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10 DOWNING STREET

THE PRIME MINISTER

19 September 1983

Dear Mr 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

Rajant Shah

J. H. Harvey-Jones, Esq.

82P

Mr. Flesher



CABINET OFFICE

~~Central Policy Review Staff~~

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12 August 1983

Mr J Harvey Jones  
Chairman  
ICI plc  
IC House  
Millbank  
London SW1

JA 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 sincerely,  
Robin Nicholson

ROBIN B NICHOLSON  
Chief Scientific Adviser

cc: Mr. Spence  
Mr. Flesher

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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 kerosene for jet fuel, or our revolutionary development of 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