83

24/8

Dear Mr. Flester,

I am replying to your letter of 14 9th which has only just reached me in France.

Of course I shall be delighted to come to the meeting on September 12th at Lancaster House and will make a contribution as you suggest.

I have already written to Dr. Nicholson & explained that I am committed to giving a plenary lecture at a meeting in

SCIENCE + TECH ; Seminar
March 85

II

Grenoble on Friday Sept. 9th, so shall not be back in Oxford until the 11th, as I am driving. I have therefore asked Lini to send any papers for the meeting to me c/o Prof. Abragam in Paris (whom I am staying with from the 2nd – 4th), or to Grenoble, c/o Conference MT8
5th – 9th
ENSIEG
B.P. 46
38402 Saint Martin d'Heres
France
Cedex
(with copies to Merton College for safety!)

I look forward to meeting you on the 11th.

Yours sincerely

Rex Richards

[redacted] at:
Westside, Newton
Stocksfield. Tel. 3363
West Newham Farm
Belsay. Tel. 252
Bays Leap Farm
Wylam. Tel. 2506
Hunt Law Farm
Stamfordham. Tel. 455

HUNDAY Friesians

J. E. Moffitt CBE, FRAgs
M. Moffitt
P. E. Moffitt

cc: Dr. Nicholson
Cabinet Office

E. MOFFITT & SON
PEEPY FARM . BYWELL . STOCKSFIELD . NORTHUMBERLAND NE43 7TT
Stocksfield (0661) 842279

JEM/JS

15th August 1983

R17

Dear Sir,

Further to the Prime Minister's invitation to a Seminar on Science, Technology and Industry on the 12th September, so that I can be better briefed, I am wondering if you can give any indication as to the form this will take. I would also be interested to know who else might be present from the Agricultural Industry.

If this information is as yet confidential, obviously I will understand.

Yours faithfully

John E. Moffitt

The Secretary
10 Downing Street
Whitehall
London

SCI & TECH: Public Seminar on Sci, Tech, and Ind:

March 83

Similar letters sent to DTI, DES, IT(DTI)

cc as below

10 DOWNING STREET

From the Private Secretary

12 August 1983

Prime Minister's Seminar on Science, Technology and Industry

The Prime Minister has asked me to write to say that she is grateful for the support of your Secretary of State at her Seminar on Science, Technology and Industry. This is an unusual opportunity for the four groups, industry, the city, academia and government, who between them will determine the contribution that science- and technology-based industry will make to our future economic prosperity, to analyse the reasons for past success, to ensure that we build on that success and of course to identify problems and possible solutions to those problems.

The Prime Minister is pleased that your Secretary of State will be making a short speech and she hopes that he will also contribute to the discussion during the day.

For information, I attach a copy of the letter sent to Sir Geoffrey Allen as one of the speakers at the Seminar. Similar letters have gone to all the other non-Government speakers.

I am copying this letter to the Private Secretaries to Mr. John Moore, Mr. William Waldegrave, Mr. Peter Brooke and Mr. Anthony Newton who also intend to be present at the Seminar.

Tim Flesher

Nick Evans, Esq.,
Ministry of Defence.

W.0533

12 August 1983

MR FLESHER

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

I think we owe Private Offices of Ministerial speakers a letter from No 10 since the Ministers have had nothing formal from the Prime Minister about the Seminar. Rather than repeat the material in the letter to outside speakers, I thought it best to send a copy of one of those. I attach a draft.

RBN

ROBIN B NICHOLSON
Chief Scientific Adviser

Nick Evans

DRAFT LETTER FROM MR FLESHER TO PRIVATE OFFICES OF ~~S/S DEFENCE,~~ S/S ~~DTI~~, S/S ~~DES~~ AND M/S ~~INDUSTRY AND INFORMATION TECHNOLOGY~~

J Spear Imogen Wilde Neil Macmillan

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

The Prime Minister has asked me to write to say that she is grateful for the support of your Secretary of State[Minister] at her Seminar on Science, Technology and Industry. This is an unusual opportunity for the four groups, industry, the city, academia and government, who between them will determine the contribution that science and technology-based industry will make to our future economic prosperity, to analyse the reasons for past success, to ensure that we build on that success and of course to identify problems and possible solutions to those problems.

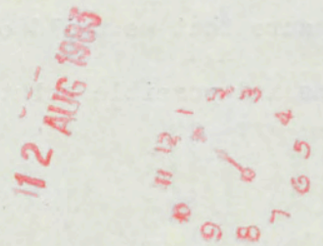
The Prime Minister is pleased that your Secretary of State[Minister] will be making a short speech and she hopes that he will also contribute to the discussion du ring the day.

For information, I attach a copy of the letter sent to Lord Weinstock as one of the speakers at the Seminar. Similar letters have gone to all the other non-Government speakers.

I am copying this letter to the Private Secretaries of Mr John Moore, DoE DES DHSS HMT Mr William Waldegrave, Mr Peter Brooke and Mr Anthony Newton who also intend to be present at the Seminar.

Science + Tech:

Public remark 3/83



CABINET OFFICE
~~Central Policy Review Staff~~
70 Whitehall, London SW1A 2AS Telephone 01-233 7089

W.0544

12 August 1983

Miss J E Ridley
PS/Secretary of State for Defence
Ministry of Defence
Main Building
Whitehall
London SW1

12/8

Dear Miss Ridley,

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

Enclosed is a copy of a letter I have sent to Mr Harvey Jones who is speaking in the same session as your Secretary of State, and a list of notes for speakers.

Copies of this letter with appropriate enclosures go to the offices of S/S Trade and Industry, S/S DES and M/S Industry and Information Technology.

Copies of this letter only go also to the Private Offices of Mr John Moore, Mr William Waldegrave, Mr Anthony Newton and Mr Peter Brooke.

Can I also use this opportunity to point out that we are very tight for space in the Long Gallery at Lancaster House and I am expecting Ministers to be accompanied only by officials from their Departments who have received invitations to attend the seminar.

If you have any queries between now and Tuesday, 30 August when I return from leave, please address them to Mr G B Spence (233 8589) or Mrs M J Hare (233 8493) in the Cabinet Office who can get in touch with me by telephone.

Yours sincerely,
Robin Nicholson

ROBIN B NICHOLSON
Chief Scientific Adviser

cc: Mr Spence
Mr Flesher
Miss Goodchild

Mr. Flesher

CABINET OFFICE

~~*Central Policy Review Staff*~~

70 Whitehall, London SW1A 2AS Telephone 01-233 7089

W.0539

12 August 1983

Mr J Harvey Jones
Chairman
ICI plc
IC House
Millbank
London SW1

JR 12/8

Dear Mr Harvey-Jones,

PRIME MINISTER'S SEMINAR ON "SCIENCE, TECHNOLOGY AND INDUSTRY"

I am writing to follow up the invitation you received from the Prime Minister's office to speak at her Seminar on "Science, Technology and Industry" at Lancaster House on 12 September.

I am enclosing a copy of the provisional programme which we intend to finalise on 22 August. Consequently if there is any change you would like to make, for example in the title of your speech, I would appreciate hearing from you by that date.

The session in which you have been invited to speak - "Innovation through Research and Development" - is designed to stimulate a discussion on the ways in which successful innovation, ie the creation of marketable new products and services, can be achieved from research and development in science and technology. Companies of all sizes, academic institutions, the city, and government all have roles to play and whilst we would expect you to concentrate on the role of the large company, you are of course welcome to comment also on the role of others.

Whilst speakers will no doubt draw attention to difficulties which

currently inhibit successful innovation from science and technology, it is also intended that one theme running through the Seminar should be the highlighting of past and present successes and the identification of the reasons for these so as to use the experience to develop more and greater success in the future.

I would be glad to try and answer any queries you may have about the Seminar. I shall however be on leave for the next two weeks, returning to my office on Tuesday, 30 August. During that time queries can be addressed to Mr G B Spence (233 8589) or to Mrs M J Hare (233 8493) in the Cabinet Office, who can get in touch with me by telephone if necessary.

Finally I enclose a list of various administrative and other points for speakers.

Yours ever,

Robin Nicholson

ROBIN B NICHOLSON
Chief Scientific Adviser

cc: Mr. Spence
Mr. Flesher

Mr. Fleshe

CABINET OFFICE

~~Central Policy Review Staff~~

70 Whitehall, London SW1A 2AS Telephone 01-233 7089

W.0521

10 August 1983

Miss J E Ridley
PS/Secretary of State for Defence
Ministry of Defence
Main Building
Whitehall

11/8

Dear Miss Ridley,

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

Enclosed is a copy of the provisional programme for the Prime Minister's Seminar. The only significant change from my previous draft is an adjustment to the morning session so as to improve the balance of the programme between electronics and non-electronics, and also bring in the defence aspect as an example of a major Government procurement activity rather than a subject on its own. I gather from your letter of 4 August that your Secretary of State is happy with this change but he may well want to suggest a better title than the one I have at the present time. If so I would be grateful if you could let me have a note of it by close of play on Monday, 22 August.

In general I am taking this programme as final in terms of names of speakers but still provisional in terms of precise timing and titles of talks.

I am also enclosing a list of guests invited to the seminar, which has been prepared from suggestions from the Departments. Unfortunately the suggestions outnumbered the available spaces by more than two to one and consequently all Departments will find that some of their nominations have not been successful.

I am copying this letter to Private Offices of other Ministerial speakers

and I would also appreciate hearing from them if they wish to change the title of their Minister's presentation.

Copies of the letter and provisional programme go also to Chief Scientists in MoD, DTI, DoE, DEn, DHSS and MAFF and to Richard Bird in DES, John Anson in Treasury and to Tim Flesher and Sue Goodchild at No 10.

Yours sincerely

RBN Nicholson

ROBIN B NICHOLSON
Chief Scientific Adviser

Provisional Programme

Seminar on "Science, Technology and Industry"

September 12th, 1983, Lancaster House

Chairman: The Prime Minister

09.15 - 10.00 Registration and Coffee

10.00 Introduction: The Prime Minister

Session I: Innovation through Research and Development

10.20 Innovation in large companies
Lord Weinstock, Managing Director, General Electric Company plc
Mr J H Harvey-Jones, Chairman, Imperial Chemical Industries plc

10.50 Procurement and innovation
RT Hon Michael Heseltine, MP, Secretary of State for Defence.

11.05 Discussion

11.30 The role of the University in Industrial Innovation
Sir Rex Richards, Warden, Merton College, Oxford.

11.45 Innovation in small companies
Sir Clive Sinclair, Chairman, Sinclair Research Ltd.
Mr D K Duckworth, Chairman and Chief Engineer, Cosworth Engineering Ltd.

12.15 Discussion

12.40 Summary
Sir Henry Chilver, Chairman, Advisory Council for Applied Research and Development.

12.50 Lunch.

Session II: Stimulation and Financing of Innovation

14.00 Stimulation of Innovation by Government
Mr Kenneth Baker, MP, Minister of State for Industry and Information Technology.

14.15 Technology transfer
Mr D Downs, Chairman and Managing Director, Ricardo Consulting Engineers plc.

14.30 Financing of Innovation
Lord Caldecote, Chairman, Investors in Industry plc
Mr D J S Cooksey, Managing Director, Advent Ltd.

15.00 Discussion

15.25 Tea

Session III: Maintaining the strength of the science base

15.40 The role of Government
RT Hon Sir Keith Joseph, Secretary of State for Education and Science.

15.55 The role of industry
Sir Geoffrey Allen, Technical Director, Unilever plc.

16.10 The role of the Research Council
Prof J F C Kingman, Chairman, Science and Engineering Research Council.

16.25 Discussion

16.50 Summary
Rt Hon Cecil Parkinson, Secretary of State for Trade and Industry.

17.00 Concluding remarks: The Prime Minister.

9. 8. 83

Mr Flesher

With the Compliments of

R B Nicholson

This programme is final in respect of speakers but provisional in terms of titles and timing.

10.8.83

CENTRAL POLICY REVIEW
STAFF

Cabinet Office
Whitehall London
SW1A 2AS

Telephone 01-233 3000

2

Provisional Programme

Prime Minister

To note

Seminar on "Science, Technology and Industry"

September 12th, 1983, Lancaster House

Chairman: The Prime Minister

09.15 - 10.00 Registration and Coffee

10.00 Introduction: The Prime Minister

Session I: Innovation through Research and Development

10.20 Innovation in large companies
Lord Weinstock, Managing Director, General Electric Company plc
Mr J H Harvey-Jones, Chairman, Imperial Chemical Industries plc

10.50 Procurement and innovation
RT Hon Michael Heseltine, MP, Secretary of State for Defence.

11.05 Discussion

11.30 The role of the University in Industrial Innovation
Sir Rex Richards, Warden, Merton College, Oxford.

11.45 Innovation in small companies
Sir Clive Sinclair, Chairman, Sinclair Research Ltd.
Mr D K Duckworth, Chairman and Chief Engineer, Cosworth Engineering Ltd.

12.15 Discussion

12.40 Summary
Sir Henry Chilver, Chairman, Advisory Council for Applied Research and Development.

12.50 Lunch.

Session II: Stimulation and Financing of Innovation

14.00 Stimulation of Innovation by Government
Mr Kenneth Baker, MP, Minister of State for Industry and Information Technology.

14.15 Technology transfer
Mr D Downs, Chairman and Managing Director, Ricardo Consulting Engineers plc.

14.30 Financing of Innovation
Lord Caldecote, Chairman, Investors in Industry plc
Mr D J S Cooksey, Managing Director, Advent Ltd.

15.00 Discussion

15.25 Tea

Session III: Maintaining the strength of the science base

15.40 The role of Government
RT Hon Sir Keith Joseph, Secretary of State for Education and Science.

15.55 The role of industry
Sir Geoffrey Allen, Technical Director, Unilever plc.

16.10 The role of the Research Council
Prof J F C Kingman, Chairman, Science and Engineering Research Council.

16.25 Discussion

16.50 Summary
Rt Hon Cecil Parkinson, Secretary of State for Trade and Industry.

17.00 Concluding remarks: The Prime Minister.

10 DOWNING STREET

From the Private Secretary

9 August 1983

Dear Sir Geoffrey,

The Prime Minister has asked me to invite you to participate in a Seminar on "Science, Technology and Industry" which she is holding in Lancaster House on 12 September.

The Seminar will bring together people from industry and the city who together create and finance our successful industrial and commercial activities, the universities who provide much of our science base and our trained people, and Government which has the responsibility for creating a climate in which innovation and the creation of wealth can flourish.

The purpose of the Seminar is to consider how innovation based on science and technology might, in the future, best be generated, financed and exploited. It will comprise three sessions:

I. Innovation through Research and Development

(Speakers from industry (both large and small companies), universities and Government).

II. Stimulation and Financing of Innovation

(Speakers from industry, the city and Government).

III. Maintaining the Strength of the Science Base

(Speakers from industry, universities and Government).

The Prime Minister has in mind a series of short (10 - 15 minutes) prepared speeches followed by discussion. She would like to ask you to speak in Session III from the point of view of industry.

Like the others whom she has asked to speak, Mrs. Thatcher believes that you would be able to give a special insight into the issues which will be raised by the Seminar. She very much hopes therefore that you will feel able to accept this invitation and also participate in the discussion during the day.

/ I ought

I ought to mention that since the Prime Minister would like results of the Seminar to reach the widest possible audience she has invited the media to cover the event, and of course your own contributions, should you accept this invitation.

The Prime Minister looks forward to seeing you on 12 September.

Yours sincerely,

Tim Flesher

Timothy Flesher

Sir Geoffrey Allen, FRS.

SEMINAR ON 12 SEPTEMBER 1983

The following invitations will be coming over this afternoon:

Sir Rex Richards, FRS
Merton College,
Oxford

Sir Geoffrey Allen, FRS
Director of Research,
Unilever plc
Unilever House,
Blackfriars,
EC4

J. Harvey Jones, Esq.,
ICI plc,
ICI House,
Millbank,
SW1

The Lord Weinstock
GEC plc
1 Stanhope Gate,
W1

Sir Clive Sinclair,
Sinclair Research Ltd.,
23 Motcomb Street
SW1X 8LB

D.K. Duckworth, Esq.,
UEI plc
North Way,
Walworth Industrial Estate,
Andover,
Hants
SP10 5AJ

← Cosworth Engineering Ltd,
St. James' Mill Road
Northampton, NN5 J.J. ?

D. Downs, Esq.,
Ricardo Consulting Engineers plc
Bridge Works,
Shoreham-on-Sea
West Sussex BN4 5FG

Dr. D.J.S. Cooksey,
Advent Management Ltd.,
25 Buckingham Gate,
SW1

+ Sir Henry Chilver, FRS,
Cranfield Institute of
Technology,
Cranfield,
Bedford, MK43 0AL

+ Prof. J.F.C. Kingman, FRS,
Science & Engineering
Research Council,
Polaris House,
North Star Ave,
Swindon,
SN2 1ET.

+ The Viscount Caldecote
of Bristol, DSC
Investors in Industry plc,
91 Waterloo Road,
London,
SE1 8XP

W.0511

8 August 1983

MR FLESHER

pse type the letters for my sig.

Prime Minister's Seminar on Science, Technology and Industry

Herewith a draft letter for the Prime Minister to send to the non-Government speakers in her Seminar. I am not entirely happy with the style and I am sure you can improve on it. As we discussed, it could be converted into a Private Secretary's letter.

I am sending you separately a Private Secretary's letter for Ministerial speakers.

RBN

ROBIN B NICHOLSON
Chief Scientific Adviser

DRAFT LETTER FROM PRIME MINISTER TO NON-GOVERNMENT SPEAKERS

The Prime Minister has asked me to invite
~~I am writing to ask~~ you to participate in a Seminar on "Science, Technology and Industry" which ~~I am~~ she is holding in Lancaster House on 12 September.

The purpose of the seminar is to discuss the creation of wealth from science and technology which ~~my Government sees~~ Mrs Thatcher as making a significant contribution to our aim of providing stable prices, lasting prosperity and employment for the British People.

The seminar will bring together people from industry and the city who together create and finance our successful industrial and commercial activities, the universities who provide much of our science base and our trained people, and Government which has the responsibility for creating a climate in which innovation and the creation of wealth can flourish.

The purpose of the seminar is to consider how
~~The seminar will consider the generation, financing and exploitation~~ of innovation based on science and technology might, in the future, best be generated, financed and exploited. ~~and will consist of three sessions:~~ It will comprise three sessions:

I. Innovation through Research and Development

(Speakers from industry (both large and small companies), universities and Government).

II. Stimulation and Financing of Innovation

(Speakers from industry, the city and Government).

III. Maintaining the Strength of the Science Base

(Speakers from industry, universities and Government).

The Prime Minister has in mind

~~I have in mind~~ a series of short (10-15 minutes) prepared speeches followed by discussion. ~~I~~ She would like to ask you [ ]

~~Mrs Thatcher~~ that feel able to ~~I very much hope~~ you will accept this invitation and also participate in the discussion during the day.

The speakers I have invited have all been successful in their jobs and I hope that in this way it will be possible for us to identify and learn from the reasons for their success. Of course we shall also want to identify problems and their solutions.

I ought to mention that since the Prime Minister

~~There is a limit to the number of people who can attend such a seminar~~ ~~and I~~ would like ~~the outcome~~ results of the seminar to reach ~~a wider audience~~ the widest possible audience. ~~Accordingly~~ ~~I have~~ invited the media to ~~cover the seminar~~ cover the event, and she has

of course; your own contributions, should you accept this invitation.

~~I~~ looks forward to seeing you on 12 September.

Yours sincerely

* ~~In common~~ like the others whom ~~the Prime~~ She Minister has asked to speak ~~during the seminar~~, Mrs Thatcher believes that you would be able to ~~make~~ ~~contribute~~ ~~make a point~~ give a special insight which will be into the ~~subject~~ issues raised by the seminar. She very much hopes therefore

Square brackets inserts

Lord Weinstock, Mr Harvey-Jones

to speak in Session I from the point of view of a large company.

Sir Clive Sinclair

to speak in Session I from the point of view of a small company.

+ D. K. Duckworth, Esq.

Sir Rex Richards

to speak in Session I from the point of view of a University.

Sir Henry Chilver

to sum up at the end of Session I.

Mr D Downs

to speak in Session II on technology transfer from the point of view of an independent company in the private sector.

Lord Caldecote

to speak in Session II on private sector financing of innovation.

Dr Cooksey

to speak in Session II on financing of innovation through venture capital.

Sir Geoffrey Allen

to speak in Session III from the point of view of industry.

Professor Kingman

to speak in Session III from the point of view of a Research Council.

Science & Technology

Public Seminar : March 83

W.0499 3 August 1983

MISS GOODCHILD

PRIME MINISTER'S SEMINAR

I enclose two lists of names and addresses for invitations for the Prime Minister's Seminar on 12 September. The remaining lists will follow shortly.

Because of uncertainty on the percentage acceptance and space limitations at Lancaster House, I daren't ask you to send out more than 240 invitations at the moment. Accordingly, names in square brackets thus [ ] should be held in reserve and invitations not issued unless and until we start getting some non-acceptances.

Speakers are also in square brackets designated thus: I [ ]. I am drafting a letter for the Prime Minister to send to them and I suggest that their formal invitations be held back to go with the letter.

Please let me know if you have any queries.

RBN

ROBIN B NICHOLSON
Chief Scientific Adviser

cc: Mr Flesher without encl.
Mr Spence

BF
25/1

4

W.0492

1 August 1983

MR FLESHER

3/8

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

I attach a list of guests for the Seminar which the Prime Minister might wish to glance at. The list still requires some pruning to get down to the right number and a final version (with addresses) will be sent to Sue Goodchild tomorrow. The industrial list contains entrepreneurs and technical directors as well as captains of industry; the university list has many active scientists and engineers as well as professors and vice-chancellors; the city list was provided by the Bank of England through Treasury and consists of people who have responsibility for the financing of new technology.

2. I recommend that the ten speakers receive a formal letter of invitation from the Prime Minister which I shall draft.

3. I would appreciate your advice on how to respond to the letter from Mr Kenneth Baker (copy attached).

ROBIN B NICHOLSON

cc: Miss Goodchild
Mr Spence

Cabinet Office

Industry

Mr G Roberts	John Taylor & Sons
Mr I Gardener	BR
Mr O H Colburn	Farmer
Mr J Moffit	Farmer
Mr K Durham	Unilever
Sir Geoffrey Allen	Unilever
Mr R Halstead	Beechams
Mr P Reynolds	Rank Hovis McDougall
Sir Walter Marshall	CEGB
Dr T Broom	CEGB
Mr John Mills	NCB
Mr Frank Gibb	Taylor Woodrow
Mr Philip Warner	NEI
Sir Austin Bide	Glaxo/BL
Mr Paul Girolami	Glaxo
Sir James Black	Wellcome
Dr J Vane	Wellcome
Mr J Harvey Jones	ICI
Mr P Cunliffe	ICI
Dr Alan Suggett	Smith & Nephew
Sir Ronald Mackintosh	APV
Mr Gerald Fairtlough	Celltech
Sir Alastair Pilkington	Pilkingtons
Dr D S Oliver	Pilkingtons
Sir Arnold Hall	Hawker Siddeley
Lord Weinstock	GEC
Sir Robert Telford	GEC
Sir Robert Clayton	GEC
Mr D H Roberts	GEC
Dr C Hilsum	GEC
Mr P Rainger	BBC
Mr L Sallabank	Wimpey
Mr W Allen	Bickerdike Allen
Sir Monty Finniston	Sears
Mr C McCaskey	Baker Perkins
Sir Basil Blackwell	Westland
Lord Gregson	Fairey
Mr D Alun Jones	Ferranti

Sir Clive Sinclair	Sinclair Research
Mr Jack Leonard	Eurotherm
Mr D C Duckworth	UEI
Mr Charles Askwith	Information Transmission Ltd
Mr Ken Wade	Pactrol Controls
Dr Hawarth	Management Control System
Mr Tony Cann	Terminal Display Systems
Sir Ernest Harrison	Racal
Mr D Downs	Ricardo
Mr J Fairclough	IBM
Dr J Cadogan	BP
Mr J Alvey	BT
Sir Peter Baxendale	Shell
Dr J Birks	NMI
Dr J M Hughes	Johnson Matthey
Mr G Adler	BHRA, Cranfield
Sir Terence Beckett	CBI
Mr M J Bevan	Xionics
Mr E Briscoe	Doulton
Mr J Collyear	AE
Sir William Duncan	RR
Mr Alan Newton	RR
Dr J McKenzie	BSC
Sir Campbell Fraser	Dunlop
Sir Trevor Houldsworth	GKN
Sir George Jefferson	BT
Sir John Clark	Plessey
Sir Basil de Ferranti	Ferranti
Mr Keith Grant	Design Council
Sir Austen Pearce	BAe
Mr Peter Hickman	BAe
Mr J M Kimberley	Lotus Cars
Mr Rob Wilmot	ICL
Mr P Laister	Thorn EMI
Sir William Barlow	Thorn EMI
Mr W Mallinson	Smiths Industries
Mr C I Mellor	Metal Box
Mr T S Monkcom	Devilbiss
Mr J F Mowat	Anderson Strathclyde
Dr P Reasbeck	Lucas

Mr Eric Sharp	Cable & Wireless
Mr Anthony Smith	Cable & Wireless
Mr Brian Street	Air Products
Mr Philip Hughes	Logica
Sir Peter Walters	BP
Dr D Braben	BP
Mr R Wheeler	British Hovercraft
Mr I Barron	Inmos
Mr S B Mercer	Netlon
Mr J R Dyke	Sension
Mr L J Rowe	LJ Electronics
Mr D Norman	Norman Magnetics
Mr A Battersby	VDV Installations

Universities/Polytechnics

Prof John Burnett	Edinburgh
Sir Denys Wilkinson	Sussex
Prof K Gwilliam	Leeds
Prof Mark Richmond	Manchester
Prof R Hoffenburg	
Prof D E N Davies	University College, London
Lord Flowers	Imperial College
Prof R E D Bishop	Brunel
Sir Jack Lewis	Cambridge
Prof W A Gambling	Southampton
Prof J Lawrenson	Leeds
Sir Rex Richards	Oxford
Lord Todd	Cambridge
Sir James Mentor	Queen Mary College
Sir Frederick Dainton	
Sir Charles Carter	Lancaster
Dr E de Bono	Cambridge
Dr A Kelly	Surrey
Dr L Rotherham	
Sir Bruce Williams	Technical Change Centre
Prof E A Ash	University College
Prof D C Bradley	TCD
Prof B Crossland	Belfast
Prof B S Hartley	Imperial College
Prof P Owen	
Prof W D P Stewart	Dundee
Dr G A O Davies	Imperial College
Sir Kenneth Alexander	Stirling
Sir Clifford Butcher	Loughborough
Prof K W Crawford	Aston
Mr J B Butterworth	Warwick
Dr G J Hills	Strathclyde
Prof F G T Halliday	Durham
Dr T L Johnston	Heriot-Watt
Prof T B Holland	Leicester
Mr S H Salter	Edinburgh

Universities/Polytechnics (cont'd)

Sir Peter Hirsch	Oxford
Prof G J Davies	Sheffield
Dr J A Charles	Cambridge
Prof R M Needham	Cambridge
Prof A Hoare	Oxford
Prof M D Lilly	University College
Mr G R Hall	Brighton
Dr J B Butcher	Middlesex
Dr S Cotson	Leicester
Dr W J Rea	Oxford
Mr G V Holroyde	Coventry (Lanchester)
Dr H D Law	Porthsmouth
Prof J L Monteith	Nottingham (University)

Government, Government Departments and Research Councils

Government

Sir Keith Joseph
Mr Cecil Parkinson
Mr Kenneth Baker
Mr Michael Heseltine
Mr William Waldegrave
Mr Peter Brooke
Mr T Newton

Government Departments

Sir Brian Hayes	DoI
Sir Anthony Rawlinson	"
Mr R Croft	"
Mr J Gill	"
Mr A G Manzie	"
Mr O Roith	"
Mr A Williams	"
Chief of Defence Procurement (Mr D H Perry)	MoD
Prof R O C Norman	"
Mr C Fielding	"
Mr G Pope	"
Sir Michael Franklin	MAFF
Dr G H O Burgess	"
Dr G A H Elton	"
Dr M Holdgate	DoE
Dr A A L Challis	DEn
Sir Desmond Pond	DHSS
Mr D J Hancock	DES
Mr R H Bird	"
Mr D Tanner	"

Research Councils

Sir Hermann Bondi	NERC
Dr Ralph Riley	ARC
Sir Leslie Fowden	Rothamsted
Mr Michael Posner	SSRC
Prof J Kingman	SERC
Sir James Gowans	MRC
Lord Selbourne	ARC

Government, Government Departments, etc. (cont'd.)

Staff

Dr R B Nicholson	Cabinet Office
Dr P Davies	"
Mr R Courtney	"
Mr G B Spence	"
Mr B Copestake	DTI
Mr I Thom	DES

Government Laboratories

Dr Peter Sutton	CAMR, Porton Down
Dr P Dean	NPL
Dr K Gray	RSRE

CITY

Mr D A Walker	-	Bank of England
Mr John Davis	-	Barclays
Mr J Beavor	-	Midland Bank
Mr C S Jones	-	Lloyds Bank
Mr D Scholey	-	Warburgs
Mr R Quartano	-	Post Office Superannuation Fund
Mr John Chiene	-	Wood Mackenzie
Dr D Allam	-	Prutec
Mr G Taylor	-	Investors in Industry
Mr P Chappell	-	Morgan Grenfell
Lord Selsdon	-	Midland Bank Internationa
Mr J B Stuttard	-	Coopers & Lybrand
Mr R Peters	-	Murray Johnstone
Mr C Clive	-	Thompson Clive

Government Advisory Committees, Professional and Learned Societies

ACARD

Sir Henry Chilver	Cranfield
Dr C Reece	ICI
Sir Alan Muir Wood	Sir William Halcrow
Mr P C Michael	UEI
Lord Caldecote	III
Sir Kenneth Corfield	STC
Dr B Lindley	Dunlop
Dr D V Atterton	Foseco
Mr C S King	BL Technology
Sir Hans Kornberg	Cambridge University
Prof J M Thomas	Cambridge University
Prof S Metcalfe	Manchester University
Lord Scanlon	
Mr D H Roberts	GEC
Mr R Malpas	BP

ABRC

Sir David Phillips	Oxford University
Prof A P M Forrest	Edinburgh University
Sir James Lighthill	University College, London
Mr J S R Morris	Brown & Root
Sir Edward Parks	UGC
Sir Peter Swinnerton-Dyer	Cambridge University
Dr W F Bodmer	Imperial Cancer Research Fund
Dr A James	Unilever
Prof P Mathias	Oxford University

ITAP

Dr Ivor Davies	Mullard
Mr Michael Alridge	Rediffusion
Mr Charles Read	Post Office

ROYAL SOCIETY

Sir Andrew Huxley	University College, London
Sir Morris Sugden	Cambridge University
Prof D C Smith	Oxford University
Sir John Mason	Meteorological Office

Govt. Advisory Committees, etc. (cont'd.)

Fellowship of Engineering

Sir Dennis Rooke	British Gas
Sir Francis Tombs	Weir Group
Sir Hugh Ford	Ford & Dain
Prof J H Horlock	Open University
Dr K Miller	Engineering Council

Others

Lord Rothschild	
Sir Alan Cotterell	Cambridge University
Prof J M Ashworth	Salford University
Sir Alec Merrison	Bristol University
Sir Robin Ibbs	ICI
Mr J Sparrow	Morgan Grenfell
Prof T R E Southwood	
Dr Duncan Davies	
Sir Ronald Mason	
Mr J Cassels	NEDO

DEPARTMENT OF INDUSTRY
ASHDOWN HOUSE
123 VICTORIA STREET
LONDON SW1E 6RB
TELEPHONE DIRECT LINE 01-212
SWITCHBOARD 01-212 7676 6401

FROM THE
MINISTER OF STATE
FOR INDUSTRY AND
INFORMATION TECHNOLOGY

KENNETH BAKER MP

Dr Robin Nicholson
Chief Scientist
Cabinet Office
Whitehall
London SW1

CABINET OFFICE
W ...125.1.
29 JUL 1983
FILING INSTRUCTIONS
PYLE No. .....

28 July 1983

Dear Robin,

PRIME MINISTER'S SEMINAR ON TECHNOLOGY

It occured to me that we might perhaps invite to the seminar on 12 September two or three MPs who are particularly interested in the problem of technology transfer. I have this in mind because this week I've met a new MP called Spencer Batiste who is a solicitor in Sheffield who has hitherto acted as an adviser to the academic staff at the University there when they wanted to exploit their ideas.

He is very well informed indeed and is knowledgeable of the problems of technology transfer. The trouble about inviting MPs is that we would probably have to invite representatives from each party and I don't think that that is really appropriate for this sort of meeting.

However, I do think Mr Battiste might be invited in his own right as someone who is a practitioner in the field. Perhaps you'd like to consider this.

Yours ever,
Kenneth

KENNETH BAKER

MA4/MA4ABX

cc

Science + Tech

10 DOWNING STREET

From the Press Secretary

→ Mr Fletcher

22 July 1983

par

Dear Dr Nicholson,

SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

I have consulted the Prime Minister over media representation at the above.

One of the objectives of the Seminar is, of course, to secure publicity in order to correct any false impressions generated by the BBC programme.

The Prime Minister is accordingly content not merely that the press should attend but also that radio and tv should be able to broadcast/record the occasion or extracts from it. She is also fairly relaxed about numbers and we clearly need not feel constrained by a figure of 20. If John Stubbs would like to consult next week before I go on holiday I would be happy to try to help.

Yours sincerely

Bernard Ingham

BERNARD INGHAM

Robin B. Nicholson, Esq.,
Chief Scientist,
Cabinet Office.

M. FLESHER.

RESTRICTED

PSA Room 10/08
Property Services Agency
St Christopher House Southwark Street London SE1 0TE
Telex 21352
Telephone 01-928 7999 x 2395
GTN 2813

Department of the Environment

CABINET OFFICE
REG. 34
22 JUL 1983
FILING INSTRUCTIONS
FILE No.

R G Courtney Esq.
Cabinet Office
70 Whitehall
London
SW1A 2AS

cc. Dr Nicholson
Mr Spence
Mr Fletcher - No 10.

Our ref 83/C178
Your ref
Date 21 July 1983

Dear Mr Courtney

PRIME MINISTER'S SEMINAR ON SCIENCE AND TECHNOLOGY : 12 SEPTEMBER 1983

1. Thank you for your letter of 14 July. I can confirmthat Lancaster House accommodation has been reserved for the above seminar. As you are aware we are required to recover the cost of all Conference provisions from the client and your use of the building is, therefore, subject to your agreement to meeting these and the other conditions contained in this letter.

2. From our discussion at Lancaster House I understand that the following rooms will be required. The hiring charge for each will be as indicated :

a). Long Gallery	£845	per day
b). State Drawing Room	£425	" "
c). East Ante Room	£115	" "
d). West Ante Room	£115	" "
Setting Up Charge - Long Gallery only	£845	" "
TOTAL	£2345.00	

These charges include all normal furnishings and cover the period required to set up and install equipment. They do not cover the cost of amplification which, for 12 microphones (6 at the top table plus 6 standing microphones among the delegates), amounts to a figure of £231.80 which includes VAT and PSA Establishment Charges.

3. This makes a grand total of £2576.80 and, though the cost may differ from the Estimate, as far as practicable, you will be told as soon as possible of any significant increase.

4. Perhaps you would also consider the following points :

i). The quotation does not include any provision for tape recording. Could you advise as to whether this will be required. Additional cost will be involved.

ii). You indicated at our meeting that you did not expect to need telephones. Could this be confirmed. For your information, a charge of £10 per instrument per day is made for those requiring domestic call facilities and £20 per instrument per day where International calls are needed.

iii). I understand the numbers attending to be 250 plus those on the top table and I attach, as promised, a suggested layout. I have allowed for nine people at the top table but I believe you envisage no more than six. Could you confirm. The press tables shown at the back can be moved to the rear of the block of seats at the garden end to allow more delegate space in the centre if you wish. The microphone operator shown can probably operate as efficiently from one of the interpretation booths at the north end which will also make slightly more space available on the floor. Could you please advise me of any changes you wish made and also the positions in the aisles you would like the standing microphones to occupy. I have allowed for six in my quotation but more can be provided if desired. Would you also advise whether a lecturn, free standing or table top, will be needed.

iv). With regard to the amount of accommodation reserved for you should you feel, in view of the numbers involved, that extra space is needed for the serving of refreshments or other purposes, the Music Room is available at an additional £500 and the West Drawing Room at £245. The latter is normally used as a Chairman's Office but I understand that this facility will not be required.

v). There is no car parking available in Stable Yard apart from a couple of spaces for Ministerial cars on the Green Park side. Parking is normally available on the Mall Horse Ride in front of St. James' Palace, with the agreement of the Royal Parks, but subject to any closure which would normally be for ceremonial reasons.

vi). You will be responsible for any catering provision and the first floor pantry is available to a caterer for preparation purposes. I think, however, you may be considering approaching the Government Hospitality Fund, joint occupiers of Lancaster House, for assistance in this.

5. Cancellation fees are payable and the following will apply in this case :

a). Notice given between 1 and 2 months prior to the date of the meeting : client liable for 75 % of the total cost.

b). Notice given within 1 month of the date of the meeting : client liable for total cost.

6. If these conditions are acceptable would you please confirm and sign the undertaking at the end of the attached copy letter. Would you please advise on any points raised in paragraph 4.

Yours sincerely

D C BALL
London Conference Section

RESTRICTED

83/C178

UNDERTAKING : 1. I/We agree to pay the full and final costs of the service including Departmental Expenses and VAT and any attendant financial liabilities resulting from this provision.

2. I/We agree to deposit funds in advance on request by PSA Accounts Division.

3. I/We agree to the cancellation fees as contained in the attached letter.

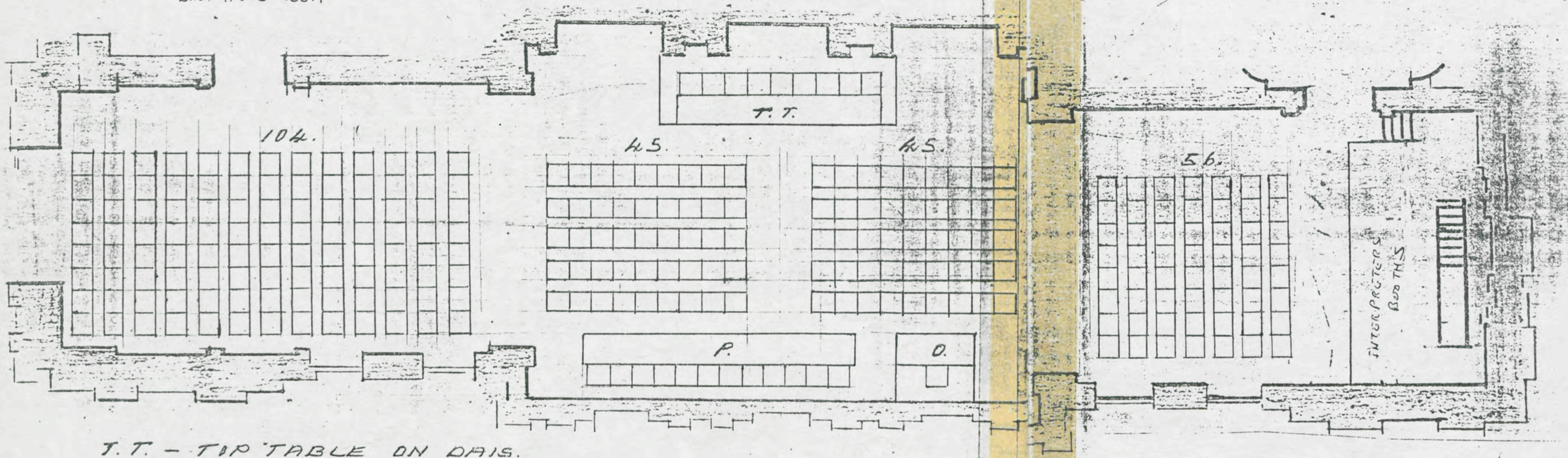
SIGNED : NAME IN CAPITALS :

ON BEHALF OF :

DATE :

LANCASTER HOUSE LONG GALLERY

SEMINAR 12TH SEPTEMBER 1983



T. T. – TIP TABLE ON DAIS.
O. – OPERATORS TABLE ON DAIS.
P – 4 TABLES FOR PRESS.
4 BLOCKS OF CHAIRS TOTAL 250.
WITH 6 FT. GANGWAYS BETWEEN.

10 DOWNING STREET

From the Private Secretary

DR NICHOLSON

SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

The Prime Minister has now seen your minute of 15 July about the arrangements for the Seminar on Science, Technology and Industry which is being held on 12 September. Mrs Thatcher thought the proposed programme excellent and should be grateful if you could now proceed with the preparations. As to speakers, you might like to know that the Prime Minister has expressed a preference for Lord Weinstock for the session on the large company; Sir Clive Sinclair for the small company; Sir Jack Lewis for the university scientist; Sir Ernest Harrison for the defence session and Sir Henry Chilver to sum up at the end of the morning. It is likely that the Prime Minister will wish to stay for the whole of the seminar.

Mrs Thatcher has also asked that preliminary thought should now be given to her speech of introduction to the Seminar and she would be grateful if, in consultation with the Minister for Information Technology, you could produce the first draft to reach us please by Wednesday, 7 September.

I am sending a copy of this minute to Richard Hatfield (Cabinet Office).

(Timothy Flesher)

18 July, 1983

Prime Minister: cc Sue Goodall

Do you agree that the programme devised by Dr Nicholson is on the right lines? If so, shall I ask him to prepare the first draft of your speech, perhaps in consultation with Kenneth Baker?

DJ 15/7

W.0445

15 July 1983

PRIME MINISTER

SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

At the start of the election campaign, you agreed to my suggestion that it would be best to postpone your seminar on 'Science, Technology and Industry' until the autumn. Your office proposed the date of 12 September and Lancaster House has been booked for the occasion.

2. Attached is a new draft programme for your consideration. The longer time which will have elapsed since the 'Horizon' programme and the fact that the seminar is now occurring at the start of a Parliament made me feel that the form of the seminar should be re-cast somewhat.

3. The seminar is now firmly based on the potential contribution of science and technology to the first of the 'five great tasks of the future' given in the Government's Manifesto.

4. I have in mind that in introducing the seminar you would refer to the tremendous Government investment in Research and Development (£3.5 billion per annum) and pose some questions to the industrialists, scientists and financiers in the audience as to how they propose to use this money plus the private sector's own resources to generate a substantially better performance in science and technology based industries in this country.

5. Although some Ministers would also be involved in formal presentations during the day, the bulk of the time would be taken up with presentations and discussion from those who generate and create wealth from our science and technology.

6. DES Ministers have indicated broad agreement with the aims and content of the seminar. At Mr Kenneth Baker's request, I discussed

the draft programme with him yesterday, as a result of which a few changes were made, especially the introduction of a specific section on Defence. This has not yet been cleared with MoD Ministers.

7. The next step is to invite the speakers and prepare the guest list but you may first wish to comment on the scope and content of the proposed programme.

8. I believe the seminar could have a key role in generating new enthusiasm and determination to exploit properly this country's scientific achievements. Since the programme is designed as an integrated whole, I very much hope you will be able to chair both the morning and afternoon sessions.

RBN

ROBIN B NICHOLSON
Chief Scientific Adviser

cc: Sir Robert Armstrong

Cabinet Office
15 July 1983

SECOND DRAFT PROGRAMME

SEMINAR ON "SCIENCE, TECHNOLOGY AND INDUSTRY", 12 SEPTEMBER 1983

Chairman, The Prime Minister

Seminar Theme: The purpose of this seminar is to discuss the creation of wealth from science and technology which is a major component of the Government's aim to create an economy which provides stable prices, lasting prosperity and employment for the British people. The seminar will consider the generation, financing and exploitation of innovation based on science and technology.

Morning Session

10.00 Introduction: The Prime Minister

Topic I: Innovation through Research and Development

(a) The large company

10.20 John Harvey-Jones (ICI) or Lord Weinstock (GEC) or Owen Green (BTR) or John Collyear (AE)

(b) The small company

10.35 Two speakers from Clive Sinclair (Sinclair Research), Martin Wood (Oxford Instruments), Jack Leonard (Eurotherm), Peter Michael (Microconsultants).

(c) The university scientist

10.55 Sir Jack Lewis (Cambridge) or Alec Gambling (Southampton) or John Lawrenson (Leeds) or Sir Rex Richards (Oxford) or John Kingman (Oxford/SERC).

11.10 Discussion

(d) Applications of defence R & D

11.40 Secretary of State for Defence

11.55 Lord Weinstock (GEC) or Sir Ernest Harrison (Racal)

12.10 Discussion

12.35 Summing up: Secretary of State for Trade and Industry or Sir Henry Chilver

12.45 Break.

Afternoon Session

Topic II: Stimulation and Financing of Innovation

(a) Stimulation of Innovation by Government

2.15 Minister of State for Industry and Information Technology

(b) Technology transfer in the private sector

2.30 Diarmuid Downs (Ricardo).

(c) Private sector financing

2.45 Lord Caldecote (Investors in Industry)

3.00 David Cooksey (Advent Venture Capital)

3.15 Discussion

Topic III: Maintaining the strength of the science asset base

(a) Government's role

3.40 Secretary of State for Education and Science

(b) Industry's role

3.55 Sir Geoffrey Allen (Unilever) or Charles Reece (ICI) or Derek Roberts (GEC)

(c) The Research Councils' role

4.10 Sir David Phillips (ABRC) or John Kingman (SERC)

4.25 Discussion

4.50 Summing up: Prime Minister or Secretary of State for Trade and Industry.

5.00 Close.

Cabinet Office
15 July 1983

Hw013

MR FLECHER - No. 10

c Dr Nicholson

14 July 1983

PRIME MINISTER'S SEMINAR - 12 SEPTEMBER.

I received your telephone message asking me to book Lancaster House for this event. This I have done; a copy of my letter to Mr Ball is attached. I shall re-direct any subsequent invoices to you!

R G COURTNEY

CABINET OFFICE
70 Whitehall, London SW1A 2AS Telephone 01-233 7478

RESTRICTED

Hw012

D Ball Esq
Property Services Agency
St Christopher House
Southwark St
London SE1

14 July 1983

Dear Mr Ball

PRIME MINISTER'S SEMINAR ON SCIENCE AND TECHNOLOGY - 12 SEPTEMBER 1983

I have been asked by the Prime Minister's office to confirm the booking for the Long Gallery of Lancaster House and adjacent rooms as we discussed at our recent meeting there. No doubt you will confirm the details in due course. You were also intending to send a seating plan of the Long Gallery arrangements.

Yours sincerely

R G COURTNEY

Seen

2 pps

W.0437

12 July 1983

TO: MR SCHOLAR, 10 Downing Street

cc: Mr Spence
Mr Courtney

FROM: DR NICHOLSON

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY, 12 SEPTEMBER

With the agreement of the Establishment Officer I have asked Mr Gerry Spence to look after the administrative side of this seminar. His immediate tasks are to settle outstanding issues with Lancaster House, especially the impasse as to whether or not the GHF will agree that this is within their terms of reference.

RPBW

Tim Spoke to Mr Courtney

Over to you

Hw1015

MCS 11/7

DR NICHOLSON

c Mr Scholar

7 July 1983

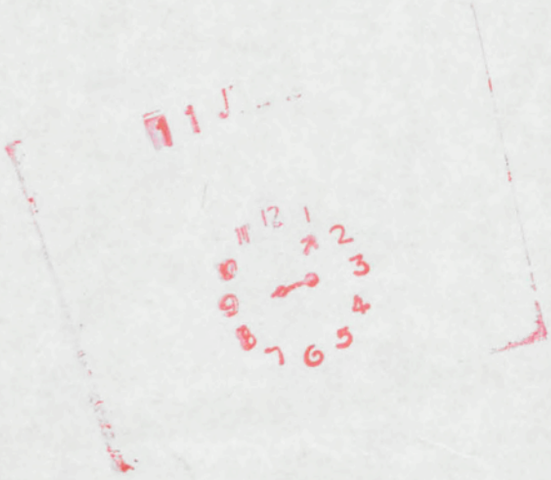
PRIME MINISTER'S SEMINAR - 12 SEPTEMBER 1983.

1. Mr Ball (PSA) is, not unreasonably, pressing me for a formal written booking for Lancaster House on this day. I presume this should come from No. 10; perhaps Mr Scholar would arrange.

R G COURTNEY

SCIENCE + TECH : Public Seminar

March 1983



OIC

Mr Flesher

Science + Technology
Seminar
Sec.

Hw0981

DR NICHOLSON

c Mr Scholar

27 June 1983

PRIME MINISTER'S SEMINAR - 12 SEPTEMBER.

At your request, I visited Lancaster House and discussed possible arrangements with Mr Ball (PSA). The Long Gallery, which is the only room capable of taking 250 people, does not have the ideal proportions for a conference being, as one might expect, rather too long and narrow - but it is not unreasonable. The top table could be put half way down one side with a block of seats facing it and two other blocks facing inwards from each end. Everyone would have a reasonable view.

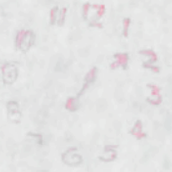
We would need to use several ante-rooms, including the Ballroom, for coffee and tea. There are no suitable facilities for lunch on that floor, but if we employ GHF as our caterers (as I presume we would do), they have appropriate facilities on the ground floor.

You have probably been to Lancaster House yourself. It is exceedingly ornate, with masses of gold leaf, and you may perhaps feel that the setting is somewhat overpowering - particularly for a conference concerned with technology. We need also to consider the cost involved in using it. I do not know what budget has been allocated to this event, but the likely cost of hiring the accommodation would be £2000 - £2500. (The Long Gallery costs £845 per day and we would incur a setting-up charge equivalent to a day's rent; there would be smaller charges for the other rooms.) We would also have to make our own arrangements concerning security, reception, guidance to delegates etc since the PSA merely operate the building - they do not provide a conference service.

Mr Ball has offered to prepare a seating plan for us but clearly would like to have a written booking in the near future.

R G COURTNEY

28 JUN 1983



Q10

Science + Technology

CABINET OFFICE
Central Policy Review Staff
70 Whitehall, London SW1A 2AS Telephone 01-233 7089

W.0355

31 May 1983

31/5

Mr Oscar Roith
Chief Engineer and Scientist
Department of Industry
Ashdown House
123 Victoria Street
London SW1

Dear Oscar

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

Because of the Election the Prime Minister has decided that her seminar on Science and Technology and Industry should be postponed from 8 July until some time in September. We are exploring dates in the weeks beginning 5 and 12 September and I will let you know as soon as a new date is fixed.

Yours ever

for ROBIN B NICHOLSON
Chief Scientist

cc: Mr Sparrow
Mr Gregson
→ Mr Flesher
Mr Caines
Members of CPRS
Mr Courtney
Dr Harrison
Dr Miles
Mr Harris
Mrs Ransom
Mr Williamson
Mr Hatfield
Dr Challis, D/Energy
Dr Holdgate, DoE/D/Tp
Dr Elton, MAFF
Dr Pope, MoD

PS/Mr Jenkin
PS/Mr Baker
PS/Sir Keith Joseph
PS/Mr Waldegrave
PS/Mr Shelton
PS/Chancellor of the Exchequer
PS/Chief Secretary, Treasury
Mr Ingham, 10 Downing Street
Mr Stubbs, MPO
Mr Gill, DoI
Mr Williams, DoI
Mr Bird, DES
Mr Tanner, DES
Mr Bailey, HMT

Science Technology March 83

8-4

10 DOWNING STREET

From the Private Secretary

DR. NICHOLSON

The Prime Minister has now seen your minute of 24 May about the forthcoming seminar on science, technology and industry. She agrees with your suggestion that the seminar should be postponed from 8 July until September. Perhaps this might best be arranged for the week beginning 5 September or, possibly, on 12 or 13 September. Later in that month it is possible that the Prime Minister may be abroad.

I am sending a copy of this minute to Mr. Hatfield, Mr. Spence and Mr. Courtney.

TIMOTHY FLESHER

27 May 1983

Prime Minister:

Do you agree with Dr Nicholsons proposal to postpone the seminar until September?

Yes

No

W.0325

24 May 1983

MR MICHAEL SCHOLAR

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

I need to have instructions as to how to handle the Prime Minister's seminar on Science, Technology and Industry over the election period.

2. The present position is that Lancaster House has been booked for the agreed date, 8 July, and there has been a first round of discussions between Departments on the content of the seminar when there was broad agreement with the draft I prepared dated 31 March, a copy of which was sent to you.

3. If we are to continue to plan on 8 July as the date, it would be necessary to take further actions over the next two or three weeks. In particular it would be necessary to approach the main speakers to ensure that they are happy to speak and are available on 8 July. We would also need to make some of the administrative arrangements and to prepare the guest list so that invitations could go out immediately after the Election.

4. The alternative is to abandon the 8 July date which no longer has any particular significance and to postpone the seminar to, say, mid-September, leaving the precise date to be fixed after the Election. This would avoid the need to approach the speakers on a provisional basis, allow Ministers with new Portfolios more time to decide on their contributions to the seminar and allow the Prime Minister greater opportunity to have an input into the detailed content and scope of the seminar.

5. My own view is that there are real advantages in holding this seminar early in the new Administration. The subject matter is of fundamental importance to a number of policies expressed in the

Conservative Party Manifesto. However I don't think this advantage extends to a case for having the seminar on 8 July rather than in mid-September, so my own recommendation in view of the administrative difficulties which I refer to above, would be to re-schedule the seminar for a date in September and to re-start discussion of its scope and content immediately after the Election.

RBN

ROBIN B NICHOLSON
Chief Scientist, CPRS

cc: Sir Robert Armstrong
Mr Sparrow
Mr Courtney

24 MAI 1960

aps pl.

Mr Fleshen

Wd you deal with these bolts and nuts?

MCS 10/5

RESTRICTED

Hw08 96

DR NICHOLSON

c Mr Scholar

9 May 1983

PRIME MINISTER'S SEMINAR - 8 JULY.

As requested, I have booked accommodation at Lancaster House for this event. This was done by means of a telephone call to Mr D Ball, PSA, St Christopher House (2813 - 2395). There will need to be written confirmation in due course. Mr Ball pointed out that, now that PSA were a repayment organisation, a fee would be payable for the use of the accommodation. This will presumably fall to No. 10 funds, the exact sum being determined once the detailed arrangements are made.

R G COURTNEY

Mr Fleshman

To see

MLS 31/3

CABINET OFFICE
Central Policy Review Staff
70 Whitehall, London SW1A 2AS Telephone 01-233 7089

W.0251

31 March 1983

Mr Oscar Roith
Chief Engineer and Scientist
Department of Industry
Ashdown House
123 Victoria Street
London.

OR
31/3

Dear Oscar,

PRIME MINISTER'S SEMINAR ON SCIENCE, TECHNOLOGY AND INDUSTRY

As you know from Michael Scholar's letter to me of 9 March, the Prime Minister has asked me to arrange a public seminar on Science, Technology and Industry. The date of the seminar is now scheduled as 8 July.

2. Over the last three weeks I have had a number of discussions on the objectives, form and content of the seminar. These discussions have been with Departments, in the Cabinet Office and with Sir Henry Chilver and Sir David Phillips. The general view seems to be that the seminar should not understate the nation's achievements in Science and Technology but should face up to the need for improvements especially in the application of Science and Technology to wealth-producing industry. I think that Imogen Wilde in her letter to me of 24 March has captured what is in many people's minds when she says: "Clearly the occasion must be justified in its own right and by its own objectives. We see it as an opportunity for the science community to come together with technologists and industrialists to express views publicly on major current issues of national policy for science and technology and on the directions in which the UK should be seeking to develop its undoubted strengths. It should be not simply an occasion for celebrating success (although that will be an important part of the purpose); it should also positively help to define directions and priorities, and to allow serious issues to be raised even if this means frank and critical speaking."

3. In the light of this I have prepared the attached draft programme which I propose to submit (modified as appropriate) to the Prime Minister in the week beginning 11 April.

4. I would welcome any criticism, comments and suggestions on the themes, scope, content and speakers suggested for the seminar. I hope that your comments and comments from other recipients of this letter (listed below) can reach me by midday on 11 April.

cc: Mr Sparrow
Mr Gregson
Mr Scholar, 10 Downing St.
Mr Caines
Members of CPRS
Mr Courtney
Dr Harrison
Dr Miles
Mr King
Mr Harris
Mrs Ransom
Mr Hancock
Mr Hatfield
Dr Challis, D/Energy
Dr Holdgate, DoE/D/Tp
Dr Pope, MoD
PS/Mr Jenkin
PS/Mr Baker
PS/Sir Keith Joseph
PS/Mr Waldegrave
PS/Mr Shelton
PS/Chancellor of the Exchequer
PS/Chief Secretary, Treasury
Mr Ingham, 10 Downing St.
Mr Stubbs, MPO
Mr Gill, DoI
Mr Williams, DoI
Mr Bird, DES
Mr Tanner, DES
Mr Bailey, Treasury

Yours ever,

Robin.

ROBIN B NICHOLSON
Chief Scientist

DRAFT PROGRAMME

SCIENCE, TECHNOLOGY AND INDUSTRY

Seminar Theme: The United Kingdom has an excellent record of innovation in science and technology. We must maintain and enhance this in the future and also substantially improve our ability to use this achievement to generate a better industrial performance.

Seminar Chairman: The Prime Minister [Lord Caldecote in the afternoon if the Prime Minister is available only in the morning]

Morning Session

10.00 Introduction : The Prime Minister

Topic I Choices and Priorities: Few countries, companies or institutions can cover all the science and technology which is relevant to their interests. Therefore priorities must be established and choices made - how?

10.20 Priorities for industry: (i) Lord Weinstock (GEC)/Sir Austin Bide (Glaxo)

(ii) Sir David Orr (ex-Unilever)/John Harvey-Jones (ICI)

10.50 Discussion

11.20 Choices in Science: (i) Sir David Phillips (ABRC)

(ii) John Kingman (SERC)

11.55 Discussion

12.15 Value for Money for the Tax-Payer: S/S Industry/M/S Industry and IT

12.30 Discussion

12.55 Summary: The Prime Minister

13.00 Break

Afternoon Session

14.15 Introduction: Sir Henry Chilver (ACARD)

Topic II Creating wealth from Science and Technology: Successful, wealth-producing innovation depends on effective communication between the innovator and the market place, between the scientist and the designer, between the industrialist and the financier. How well do these links operate in the United Kingdom today?

14.30 Industry's links with Universities and Polytechnics: Sir Geoffrey Allen (Unilever)

14.45 Discussion

15.15 Break

15.35 Finance for Innovation: Lord Caldecote (ICFC)

15.40 The Successful Innovator: Jack Leonard (Eurotherm Ltd)

16.10 Discussion

16.45 Summary: S/S Education and Science/Ministers from DES/DoI

17.00 Close.

Literature: The following reports published or to be published in the first half of 1983 will be relevant to the seminar:-

(1) House of Lords Select Committee report on Engineering R & D (March)
(2) Government response to (1) (expected May/June)
(3) Versailles Working Group report: Technology, Growth and Employment (March, Cmnd 8818)

(4) ACARD report on University/Industry Links (expected May/June)

(5) Report on Science and Technology by Chairmen of ACARD and ABRC (Cmnd 8591, paragraph 10, expected May/June)

(6) Report on Modern Materials (commissioned from the Fellowship of Engineering by the Department of Industry, expected May/June)

Attendance: Approximately 250 comprising Industry 80, City 20, Universities/Polytechnics 50, Government Departments/ Research Councils 40, Government advisory committees/ professional and learned societies etc 60.
Plus Press 20.

NBPM

MS 25/3

DEPARTMENT OF EDUCATION AND SCIENCE

ELIZABETH HOUSE, YORK ROAD, LONDON SE1 7PH

TELEPHONE 01-928 9222

FROM THE SECRETARY OF STATE

Dr R B Nicholson
Central Policy Review Staff
70 Whitehall
London
SW1

24 March 1983

Dear Dr Nicholson,

PRIME MINISTER'S SEMINAR ON SCIENCE AND TECHNOLOGY

My Secretary of State has seen a copy of Michael Scholar's letter to you of 9 March on this subject.

He has asked me to say that he warmly welcomes the proposal and would himself wish to attend. He hopes too that Mr Shelton and Mr Waldegrave will also be able to come.

Accordingly we will be very willing to help in every way possible in planning the agenda, in the selection of speakers and guests, and in the preparation of the Prime Minister's opening speech. My Secretary of State would wish due weight to be given to basic science and to the contribution of the universities and Research Councils. We understand that Sir David Phillips is willing to be involved and welcome this. We also welcome the idea of involving Professor Kingman and Sir Alex Merrison (whose "state of the nation" report jointly with Sir Henry Chilver (see paragraph 10 of Cmnd 8591) could, we hope, be available in advance).

Clearly the occasion must be justified in its own right and by its own objectives. We see it as an opportunity for the science community to come together with technologists and industrialists to express views publicly on major current issues of national policy for science and technology and on the directions in which the UK should be seeking to develop its undoubted strengths. It should be not simply an occasion for celebrating success (although that will be an important part of the purpose); it should also positively help to define directions and priorities, and to allow serious issues to be raised even if this means frank and critical speaking. We will be giving further thought to the issues we would hope to see addressed, and to possible speakers and guests. We hope you

will feel able to involve Richard Bird and Science Branch closely in the planning (although we assume that the logistics - which will be considerable - you will contract for outside Government).

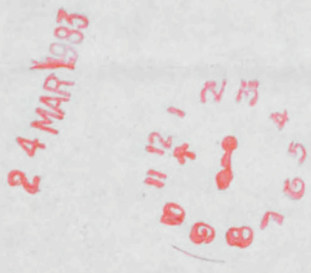
I am sending a copy of this letter to Michael Scholar and to Jonathan Spencer.

Yours sincerely,

Imogen Wilde.

MRS I WILDE
Private Secretary

Science & Tech.
March '63 Seminar
on Science/Tech/Ind



JH 282

Prime Minister 2

MCS 23/3

DEPARTMENT OF INDUSTRY
ASHDOWN HOUSE
123 VICTORIA STREET
LONDON SW1E 6RB
TELEPHONE DIRECT LINE 01-212 3301
SWITCHBOARD 01-212 7676

Secretary of State for Industry

22 March 1983

Michael Scholar Esq
Private Secretary to the
Prime Minister
10 Downing Street
London SW1

Dear Michael

Thank you for sending me a copy of your letter of 9 March to Dr Nicholson about the Prime Minister's wish to have a seminar on science, technology and industry.

2 My Secretary of State fully supports this proposal and believes that it will provide an excellent opportunity to present British scientific and technological achievements in a much more positive way than we can apparently expect from the BBC. He suggests that the programme for the seminar should aim to show that Government priorities and expenditure on science and technology do result from a consistent view of the Government's wider policy responsibilities.

3 Whilst he believes that much more can, and should be done, to secure general economic benefits from the UK's considerable expenditure on basic research and defence R&D he suggests that on this occasion the emphasis should be on what is achieved and he hopes that both the Ministry of Defence and the Research Councils will be encouraged to participate in that spirit. He sees this as an important counter to the message of the Horizon programme.

4 My Secretary of State, of course, welcomes the opportunity to speak at the seminar on the work and policy of his Department. The officials in his Department will do all that they can to assist with the arrangements.

Yours sincerely

Michael Kenny

PP ANDREW COOP
Private Secretary

P.S. Mr Jenkin hopes to minute the Prime Minister shortly on his plans for the BTG which are very relevant to the general thrust of the proposed seminar.

Science + Tech
Library Services
Meeting 83

10 DOWNING STREET

Prime Minister

Dr Nicholson

As well as Alvey you may wish to mention Ferdie's idea about Walter Goldsmith for the Science, Technology and Industry seminar.

MLS 14/3

11 March 1983

Policy Unit

PRIME MINISTER

PUBLIC SEMINAR AND RECEPTION ON SCIENCE, TECHNOLOGY AND INDUSTRY

There is, I am sure, great potential in your suggestion to Robin Nicholson for a seminar which you would launch and chair. But it will need careful preparation if it is not to look hastily contrived. The discussion must also be genuine and constructive if it is not to appear as crude Government propaganda (which will be ignored by the media); at the same time, the proceedings must not be allowed to degenerate into an anti-Government rally.

A further danger is that unless we have agreed announcements of substance to make (eg on Alvey), both your colleagues and the participants are likely to try to use the seminar as a forum for extracting commitments for more Government money.

To give the debates real substance, we might do well to take the advice of (a) someone with experience of organising these big seminars, eg Walter Goldsmith; and (b) an industrialist in science-oriented industry, eg Arnold Weinstock.

It is important to identify and separate suitable themes for discussion rather than everyone sounding off in an unstructured way. Two obvious themes:

1. How do we improve the interaction between industry and the universities?

2. What can we learn about the application of science from Japan, the US and West Germany?

To get the right sort of coverage, it might be better to leave something of a gap between the seminar and Williamsburg - not least in order to give you enough time to prepare your major speeches for Washington.

But if we advance the seminar date to mid-May, we might be short of time to prepare it properly.

Is there a case for holding the seminar after Williamsburg, say, in mid-June? The theme could then be looking forward to the next 5 years and the 1990s.

Would you like to talk to Arnold Weinstock and Walter Goldsmith?

FERDINAND MOUNT

28/3 24/3 ✓6

Kay
Please can we see you about this
MCS

bc. Mr Ingham
Mr Coles
Mr Flesher

cc PS/Chancellor

10 DOWNING STREET

From the Private Secretary

9 March 1983

Michael - See over page.
Have you received the note and guest list?
If not, shall I chase?
Kay
21/3

Dear Robin,

The Prime Minister had a word with you this afternoon about the public presentation of the Government's scientific research effort.

The Prime Minister said that she had been much disturbed by the recent BBC Horizon programme on this topic. It had presented a biassed and one-sided picture, and she wished the record to be put straight. The Prime Minister's dissatisfaction with the Horizon programme was intensified when she learnt that you had given them a three-quarter of an hour interview none of which they had used. Mrs. Thatcher has since asked Bernard Ingham here to let the BBC know of her reaction to the programme.

The Prime Minister said that she would like to arrange a public seminar and reception on science, technology and industry, preferably in Lancaster House, and ideally just before the Williamsburg Summit, at the end of May. She would wish the Department of Education and Science and the Department of Industry, as well as the other Government Departments most closely concerned to be involved in the arrangements. She envisaged an audience of 200-250 people, with representatives from the academic world and from industry. Names that came to mind: Professor Sir David Phillips of ABRC, Sir Henry Chilver of ACARD as well as Professor John Kingman and Sir Alec Merrison.

The Prime Minister said that she would be ready to chair the discussion, and to start it off with a speech. We should aim to secure full publicity, inviting representatives of Nature Magazine and the New Scientist for example. She would find the occasion useful for the discussion on this topic at the Williamsburg Summit.

/I would

I would be grateful if you could let the Prime Minister have a note developing these ideas and suggesting a guest list. For your guidance I attach guest lists at recent receptions here on information technology, design and innovation. Clearly our objective should be to avoid overlapping as much as possible. The Prime Minister's diary would allow for this occasion to take place on Wednesday 25 May. I should be grateful if you could make the necessary enquiries of Lancaster House and of the other people who would need to be involved about these dates.

I am sending a copy of this to Jonathan Spencer (Department of Industry) and to Imogen Wilde (Department of Education and Science).

Yours sincerely,

Michael Scholar

Dr R.B. Nicholson
Central Policy Review Staff.

LIST OF GUESTS ATTENDING THE MEETING AND RECEPTION TO BE GIVEN BY THE PRIME MINISTER FOR INNOVATORS AND FINANCIERS ON MONDAY, 26 JANUARY FROM 6.30 PM TO 8.00 PM

The Prime Minister

Inventors/Innovators

Professor M. French	Department of Engineering, University of Lancaster
Mr. R. Kinnersley	
Mr. R. Hickman	
Mr. A. Smythe	Amstrad Systems Ltd.
Mr. P.C. Dowles	Crado Devices Ltd.
Mr. P. Gotley	Neotronics Ltd.
Mr. R.M. Hartley	Dival Textiles Ltd.
Mr. M.A. Hiles	
Dr. F.B. Mercer	Netlon Ltd.
Mr. R. Mozley	Richard Mozley Ltd.
Mr. E. Biss	
Mr. N. Vinson	Chairman, Development Commission
Mr. C.A. Davies	Information Technology Ltd.
Mr. B. Allison	Chairman and Managing Director, Busines Intelligence Services Ltd.
Mr. L. Brownlow	Managing Director, Rodime Ltd.
Mr. H. Calvert	
Sir William Mather	Chairman of Compair Ltd.and the Council of Institute of Directors and member of the Board of National Westminster Bank
Professor Michael Hampshire	Professor of Solid State Electronics, University of Salford and founder of Pensec Ltd. and Salplex Ltd.
Mr. Tim Parker	Hiltcroft Packaging Components Ltd.

Entrepreneurs/Financiers

Mr. P. Naylor	Managing Director, Job Creation Ltd.
Mr. G. Taylor	Managing Director,TDC Development Ltd.
Dr. J.C. Cain	Managing Director, NRDC

Mr. S. Dollond	Marketing Director, NRDC
Mr. H. Jenkins	Director General of Investments, NCB Pension Fund
Mr. J. Peterson	Venture Founders Ltd.
Mr. I. Momtchiloff	Finance for Industry Ltd.
Mr. P. Redman	Abercrombie and Co. Ltd.
Mr. I.W. Lovett	Manager, Small Business Unit, Barclays Bank Ltd.
Mr. M.T.J. Wallis	Assistant General Manager, Midland Bank Ltd.

Consultants

Mr. R. Cutting	Managing Director, Cambridge Consultant
Mr. G.M. Edge	International Director, Patcentre
Professor G.P. Blair	Department of Engineering, Queen's University, Belfast

Industrialists

Sir Alastair Pilkington	Pilkington Brothers Ltd.
Dr. A. Spinks	Chairman, ACARD
Sir Robert Clayton	Technical Director, GEC Ltd.
Lord Caldecote	Chairman, Delta Metal Co. Ltd.

Miscellaneous

Mr. J.L.A. Cary	Venture Capital Report Ltd.
Mr. R. Rayner	Institute of Patentees and Inventors
Mr. P.K. McIlroy	Chairman, Tyne and Wear Chamber of Commerce and Industry

Government

The Rt. Hon. Sir Geoffrey Howe, MP

The Rt. Hon. Sir Keith Joseph, MP

The Rt. Hon. Leon Brittan, MP

Mr. Nigel Lawson, MP

Mr. Neil Macfarlane, MP

Mr. Kenneth Baker, MP

Mr. John MacGregor, MP

Members of Parliament

Sir David Price, MP

Sir Paul Bryan, MP

Mr. Ian Lloyd, MP

Mr. Kenneth Warren, MP

Mr. David Trippier, MP

Officials

Dr. J.M. Ashworth	CPRS
Miss A. Mueller	Deputy Secretary, Department of Industry
Mr. R. Franklin	Department of Industry
Mr. A. Lovell	HM Treasury
Mr. R.G. Courtney	Cabinet Office

10 Downing Street

Mr. Ian Gow, MP

Mr. Mike Pattison

LIST OF GUESTS ATTENDING THE RECEPTION/SEMINAR FOR INDUSTRIAL DESIGNERS TO BE GIVEN BY THE PRIME MINISTER AND MR. DENIS THATCHER ON MONDAY, 25 JANUARY 1982 FROM 6.30 PM TO 8.00 PM

The Prime Minister
and Mr. Denis Thatcher

Ministers

Rt . Hon. Patrick Jenkin, MP

Rt. Hon. John Biffen, MP

The Hon. Nicholas Ridley, MP

Mr. Kenneth Baker, MP

Rt. Hon. Paul Channon, MP

Mr. William Shelton, MP

Mr. John Wakeham, MP

DESIGNERS

David Carter	DCA Design Consultants Ltd.
Diarmuid Downs	Ricardo Consulting Engineers Ltd.
T.P. Dukes	W.S. Atkins, Ltd.
K. Grange	Pentagram Design
B. Hiscock	Fraser Nash
Richard Negus	Negus and Negus
Nicholas Butler	BIB Design Consultants
James Pilditch	Allied International Designers Ltd.

REPRESENTATIVE BODIES

Design Council

Sir William Barlow	Chairman
Keith Grant	Director
Mervyn Unger	Deputy Director

Society of Industrial Artists and Designers

Edward Pond	President
Michael Sadler-Forster	Director

Royal Society of Arts

Ian Hunter	Chairman
Alex Moulton	Master of the Faculty of Royal Designers for Industry

Crafts Council

Victor Margrie	Director
Jean Muir	
David Mellor	

INDUSTRY/COMMERCE

Zach Brierly	Z. Brierly Ltd.
Terence Conran	Chairman, Habitat, Ltd.
Sir Frederick Page	Chairman and Chief Executive, Aircraft Group, British Aerospace
Peter Lewis	Chairman, John Lewis Partnership
E.C. Hewitt	Technical Director, Davy Loewy
C.V. Chester-Browne	Managing Director, Vickers Design & Projects
Zandra Rhodes	
M. Kimberly	Managing Director, Lotus Cars Ltd.

UNIVERSITIES AND POLYTECHNICS

David Bethel	Director, Leicester Polytechnic
Professor L. Finkelstein	The City University
Professor J.H. Horlock	Vice Chancellor, Open University
Professor L. March	Rector, Royal College of Art
Sir Hugh Ford	Vice President of the Fellowship of Engineering and Emeritus Professor of Mechanical Engineering at Imperial College

OTHER NOTABLE ADVOCATES OF DESIGN

Viscount Caldecote	former Chairman of the Design Council Chairman of Delta Metals
Dr. Bryan Lindley	Dunlop Ltd.
David Penny	Institute of Mechanical Engineers
John Wesley	Cranfield Product Engineering Centre
Dr. Paul Freeman	Director, Computer Aided Design Centr

OTHER NOTABLE ADVOCATES OF DESIGN (Continued)

Professor F. Height	Royal College of Art

British Standards Institution

Admiral D.G.Spickernell	Director-General
Miss G.M. Ashworth	Secretary

HOUSE OF LORDS

The Lord Reilly

HOUSE OF COMMONS

Marcus Fox, MP

Michael Brotherton, MP

Christopher Price, MP

John Lee, MP

Jocelyn Cadbury, MP

Richard Page, MP

Gerry Neale, MP

OFFICIALS

Department of Industry

P. Goodman

A.L. Thomas

Michael Harrison

Department of Trade

R.C. Foster

D.R. Coates

Treasury

A. Allan

Department of Education and Science

R.H. Stone

C.R. Walker

Cabinet Office

Dr. R. Nicholson

D. Wright

10 Downing Street

Ian Gow, MP

Willie Rickett

Liz Drummond

Andrew Duguid

LIST OF GUESTS ATTENDING THE INFORMATION TECHNOLOGY PRESENTATION AND RECEPTION ON MONDAY, 17 MAY 1982 FROM 6.00 PM TO 8.00 PM

The Prime Minister

IT industry, including users and nationalised industries

Sir Robert Telford	Chairman, GEC Marconi Electronics
Mr. D. Alun-Jones	Ferranti Ltd.
Mr. D.L. Davies	Group Managing Director, Racal-Milgo Ltd.
Mr. R.W. Wilmot	Managing Director, ICL plc
Sir Raymond Pennock	BICC Ltd.
Mr. Hamish Orr-Ewing	Rank Xerox
Mr. Jonathan Gestetner	Gestetner Holdings
Mr. T. Matthews	Mitel Corporation
Mr. J. Griffiths	Director, Philips Electronics
Mr. J.G. Cottrell	STC Ltd.
Mr. Peter Laister	Thorn EMI Ltd.
Mr. R. Marriott	IBM (UK) Ltd.
Mr. D. Broad	Managing Director, Comart
Mr. C. Sinclair	Sinclair Research Ltd.
Mr. I. Barron	Inmos
Mr. K. Walkenden	British Olivetti
Sir George Jefferson	British Telecom
Mr. John Alvey	British Telecom
Mr. W.B. Willott	British Technology Group
Mr. R.E. Dearing	The Post Office
Mr. R.M. Denny	Rediffusion Ltd.
Mr. J. Ockenden	CAP-CPP Group Ltd.
Mr. D. Harris	Tesco Stores (Holdings)
Mr. J.G. Grindle	Departmental Director, Branch Services Sainsbury PLC
Mr. R.J. Kelly	American Express
Mr. C. Bradley	Publishers Association

Mr. J.P. Leighfield	Managing Director, BL Systems
Mr. P. Hughes	Logica
Sir Raymond Lygo	British Aerospace Dynamics Group
Mr. Bryan Cowgill	Thames TV Headquarters
Mr. J. McHugh	British Gas Corporation
Mr. B. Rigby	Confederation of British Industry
The Lord Flowers	
Mr. J.J. Salisse	Marks and Spencer
Mr. G.P.K. Miller	Director of Management Services, John Lewis Partnership
Ms. Rachel Waterhouse	Consumers Association
Mr. Chris Webb	Notting Dale Urban Studies Centre
Trades Unions	
Mr. David Lea	TUC
Mr. Frank Chapple	Electrical, Electronic, Telecommunications and Plumbing Union
Mr. E. Hammond	" " "
Mr. B. Stanley	POEU
Mr. B. Sherman	ASTMS
Others	
Dr. P. Stoneman	Warwick University
Professor J. Heath	London Business School
Mr. M. Harrison	Director of Education, City of Sheffield
Sir Henry Chilver	Cranfield Institute of Technology
Mr. David Young	Manpower Services Commission
Financial/Economic	
Mr. J.G. Quinton	Barclays Bank
Mr. R.R. Amos	Deputy Chief General Manager, Lloyds Bank
Mr. T.M. Rybczynski	Lazard Bros.
Mr. Andre Villeneuve	European Manager, Reuters
Mr. J.R. Heugh	Clydesdale Bank

Financial/Economic (continued)

Mr. B. Fireman	Charterhouse Japhet Ltd.
Mr. D.G. Scholey	S.G. Warburg & Co. Ltd.

IT Advisers

Mr. C. Read	IBRO
Mr. C. Southgate	Thorn-EMI
Mr. I. Cohen	Mullard Ltd.

Members of Parliament

Mr. Kenneth Warren, MP

Mr. John Lee, MP

Mr. Gerry Neale, MP

Mr. Ian Lloyd, MP

Journalists

Mr. Guy de Jonquieres	Technology Correspondent, Financial Times
? Mr. Bill Johnstone	Electronics Correspondent, Times
Mr. Peter Large	Technology Correspondent, Guardian
Mr. Roland Gribben	Business Editor, Daily Telegraph
Mr. Richard Brooks	Technology Correspondent, Sunday Times
Mr. Steve Vines	Observer
Mr. Nick Measham	Economist

HM Government

Rt. Hon. Patrick Jenkin, MP

Mr. Kenneth Baker, MP

Mr. John Butcher, MP

Mr. John Wakeham, MP

Officials

Mr. R.H.F. Croft	Deputy Secretary, Department of Industry
Mr. W.N. Hyde	Deputy Secretary, Home Office
Mr. Terry Burns	Chief Economic Adviser, Treasury
Mr. J.B. Unwin	Under Secretary, Cabinet Office
Dr. R.B.Nicholson	CPRS
? Mr. John Sparrow	CPRS

Sir Derek Rayner	
Mr. A.J. Macdonald	Under Secretary, IT Division, Department of Industry
Mr. J.C.J. Thynne	Assistant Secretary, IT Division
Mr. N.M. Macmillan	Private Secretary to Mr. Kenneth Baker

10 Downing Street

Mr. Ian Gow, MP

Professor Alan Walters

Mr. Michael Scholar

Mr. John Vereker

Mr. William Rickett

Miss Sheenagh Wallace

SCOTTISH OFFICE
WHITEHALL, LONDON SW1A 2AU

W F S Rickett Esq
Private Secretary
10 Downing Street
LONDON SW1

22 December 1982

Dear Willie,

PRIME MINISTER'S SPEECH FOR CONFERENCE ON INFORMATION TECHNOLOGY

You will recall asking if the Prime Minister could say in her recent Barbican speech that more people were employed in Scotland in electronics than in steel and shipbuilding combined. I am sorry that our response to this enquiry was hesitant and apparently inconsistent with information we had earlier provided.

The basic problem here, as you can imagine, is one of definition. This is further complicated by the absence of comprehensive up-to-date employment figures so that some element of estimation is inevitable. The conventional statistical breakdown of employment combines shipbuilding, ship repairing and marine engineering in a single MLH*. The MLHs within the SIC grouping Metal Manufacture which refer to ferrous metals are iron and steel (general), steel tubes and iron castings. Of these definitions, shipbuilding employment in Scotland in 1981 was estimated at around 30,000 and iron and steel around 20,000. On a narrower and more realistic definition current employment in steel may well not now exceed 14,000. Current employment in British Shipbuilders in Scotland is around 18,000. In addition we have the MOD base at Rosyth, many of whose employees are engaged in shipbuilding and ship repairing, but many of whom are not, and a very minor element of private shipbuilding and ship repairing.

We therefore believe that the assertion that the number employed in electronics (an estimated 40,000 last year) exceeds the combined total in steel and shipbuilding is realistic and could be defended if challenged. We would not, however, on reflection want to defend publicly the 32,000 combined total for steel and shipbuilding quoted in our minute of 18 October, because it involves a substantial element of judgement.

* Minimum List Headings

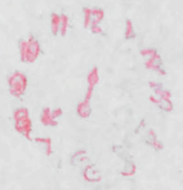
I hope that this clarifies the position and I apologise again for the confusion which your request evoked.

Yours sincerely

John Wilson

JOHN S WILSON
Private Secretary

12 MAY 1983



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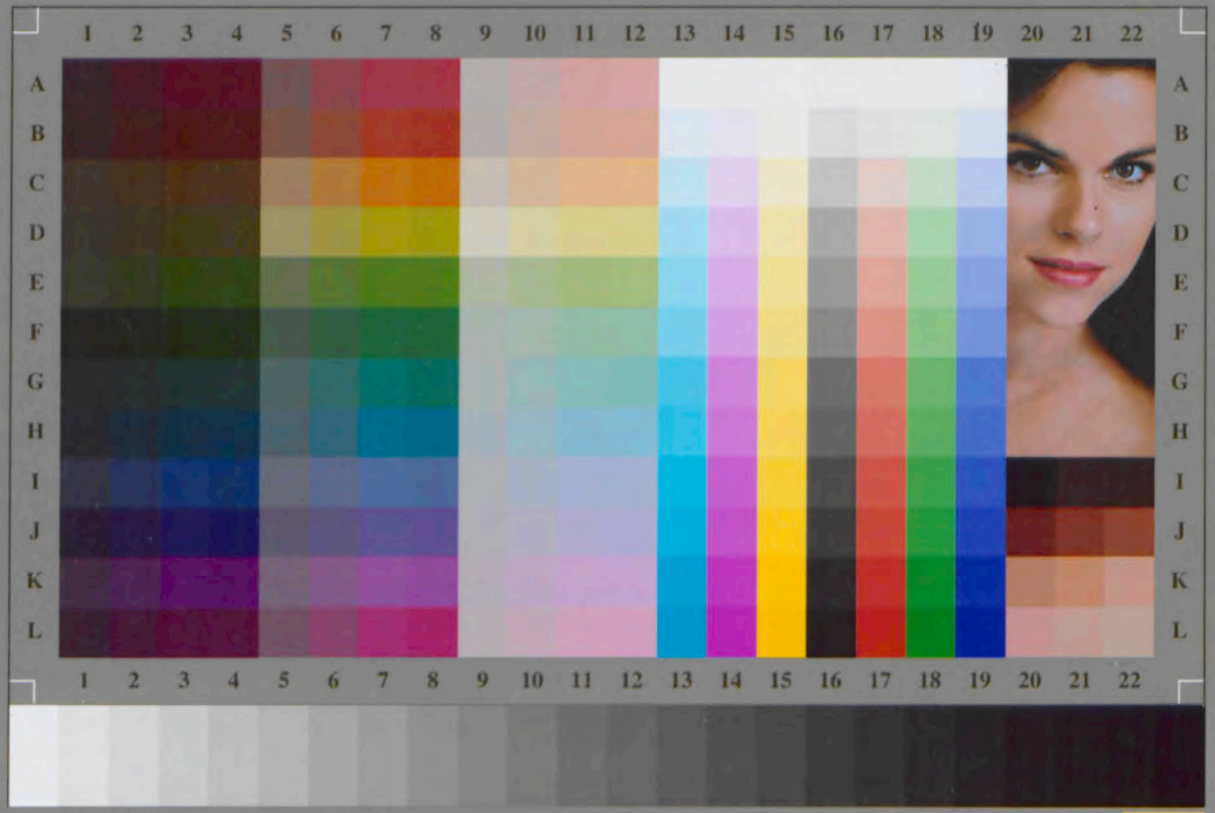

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