PART 1

Confidential filing.

The problems faced by private inventors in the UK in securing commercial exploitation of their inventions. Innovation in the U.K. Reception for inventors and Innovators, 26 January 1981.

SCIENCE AND TECHNOLOGY.

August ~~September~~ 1980.

Referred to	Date	Referred to	Date	Referred to	Date	Referred to	Date
~~5-9-80.~~							
~~28-11-80~~							
~~28-1-81~~							
~~29-1-81.~~							
~~29.1.81~~							
~~2.2.81~~							
~~6-2-81~~							
~~13-2-81~~							
31-1-81							
END							

PREM 19/585

PART 1 ends:-

Andrew Smyth of Amstrad Systems Ltd to PM of 31/1/81

PART 2 begins:-

DES to MAP of 2/2/81.

MAP 4/2 Science + Tech.

Amstad

75 Camden Mews
London NW1 9BU
Telephone 01-267 9444
Telex 896691

Prime Minister
The Rt. Hon. Margaret Thatcher M.P.
10 Downing Street
London SW1

31st January 1981

Dear Prime Minister,

Let me first thank you for your hospitality last Monday, I greatly enjoyed it. I am particularly impressed by the great interest you showed in the subject and the views expressed. Continually our overseas customers praise the British ability to innovate, while at the same time condemning the inneficiency with which we go about it. As you say, we are not noted for risk-taking, but there is no reason why this should not change.

Regarding the discussion itself, rarely have I heard such consistent themes emerge, and in this respect it was a great success. By their nature, innovators do not usually get together, and the occasion must have been quite unique. I feel, however, that it would be a great pity if the initiative were to stop there, and would urge you to continue it.

I enclose my notes made before the meeting, which might of of interest to ACARD. I am sure that, before any policy can be formulated, there is a great deal of very useful work to be done in trying to define the problems of innovators. It is my view that the ACARD report, upon which our discussions were based, went no way towards this. Since much innovation is inseparable from design, I have written to the Design Council Director suggesting that he initiates some research into this area. Should you feel that this is a good idea, Government encouragement would be very useful.

Finally, and at the risk of stating the obvious, it is important to remember that for every innovator represented last Monday, there must be thousands who have fallen by the wayside soley through lack of proper support. It is vital for the future prosperity of this country, that an effort is made to stop this.

Once again my sincere thanks for your hospitality, and your time.

Yours sincerely,

Andrew Smyth

For Amstad Systems Ltd.

Amstad Systems Ltd
Director: Andrew Smyth
Reg in London No 1088859
Registered Office 82z Portland
Place London W1N 3DH

Amstad

75 Camden Mews
London NW1 9BU
Telephone 01-267 9444
Telex 896691

COMMENTS ON THE ACARD REPORT OF DECEMBER 1980

Firstly, there seems to be great confusion with definitions. There are (a) small companies, (b) small new companies, and (c) small new companies with new products. The problems of each of these are significantly different. In addition there are existing companies who are trying to launch new products. We feel that the confusion between these definitions has led to misunderstanding and it is therefore important to understand which category one is talking about.

The principal area of difference is in financial return. An investment made in a new product takes longer to show a return than an investment in a new company selling an existing product. This is because, before actually selling the product, the market has to be established and proven, and during this time, not only development and tooling expenses have to be carried, but also overhead and sales expenses. This will almost invariably result in relatively substantial initial losses for the company. As an example, no matter how suitable a product is for a particular market, it is likely that potential customers will initially place only trial orders, which can be disproportionately expensive to produce, before placing orders of a more commercial size.

Secondly, and in view of the above, we feel that the ACARD report seriously misrepresents the true situation regarding product innovation. It does this in three major ways: 1. In overemphasising the true situation of public organisations such as NRDC, NEB and the DoE. 2. In unscientifically representing the comercial worth of potential innovations, and 3. In misrepresenting the real availability of venture capital within the UK.

1. The public organisations generally, and inevitably, operate on bureaucratic principles which is anathema to most innovators. In particular we feel that, by representing an innovator°s time as without cost, it seriously underestimates the real, day-to-day problems which innovators face. These organisations are generally not the first port of call of small innovators, for precisely this reason.

2. It is tautological to say that only 1 to 2%of innovations are of commercial worth, since there is currently no way of ascertaining the potential of innovations which have not received support, and which have therefore automatically failed. In contrast, the report states BSC°s experience showing "a surprisingly high probability of success.

3. ACARD°s report states, regarding venture capital, that "There is increasing interest and genuine competition between institutions in this field", which in our experience is totally untrue.
In support of this it cites only the VCR newsletter, which, by its own admission, aranges finance for less than 10 innovations a year.

Amstad Systems Ltd

Director: Andrew Smyth
Reg in London No 1088859
Registered Office 82z Portland Place London W1N 3DH

Recommendations.

We feel that important areas ommitted from the ACARD report, are in the following areas: 1. Definitions and information about the type of new company under consideration. 2.The role of the clearing banks, and 3. The general prevailing attitude to new companies.

1. As outlined above, we feel that there is insufficient proven knowledge of the nature of the problems facing innovators. In particular this relates to their success in raising initial finance and their subsequent success in the market place. There is enough information available from existing sources to provide a more statistically based outline of the real problem. Apart from government-related organisations, there have been a number of "Innovation for Industry" competitions, in particular those sponsored by "The Observer" newspaper and TDC Ltd, to provide a very useful source of data. We recommend that a report be produced, based on this specific information, thereby providing a much sounder base for any eventual policy decision.

2. Clearing banks are generally the first port of call for any innovator wishing to establish a business. It is our view that any new service designed to aid innovation, be supported by the existing "personal" sevice offered by the banks, with referral procedures where necessary. Initially we feel that Bank Managers could be better informed about the existing sources of help. We are aware of current discussion regarding loan guarantee schemes to help small businesses, but because of the initial high risk of providing venture capital, and the associated long-term payback of such investments, feel that a loan scheme would be unworkable for most innovations. Equity participation would be a better way to proceed, and be of more benefit to innovator and investor alike. We therefore recommend that, along with consideration of a loan-guarantee scheme, an equity-finance guarantee scheme be also considered. Any such scheme, because of the risks involved, would inevitably, if regretably, be government backed.

3. A general atmosphere sympathetic to new products needs also to be established. Any new venture must inevitably come into contact with very large organisations of either government or commerce, and these large organisations are not always predisposed to help. In particular, we feel that the prevailing attitude that new ideas need to be "block-busters" needs to change. Most new products seem to be measured against this kind of criterion, (witness ACARD°s reference to the Workmate), and yet perfectly sound, export-based companies can be established with products of smaller market potential. In this respect we cannot see how the ACARD report can so confidently state that a business of 50,000 pounds annual sales can provide work for only one person. Such a statement seems to perpetuate the idea that all innovations need to appeal to enormous markets. Knowing of the success of the CoI in publicising British innovations abroad, we recommend that they look at a similar promotion or the awareness of British inventions within the UK.

1717 4/2

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MIKE PATTISON

Numatic
INTERNATIONAL

NUMATIC ENGINEERING LTD. BROADWINDSOR ROAD, BEAMINSTER, DORSET DT8 3PR, ENGLAND. TEL: 0308 862062 TELEX: 417150.

CRD/gmr

30th January, 1981.

The Rt.Hon. Margaret Thatcher, MP,
10 Downing Street,
LONDON SW1.

Dear Mrs. Thatcher,

I have been threatening Jim Spicer for some considerable time to write to you on the subject of the current economic situation but each time that I put pen to paper I feel convinced that it will fall on stony ground and that you are far too busy to take heed of the thoughts of a small country businessman.

At long last I find that I must put pen to paper, if only to say that at least I tried to impress upon you and your government the absolute and utter necessity for some degree of modification to your existing policies to bring about a change of direction which I feel sure will be in the long-term best interests of the country.

Briefly, by way of explanation, we - Numatic International Ltd. - are a Dorset company employing 130 people, with sales approaching £5,000,000 per annum and with a record of exports over the last seven years of 50% of our production annually.

You may well recall before our entry into the EEC, businessmen were beseeched to export or die. Our entry into the EEC, with which I wholeheartedly concur, provided the export impetus that we needed. The current situation has brought us very close to the original position with the exception that now we export and die.

Over the past ten years we have invested heavily in building up export markets and we pride ourselves on being considered a good supplier overseas. We have been termed by a number of our customers as a 'different sort of British company'. The return we are now receiving for all these efforts is to have our export markets annihilated by the substantial over-valuation of the sterling pound, to a point where we simply have no possibility of competing in previously strong overseas market areas and, not only this, but in addition the tide has substantially turned within the UK, allowing imported equipment from many European countries to compete and under-price equipment of our own entirely due to the artificial exchange rate situation.

/2

Registered Number 773331 England Registered office 2 Knoll Road Camberley Surrey

I fully appreciate that the figures produced with regard to our balance of payments may still not endorse what I appear to be saying, but I think it should be appreciated that such exporting as is still going on from companies such as our own, is as a result of the momentum generated during 1980 which does not die immediately and, secondly, that we are substantially discounting our product from between 20% to 25% in order to endeavour to sustain some level of business in the desperate hope that the £.Stg. will reduce to nearer its original value of one year ago.

The result of the endeavours of what can only be termed your loyal followers is to maintain a level of exports but at the same time to destroy the profit base of our very companies which can only result - if relief is not forthcoming - in the substantial reduction of these manufacturing units, loss of our export markets and further unemployment, doom and despondency. I think it should be appreciated that with the substantial revaluation of the pound, manufacturers will not be able to hold on much longer.

As you will know from your statistics, price increases in many of the European countries over the past twelve months amounted to between 1% and 3%. We as a company enter 1981 in our export markets having no price increase on our product at all and, in addition to this, we are having to discount our sales values by between 20% and 25% at this minute in time to maintain volume and keep people employed.

The reason for writing to you is not to bleat as an inefficient manufacturer of old-fashioned products who cannot compete on world markets. We are an efficient manufacturer of modern well-accepted products and through no fault of our own we can no longer compete on world markets. If the experiences of this company are the same in many other industries, which I am sure they are, then I fear for the rude awakening which, when it comes, will be too late because once we have lost these overseas markets we will not be able to recover them, nor will we have the funds or the stamina to be able to recover them. By virtue of this, our performance will probably be so miserable that the pound will decline but - alas - too late.

I feel sure that many businessmen such as myself endorse your principles and in fact are pleased to see that you are determined to succeed in following through a policy which will in the long-term strengthen the whole country, but I do beseech you to give some specific consideration to the regulation of the value of our currency, otherwise you will destroy the very fabric of the industrial base of the country; you will destroy the very small and progressive businesses on which the country's future must rely.

/3

I do not say in these difficult times it is specifically your fault, but you and your government are the only people who can take a decision to protect the future of the country by using whatever regulators you have within your power to provide a devaluation of the pound from its current high level, thereby automatically stimulating manufacturing industries on the export markets and curbing the tremendous interest in imported products which will in time show up as reduced manufacturing on the home market.

Unless I am very much mistaken, I do not think you have an option open to you but to take some steps along the lines that I have indicated as I think failure to do so will clearly place the responsibility of 1981 firmly upon the shoulders of yourself, your government and the Conservative party and the ramifications of this I think require little clarification.

In simple terms, do something positive, do it quickly and create an environment in which we can live to fight for you and yours another day.

Yours sincerely,

C.R. Duncan
Managing Director

[Not urgent]

PRIME MINISTER (has seen)

Innovators and Entrepreneurs' Reception

Generally, this seems to have been very well received. There was considerable media coverage in a variety of forms, and there is some continuing follow-up.

You might be interested to look at the selection of relevant material in the attached folder. It includes some of the letters we had on Monday from those who were upset not to have been included, some reflections on the discussion in the form of thank you letters from participants, and a letter from Michael Morris MP, saying that he is now being bombarded by inventors who believe that the Government must have instantly set up a new system for processing their ideas. We will pass this, and the other papers, to Kenneth Baker's Office for advice - something better, I hope, than his whispered comment on Monday:- "inventors and inventions come in two varieties - the improbable and the impossible".

We could have generated quite a lot more immediate publicity, if we had chosen to put in more advance effort. The evening was an experiment, and we did not want to overplay it. If you were to repeat it, for similar or different subjects, we could more confidently set out to promote interest. But I think we were right to exclude the press on this occasion, and we would need to think very carefully before changing that decision for the future.

The seminar discussion might have been more productive if we had reduced the numbers a little, and had everyone sitting around a horseshoe table. It would have been a more business-like environment. We also ought to recognise that we need to assume that the discussion phase of such a function requires at least 1½ hours.

WS Were you broadly satisfied with the evening? Would you like to consider repeating it, perhaps on [redacted] more specific, economic

/ or industrial

or industrial themes? Are there any aspects of the arrangements which you found particularly unsatisfactory (we will open the windows in advance another time)?.

I thought it was a good arrangement - easier to control with an 'audience' in front rather than round a horseshoe. But the heads of discussion were too many.

MAP

30 January 1981

Neotronics Ltd
Safety and Energy Conservation

Parsonage Road, Takeley,
Bishop's Stortford, Herts CM22 6PU
Tel: Bishop's Stortford (0279) 870182
Cable: Neotronics Stansted
Telex: 817126 Neotro G

Our Ref: G/T Your Ref:

29th January 1981.

The Rt. Hon. Margaret Thatcher, P.M.,
10 Downing Street,
London,
S. W. 1.

Reception at 10 Downing Street
on the 26th January 1981.

Dear Prime Minister,

I would like to express my sincere appreciation and thanks for allowing me to participate last Monday.

Knowing how heavy the demands on your time must be, I am sure that we were all greatly encouraged by the amount of time and attention which you devoted to the vitally important problem of optimising the economic benefits of this country's very considerable inventive talent.

I am writing to Mr. Leon Brittan, at his suggestion, with some definite proposals on Company Taxation Rules designed to foster the growth of small, expanding companies.

You may be interested in this Company's latest development in the area of Energy Conservation. The Fuel Efficiency Monitor was developed as a Joint Venture with NRDC and is already a big commercial success with large volume sales, more than 50% to export markets. A sales brochure of the instrument is enclosed.

Thank you once again for your kindness and attention last Monday.

Yours sincerely,
NEOTRONICS LTD.

Paul Gotley.
Managing Director.

Enc:

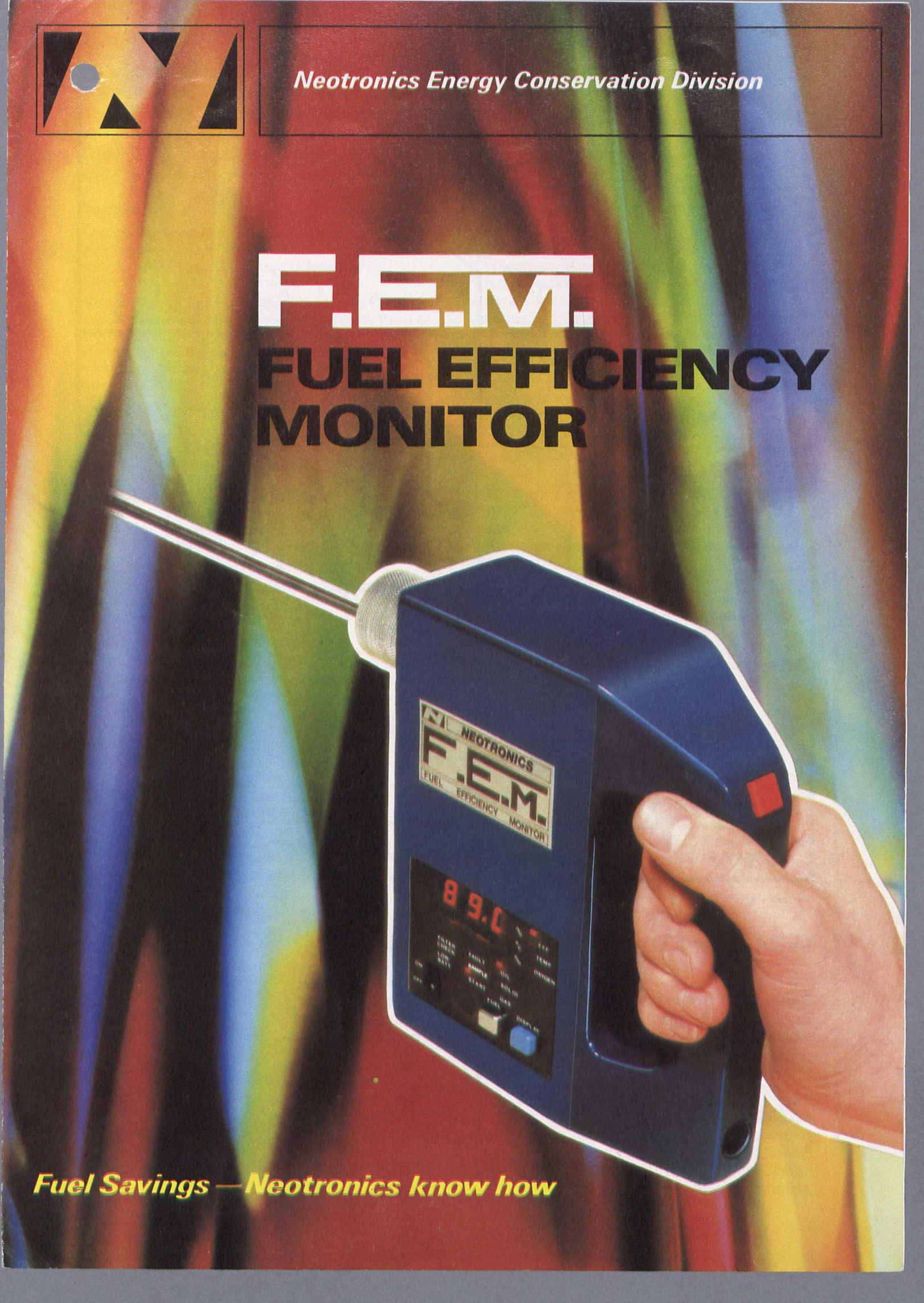
Registered Office: As above
Registration No: 1126424 England
VAT Reg. no. 214 4467 79

Directors: P Gotley MSE,
R Gotley
H A Buckenham, T.Eng. (CEI), MITE, MBIM.
H V Feldman, S. Eng. F. Inst. S.M.

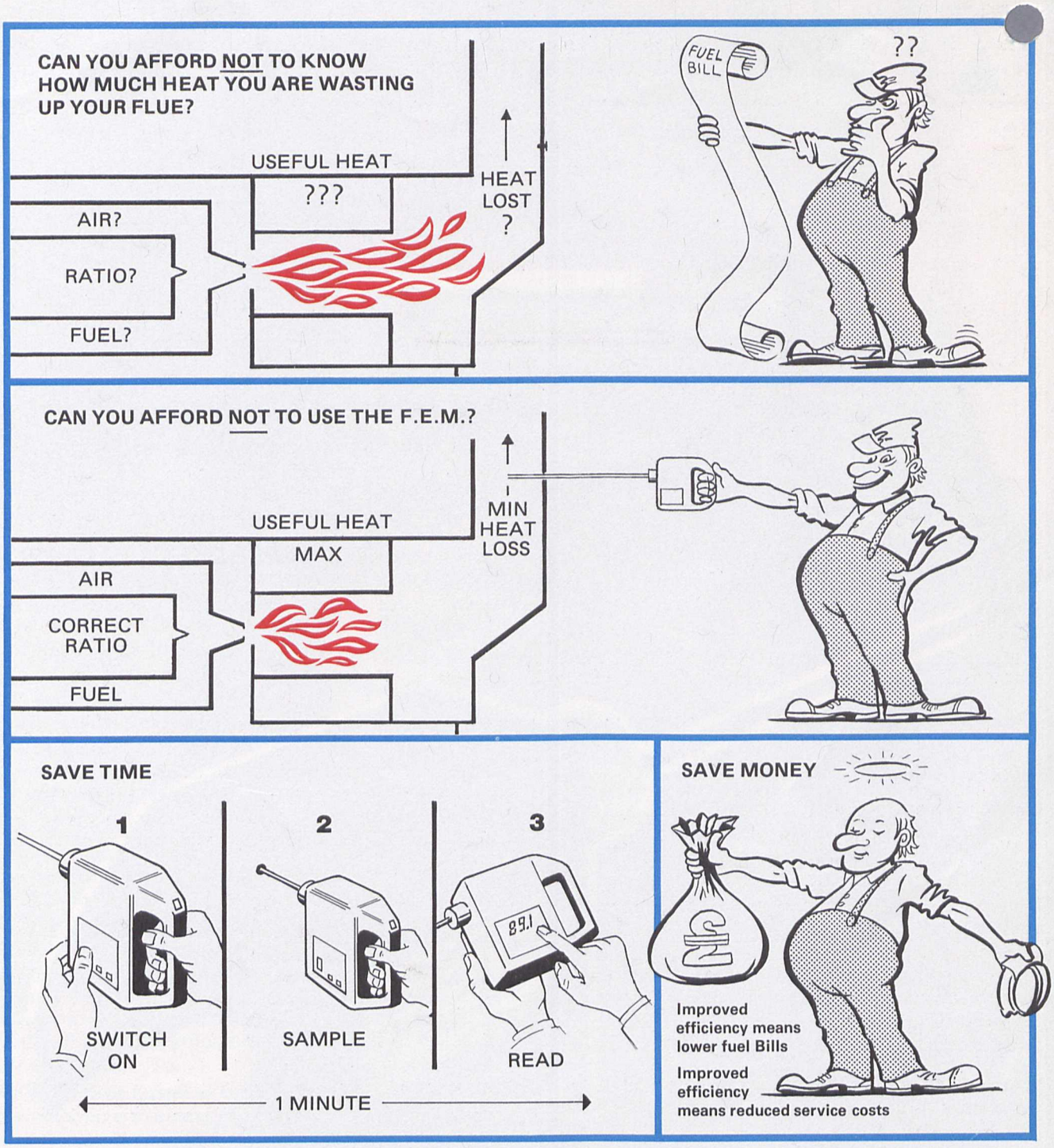
Member of the Council of Gas Detection Equipment Manufacturers

Neotronics Energy Conservation Division

F.E.M.
FUEL EFFICIENCY MONITOR



Fuel Savings — Neotronics know how



Who needs the F.E.M.?

Boiler and Furnace Users can reduce fuel costs by checking their installations more often and by keeping the fuel/air ratio correctly adjusted to maintain peak efficiency.

For example, with an annual fuel bill of £20,000, a 10% efficiency improvement will recover the cost of the F.E.M. in less than 3 months. In addition, time between services may be optimised if combustion efficiency is known and maintained.

Heating Engineers save valuable time by checking and setting up combustion efficiency with the F.E.M. The value of the maintenance service can easily be demonstrated by showing the improvement in combustion efficiency and calculated fuel savings.

Energy Managers can easily ensure effective boiler maintenance as combustion efficiency can be checked quickly and frequently. The information obtained is invaluable for monitoring long term performance of installations and in energy audits.

DESCRIPTION

The F.E.M. (Fuel Efficiency Monitor) is a hand held, completely automatic flue gas analyser. It measures flue gas temperature and oxygen content and uses this information to calculate and display the percentage efficiency of the boiler or furnace.

The F.E.M. weighs less than one Kg, performs its complete function in less than one minute and can be used with one hand, requiring no special skills on the part of the operator.

Rugged and Simple

It needs the latest sophisticated microprocessor technology to perform within one minute automatically, that which used to take highly skilled labour very much longer.

We have kept all the complexity inside the F.E.M., however. Using the instrument is simplicity itself and it is designed to withstand the tough working environment of the boiler house and industry, working reliably for years with the minimum of attention.

Proven Sensor Technology

The oxygen sensor is an electrochemical cell, many thousands of which have proved their worth over several years in environments even more adverse than those of boiler houses. Extremely good temperature and pressure stability combined with reliability and low replacement price, have made the CTL sensor the obvious choice. Expected life is 8 months and the sensor is guaranteed for 6 months.

Temperature is measured by a Ni-Cr/Ni-Al thermocouple in a specially designed probe to provide fast, accurate response combined with ruggedness and reliability.

Automatically Self-Calibrating

When the F.E.M. is switched on, the oxygen sensor is automatically calibrated to normal atmospheric oxygen (20.9%) and the temperature system is calibrated to ambient temperature. This ensures that the true oxygen content and the differential temperature of the flue gas are recorded. Any errors due to variation in ambient temperature in the boiler house are, therefore, automatically eliminated.

Calibrates to Fuel Used

The F.E.M. is suitable for installations using gas, oil or solid fuel. A few seconds after it is switched on, it automatically reminds the user to push a button to select the desired fuel. The F.E.M. is then calibrated to the fuel selected.

Sampling Mechanism

A sample of the flue gas is drawn through the detachable, composite 45cm probe, by a small but powerful electric rotary vane pump. Positive or negative flue gas pressures, within reasonable limits, will therefore not affect the sampling process. Temperature is measured within the flue itself. The sample gas is cooled in the probe, cleaned and dried by means of an easily replaceable filter before it is presented to the oxygen sensor. The micro-processor programme ensures that stable readings are obtained, for maximum accuracy and reliability.

Simple in Operation

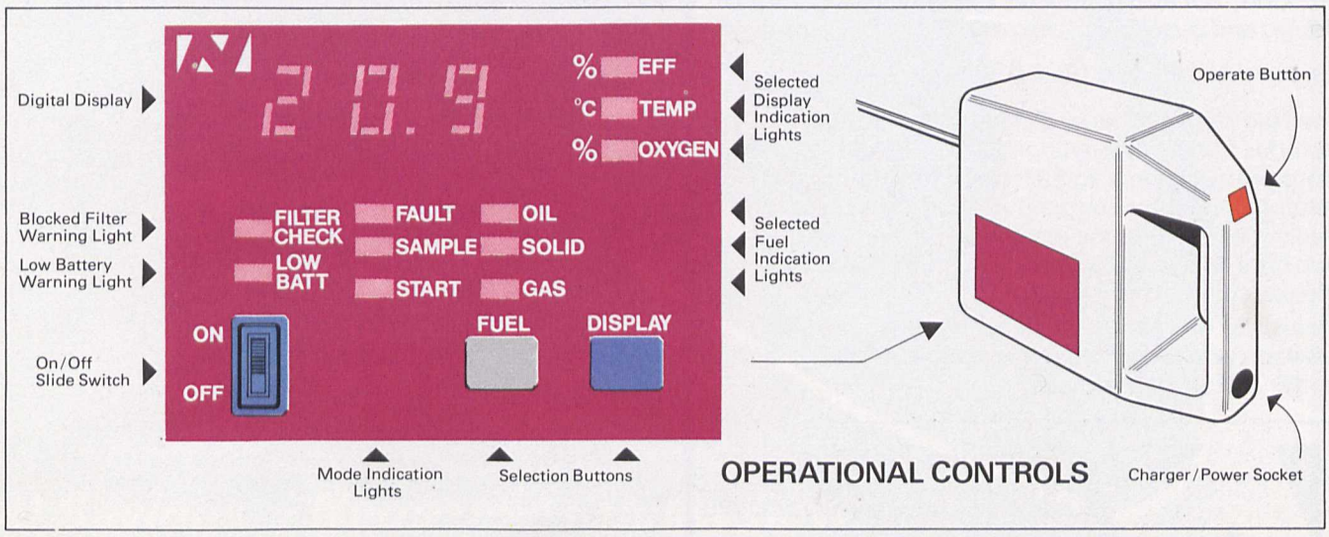
When the right fuel has been selected, the probe is inserted into the stack sampling hole and the OPERATE button is pressed. When sampling is completed (normally within one minute), a lamp and bleeper tells the user that the F.E.M. has done its work.

Readings of temperature, oxygen and efficiency are retained in a memory and displayed on the large high brightness digital readout by pressing the DISPLAY SELECT button. The information is retained in the memory until the instrument is switched off or a further sampling operation is initiated.

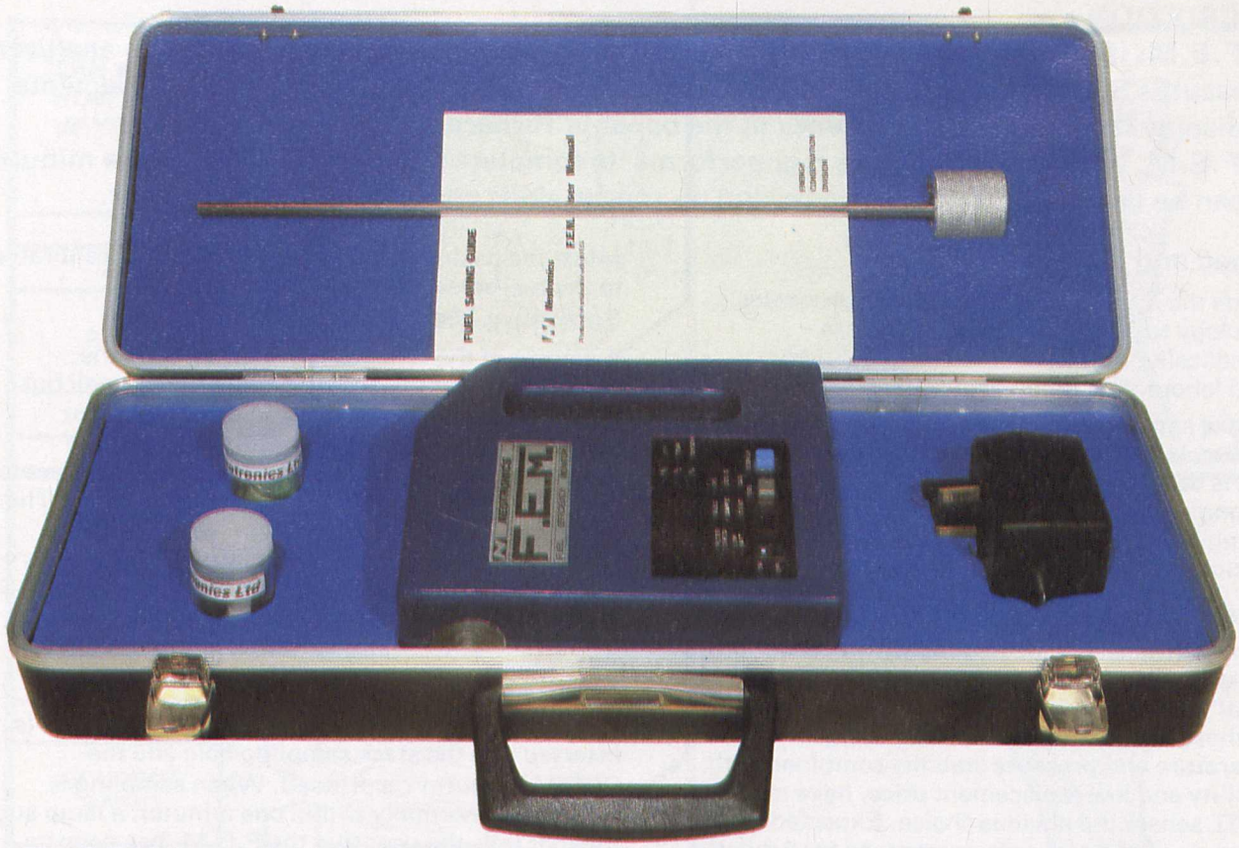
Self Check Operation

To make the operation of the F.E.M. even simpler, we have provided three warning lights, automatically indicating:

1. The filter needs changing.
2. The oxygen sensor needs replacing.
3. The internal Ni-Cad batteries are discharged. A plug top charger is provided. If necessary, the F.E.M. may be operated by the Mains supply via the plug-top charger.



OPERATIONAL CONTROLS



The F.E.M. is supplied in its own heavy duty carrying case complete with charger, spare filters and a comprehensive Application Manual specially produced in close collaboration with the National Industrial Fuel Efficiency Service (NIFES).

ABOUT NEOTRONICS

We have been engaged exclusively since 1973 in the field of monitoring and analysing of gaseous mixtures and manufacture a wide range of portable and fixed equipment for the measurement and detection of flammable gases, oxygen and toxic gases.

The F.E.M. was developed in a joint venture with the National Research Development Corporation, following a previous successful joint venture with NRDC in the field of automatic monitors for flammable gases.

We have a basic business philosophy
We are not here to please ourselves, we are here to please our customer. This applies not only to products, but also to service, not only to technical design and quality, but also to price.

Expertise in Flue Gas Analysis

The Neotronics (Energy Conservation) range includes fixed, custom engineered flue gas/oxygen monitoring systems and a trolley mounted system suitable for extended monitoring of stacks, yet easily moved from one installation to another. We also offer the easily portable OTOX 92 Stack Loss Measurement Kit.

Please ask for further details of other Neotronics products and for more detailed technical information on the F.E.M., if required.

Trolley Mounted System

Neotronics Limited
Parsonage Road, Takeley,
Bishop's Stortford, Herts. CM22 6PU.
Telephone: (0279) 870182.
Telex: 817126 Neotro G.

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LIST No. FEM 1A

(Acke'd)

VCR

Venture Capital Report Ltd

Head Office: 2 The Mall
Clifton
Bristol BS8 4DR
Tel. Bristol (0272) 37222

The Prime Minister
10 Downing St
London

29 January 1981 £31

Dear Prime Minister,

You asked for letters about the meeting on Monday night (Jan 26) and here is mine: I have endeavoured to be extremely brief.

1. Inventors and entrepreneurs with ideas to expoilt usually need the following to create a profitable business;

a. Premises and equipment to produce their product
b. A well-considered marketing strategy
c. Sectretarial and office support
d. Accounting information /control systems / general management
e. Access to markets both at home and abroad via appropriate distribution channels
f. Enthusiasm / support / encouragement / rapid decision making
g. Working capital to purchase stocks etc.

2. Many people lump these needs together under the umbrella heading of 'money', since money will purchase most of the above. To do this, however, is an error since money alone is no substitute for the appropriate help and skills delivered at the right time.

As an example consider an entrepreneur who wishes to exploit a new computer terminal. He could either:

a. Buy premises, equip them to manufacture,hire marketring consultants, design brochures, recruit salesmen, management, production staff etc and begin the slow process of starting a company from scratch. To achieve sales of £1m might take three years and cost £500,000 with a probability of success of perhaps 10%.

Or:

b. Find a company already manufacturing and selling related equipment such as disc drives, which already has premises, manufacturing skills, a marketing and distribution network, and an already developed business infrastucture. If he then hitches his product onto their product range, sales of £1m might be achieved in one year at a cost of £100,000 with a probability of success of 75%.

3. Institutions such as NRDC and the DOI can effectively provide only money, since they are not actively running businesses. This limitation also applies to a lesser extent to ICFC and the banks. This means that these institutions can only help young companies along route 2a above, unless they happen to be able to introduce the entrepreneur to a suitable established company.

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4. I felt there was a good deal of "telling the Prime Minister what she would like to hear" at the meeting, a problem which plagues every leader, and also much self-justifying by some of the institutions and banks present. It will always be possible to find a few people who have benefited from funds supplied by the banks or by the DOI and who are grateful for it. It is, however, very clear to me at Venture Capital Report, dealing with 1000 (one thousand) entrepreneurs and inventors each year, that with a few exceptions:

a. Most entrepreneurs much prefer to deal with businessmen who are technically competent in their field, who understand the market for a particular product, and who can give them practical help fast (including money), than to deal with NRDC or the DOI which are generally held to be last resorts.

b. In order to make a good match between a particular entrepreneur and the businessman most able to help him, it is necessary to approach a very large number of businesses. In a perfect world, every project would be considered by every businessman who would support those that most nearly dovetail with his overall corporate strategy.

6. Your Government rightly seeks to eliminate the PSBR, and to achieve this in part by reducing public expenditure. Much could be saved by cutting the number of staff at NRDC and the DOI who are engaged in supporting small entrepreneurs. This is not a role to which the sort of people who choose to be civil servants are well suited temperamantally, and it is no surprise to me either that I receive so many complaints about them, or that the civil servants concerned manage to put up a convincing sounding case to justify their existence. It may be that NRDC does have a useful role to play supporting development projects in large companies.

Certainly for your Government to give more public money to NRDC, as the ACARD report seemed to hint would be folly.

7. The correct alternative is to use a forum where inventors/entrepreneurs can have their products and business plans considered by as many people as possible. VCR is such a forum, and I make no apology for recommending it, but unhappily we are not large enough to be really useful. We have 440 subscibers (who pay £150 each per year), but to be really effective we need 4000. If either VCR could be boosted to have 4000 subscibers or if a government-backed publication could be established to do the same thing with a large circulation, this would form a real venture capital market in the UK, and entrepreneurs would flourish. Success

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does breed success, and with more entrepreneurs succeeding and with more knowledge about their success, more latent entrepreeurs would be encouraged to come forward to be enterprising.

Yours sincerely,

Lucius Cary

J.L.A.Cary.

P.S. Would you like me to send you a complimentary copy of VCR (the only other person who requested and receives a free copy is Prince Charles), so that you may see what projects are seeking funds? You would then be able to ask NRDC and ICFC whether they had funded particular projects and if not, why not. It is my opinion that many good projects we publish have not been funded, and the great majority of those that have obtained backing, have been funded by private enterprise (no surprise to me). If, as NRDC and ICFC would have you believe, they are themselves so enterprising...'a new spirit etc.', how do they explain this? The facts do not support their contention. In the meanwhile I enclose some recent VCR covers.

PPS. I will be delighted to expand on these thoughts if you would like, and to support the arguments with numerous examples. One merit of VCR is that it is open; there is a name and address on each article and one may contact the entrepreneurs directly to obtain their views on everything from VCR to NRDC.

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Venture Capital Report September 1980

1. Potato Chip Dispenser — £200,000

A company has designed a machine for accurately weighing and dispensing hot potato chips. More than 30 are in operation in the UK, and a letter of intent has been signed with a major US food company for manufacture and marketing in the USA. £200,000 is required to finance marketing and production in Europe, and to establish agreements to cover the remainder of the world. Up to 30% of the equity is offered.

2. Video Disc Travel Marketing — £400,000

Two entrepreneurs with marketing backgrounds seek £400,000 in addition to their own capital to launch a video disc service to travel agents, enabling the public to see a short film of resorts and hotels. A pretax profit of £10m is forecast for year 5. 25% of the equity is offered.

3. Engineering Business for Sale — £400,000

A firm of steel fabricators which made a profit of £150,000 in 1979 is seeking to sell part or all of the company.

4. Director required. Suede selling — £15,000

A cleaner of suede and leather garments wishes to find someone to run a business selling coats and jackets by mail order. The special feature of the service will be that cleaning of the garments will be guaranteed, and at a reduced rate. He wishes to start with a market test costing £5,000, and seeks someone to conduct this, and provide a bank guarantee for further finance if the test is successful. 51% of the equity is offered.

5. Hotel Tableware Manufacturer — £250,000

A 163 (2) company engaged in the manufacture of china for the catering trade seeks £250,000 to launch two new types of china product. The Board will recommend to existing shareholders that 25% of the equity be offered.

6. Computer Graphics — £80,000

A BBC employee with experience of graphics and computers wishes to establish the most sophisticated computer graphics company in the UK, and to sell the service. He seeks £80,000 for hardware and working capital, and offers 75% of the equity initially.

7. Food Distributor — £75,000

An existing food distribution company wishes to raise £75,000 so that it can import its products directly, omitting the existing import house, so reducing its costs and increasing net profits tenfold.

8. Video Gaming Machines — £50,000

As part of a programme to find new commercial products, a large high-technology company has developed a range of video gaming machines based on the ideas of the promoter, who has exclusive worldwide rights to market the machines, which are now almost ready for launch. He seeks £50,000 to order an initial stock for final field trials and for working capital. 25% of the equity is offered.

Recent History of Past Projects:

1. Holiday Resort Monorail — **September, 1979**

Monorail now operating: Large company now sought to develop project potential.

2. Boat Lift — **March, 1980**

FILE

VLG

cc Mr Dalgleish

10 DOWNING STREET

From the Private Secretary

29 January 1981

Prime Minister's Reception for Innovators and Financiers

I attach a note of the main themes of discussion on Monday night's function here. The Prime Minister would like your Minister to consider the issues relevant to your Department, and she would be grateful for advice on the specific suggestions that there is a role for a broker to help an inventor to bring together possible public sector inputs, and that there might be some advantage in a new award scheme directed towards entrepreneurial initiative based on university work. (I am sending to you separately some other correspondence relevant to this idea.)

The Prime Minister would also like comments from the Treasury on taxation issues raised: in particular the likely effect of the Green Paper proposals on stock relief; the impact of section 5 of the Companies Act; and the possibility of offsetting patent costs against personal income tax liability. Thirdly, she would like the Department of Education and Science to respond to the issues raised about the style of our university and polytechnic work.

The Prime Minister is also inviting ACARD to consider whether it would wish to revise its report to her on exploiting inventions. She hopes to publish the report, revised as appropriate, shortly.

I am sending copies of this letter to Ian Ellison (in your Secretary of State's Office), Terry Mathews (Chief Secretary's Office, H.M. Treasury), Peter Shaw and June Nisbet (Department of Education and Science) and Gerry Spence (CPRS).

M. A. PATTISON

J. C. Hudson, Esq.,
Department of Industry.

VLG

10 DOWNING STREET

From the Private Secretary

29 January 1981

81-18/2/81.

The Prime Minister found the discussion here on 26 January stimulating. She was grateful both for the personal contribution you made, and for the basis for discussion provided in the ACARD report on exploiting invention. She would now like to see that paper published, but she has asked me to enquire whether you and your colleagues would wisn to modify it in any way in the light of the discussion.

I am sending you a copy of our internal note of the main themes which emerged in Monday's discussion.

M. A. PATTISON

Dr. Spinks,
ACARD,
Cabinet Office.

MR PATTISON

cc Dr Ashworth

THE SEMINAR/RECEPTION FOR INNOVATORS AND FINANCIERS

You will wish to be aware that there has been substantial interest in the occasion since Monday, partly from the press (eg specialist journals and at least one major American newspaper), but partly from financiers and companies chasing the ideas of some of those who took part. Altogether I estimate we have had a dozen-plus calls.

2. Although I have not studied the regional press in detail, I have a feeling that we did not, in fact, make the most of the occasion. You have both probably seen the impact that young Mr Clavert's presence made. With a little more time and effort (and they, of course, are very labour-intensive) we probably could have made the same regional/local media impact, embracing press, radio and TV, with most if not all the innovators. Mr Hickman and his Workmate was not the only other good story in the pack.

3. Perhaps, if there is a next time, we should aim to get into bat earlier, with more and better information available earlier. We could then, at the very least, issue a press notice about the event rather than relying simply on orally briefing the Lobby.

NEVILLE GAFFIN
29 January, 1981.

DR. S. W. TONKIN
22 DOWNS PARK EAST
BRISTOL
BS6 7QD
Tel. (0272) 622181

(3/2

29 Jan 1981

PM

Dear Mrs. Thatcher,

I was promted to write because last night you entertained a number of inventors, to discuss their relations with British Industry. May I state my own case as briefly as I can?

In 1970 I patented, on behalf of British Aircraft Corporation, a new form of satellite stabiliser which would considerably ease the lauching of the many geostationary satellites of the future. I could not even get people in BAC to read notes about it, and in 1976 and 1978 I presented papers about it at conferences. The European Space Agency, after funding a theoretical study, tried to get development going, but BAe stopped it through lethargy. The Americans (NASA Goddard Space Flight Center) in March 1979 offerred a free space flight, because they were so interested. Although I cooperated with them a lot, BAe never wrote to them officially in 7 months. In pleading for BAe to do something I made myself unpopular, and was subjected to rude memos, with copies to everyone

If one asks why now, they all maintain it was not financially viable, when in fact they had not even considered it through lethargy

I have progressive paralysis, and was only holding on (as Asst Ch. Syst. Eng on space) because I might be needed. I Have now retired chronically sick because it just isn't worth the tremendous effort work involves, and expect to go onto pension next Easter. As I retired, BAe agreed not to pay the fees on the European patents and reassign the US patent to me.

ESA have paid up the French patent in return for reassignment, and have entered into a licence agreement with me over the US patent. I doubt if I can ever collect on this because it only has 6 years to run because BAe wasted 11 years. Meanwhile NASA are building an experimental one to put in space this year.

In the middle of all this process of sitting on my invention, our MD gave an Aeronautical Society lecture, widely reported in the National press, about the 'Imagination Gap'. Well, he should know - being the Imagination Gap himself.

To give you an idea of the money side, MacDonnell Douglas have quoted NASA $1,000,000 for each launch, to do the job which this device does, when a big Comsat is launched into geostationary orbit from the shuttle. We could develop it from nothing for that.

The patents on this device are now controlled outside this country. Any employment it brings is likely to be outside this country. My son, who has just graduated, has just started a job outside the country, and good luck to him. My expected son-in-law, a brilliant young electronics engineer, I expect to emigrate, though he hasn't shown his intention to yet. In the eyes of NASA and ESA, BAe look a lot of Charlies.

If I try to find out why I just get this 'non-financial-viability' story, which is obviously a cover-up. After all, if it was true why should ESA and NASA be active now? I can only guess, and I may guess wrong. I am not attractive, being in a wheelchair for one thing. Some time ago a high-up may have decided I was a loser. For that high-up to take up my device means he'd have to admit he was wrong. It is part of the British Disease never to admit you are wrong.

The purpose of this letter is only to inform.. I'm sure you will not get as far as making enquiries about it, but if you do I would ask you to be discreet. I have found that people one expects to be human can be very vindictive. My physical condition and the fact that this is the IYDP would only egg them on. I fear for my pension, which is rather essential in my condition.

Yours sincerely, Stephen Tonkin Dr. S.W.Tonkin.

WEEKEND BOX

(I have ack'd)

MJF

University of Lancaster

R3/2

cc Dr Ashworth.

Department of Engineering
Bailrigg
Lancaster, LA1 4YR
Telephone Lancaster 65201 (STD 0524)

Professor Michael J. French M.A.(Cambridge), M.Sc.(London), C.Eng., M.I.Mech.E.
Professor Stephen L. Harris M.A.(Cambridge), C.Eng., M.I.C.E.

MJF/AC

29 January 1981

Prime Minister.
10 Downing Street,
LONDON

Dear Prime Minister,

Thank you for inviting me to your very interesting reception last Monday, which I hope and expect will have proved useful.

You suggested we might like to offer further points in writing, and I enclose some.

Yours sincerely,

Michael French

M. J. FRENCH

Some ways of promoting innovative ideas from individuals, small companies, universities, polytechnics, etc.

We are ill-suited to successful innovation by our educational, cultural, social and financial structures, in all, in fact, but the genius of our people. These matters have been written about and researched and are not in serious dispute, but we continue to do nothing about them. However, here are a few small areas where useful work is being done, and might be encouraged.

1. Most of our industry is short of the able, up-to-date engineers it needs in the middle ranks. The universities and polytechnics have many able engineers but too often they lack practical experience. Professor Hampshire pointed out that industrial units of the kind he described can stimulate innovation. With suitable arrangements they can also be an agency for increasing the practical experience of the teaching staff and for stimulating in students a motivation towards and understanding of innovation. The strong moves in the Engineering Professor's Conference towards more engineering practice in courses fit well with such developments.

Pump-priming moneys should be made available for the setting up or expansion of industrial units in universities and polytechnics, where the work should be linked with teaching wherever appropriate. Exchanges of staff with industry should be promoted.

2. Although only a small proportion of the funds of the Science Research Council goes to engineering (less than one-fifth) it has shown good judgement in supporting some kinds of invention. It is ill-placed, however, to provide the sort of support needed to try many of these ideas - an engineer and a technician for six months, say, - because staff have to be appointed and two years is a practical minimum. Also, there is delay in the grant system, in appointing staff and in their working-out of notice.

The SRC should be offered a small sum (say, £600,000 p.a. for five years in the first place) to support 'incubators of innovation' in engineering departments, and to operate a clearing-house for ideas suitable for such treatment.

3. Inventions often fail through lack of expertise at the vital 'embodiment' stage, when precise form, material and method of manufacture are determined, in small, and even large, companies. In many such cases the Design Advisory Service of the Design Council has been able to supply valuable help at low cost (see the Corfield Report). They advise firms in need of know-how where it can be had, with remarkable success, a kind of technology transfer on demand which makes a contribution to successful innovation on a scale out of proportion to the size of the organisation (unlike some other public sector activities).

Successful developments of this kind should not be encouraged to speed their growth too much. But the D.A.S. uncovered a major need of industry and have filled a small part of it very efficiently, and valuable indicators might be had from a discreet study of the operation.

The Design Advisory Service should be encouraged and given a little more help if they need it. The Design Council should be asked to find a way to make available the insights into success and failure in product innovation in our industry which could be derived from the work of the D.A.S.

MJF/AC 29/1/81

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The Prime Minister
10 Downing St
London

29 January 1981 £31

Dear Prime Minister,

You asked for letters about the meeting on Monday night (Jan 26) and here is mine: I have endeavoured to be extremely brief.

1. Inventors and entrepreneurs with ideas to expoilt usually need the following to create a profitable business;

a. Premises and equipment to produce their product
b. A well-considered marketing strategy
c. Sectretarial and office support
d. Accounting information /control systems / general management
e. Access to markets both at home and abroad via appropriate distribution channels
f. Enthusiasm / support / encouragement / rapid decision making
g. Working capital to purchase stocks etc.

2. Many people lump these needs together under the umbrella heading of 'money', since money will purchase most of the above. To do this, however, is an error since money alone is no substitute for the appropriate help and skills delivered at the right time.

As an example consider an entrepreneur who wishes to exploit a new computer terminal. He could either:

a. Buy premises, equip them to manufacture,hire marketring consultants, design brochures, recruit salesmen, management, production staff etc and begin the slow process of starting a company from scratch. To achieve sales of £1m might take three years and cost £500,000 with a probability of success of perhaps 10%.

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3. Institutions such as NRDC and the DOI can effectively provide only money, since they are not actively running businesses. This limitation also applies to a lesser extent to ICFC and the banks. This means that these institutions can only help young companies along route 2a above, unless they happen to be able to introduce the entrepreneur to a suitable established company.

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4. I felt there was a good deal of "telling the Prime Minister what she would like to hear" at the meeting, a problem which plagues every leader, and also much self-justifying by some of the institutions and banks present. It will always be possible to find a few people who have benefited from funds supplied by the banks or by the DOI and who are grateful for it. It is, however, very clear to me at Venture Capital Report, dealing with 1000 (one thousand) entrepreneurs and inventors each year, that with a few exceptions:

a. Most entrepreneurs much prefer to deal with businessmen who are technically competent in their field, who understand the market for a particular product, and who can give them practical help fast (including money), than to deal with NRDC or the DOI which are generally held to be last resorts.

b. In order to make a good match between a particular entrepreneur and the businessman most able to help him, it is necessary to approach a very large number of businesses. In a perfect world, every project would be considered by every businessman who would support those that most nearly dovetail with his overall corporate strategy.

6. Your Government rightly seeks to eliminate the PSBR, and to achieve this in part by reducing public expenditure. Much could be saved by cutting the number of staff at NRDC and the DOI who are engaged in supporting small entrepreneurs. This is not a role to which the sort of people who choose to be civil servants are well suited temperamantally, and it is no surprise to me either that I receive so many complaints about them, or that the civil servants concerned manage to put up a convincing sounding case to justify their existence. It may be that NRDC does have a useful role to play supporting development projects in large companies.

Certainly for your Government to give more public money to NRDC, as the ACARD report seemed to hint would be folly.

7. The correct alternative is to use a forum where inventors/entrepreneurs can have their products and business plans considered by as many people as possible. VCR is such a forum, and I make no apology for recommending it, but unhappily we are not large enough to be really useful. We have 440 subscibers (who pay £150 each per year), but to be really effective we need 4000. If either VCR could be boosted to have 4000 subscibers or if a government-backed publication could be established to do the same thing with a large circulation, this would form a real venture capital market in the UK, and entrepreneurs would flourish. Success

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does breed success, and with more entrepreneurs succeeding and with more knowledge about their success, more latent entrepreeurs would be encouraged to come forward to be enterprising.

Yours sincerely,

Lucius Cary

J.L.A.Cary.

P.S. Would you like me to send you a complimentary copy of VCR (the only other person who requested and receives a free copy is Prince Charles), so that you may see what projects are seeking funds? You would then be able to ask NRDC and ICFC whether they had funded particular projects and if not, why not. It is my opinion that many good projects we publish have not been funded, and the great majority of those that have obtained backing, have been funded by private enterprise (no surprise to me). If, as NRDC and ICFC would have you believe, they are themselves so enterprising...'a new spirit etc.', how do they explain this? The facts do not support their contention. In the meanwhile I enclose some recent VCR covers.

PPS. I will be delighted to expand on these thoughts if you would like, and to support the arguments with numerous examples. One merit of VCR is that it is open; there is a name and address on each article and one may contact the entrepreneurs directly to obtain their views on everything from VCR to NRDC.

c.CPRS

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PM has seen
MAD

28th January 1981

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

Dear Prime Minister

I very much appreciate being asked to your Reception last Monday to discuss the exploitation of invention. I found it intensely interesting as I have personally worked right across the spectrum; inventor, developer, manufacturer and financier.

One of the issues that did not really come out was that all the facilities required by inventors really exist in this country if the inventors knew where to look for them or had the determination to search them out.

The remarks about N.I.H. (not invented here) are terribly true. As a nation we have been brought up to believe that we invent everything and that copying is despicable so we shun it. It is the hardest thing in the world to persuade a designer or draughtsman that he is not losing face if he uses or exploits someone else's idea and this is an attitude technical institutions could well look at.

As far as finance is concerned, there really is very little problem, even North of Watford, and our Institute of Directors' Booklet, "Sources of Finance for the Smaller Company" covers the subject very fully. There are one or two minor but important tax concessions for risk capital which could be a tremendous stimulus and, as I mentioned, the Institute of Directors has produced a paper on Venture Capital which is with Sir Geoffrey Howe at present and which I hope will get favourable consideration.

Anyway, as a result of the meeting I shall chase up our National Westminster branch managers to be more adventuresome and I will also discuss with UMIST how we can work even more closely with manufacturing industry.

Thank you for a most stimulating evening.

Yours sincerely,

William Mather

Sir William Mather.

Registered Number: 929027 England Registered Office: 41 Lothbury, London EC2P 2BP

PRIME MINISTER

The attached note summaries the main themes from Monday night's discussion. If you agree, I will send this to the Treasury, The Department of Industry and CPRS. Agreed

Would you like to ask the Chief Secretary for reactions to the issues raised on stock relief; the effect of Section 54 of the Companies Act; the possibility of offsetting patent costs against personal tax liability? Similarly, Mr Baker might be asked for reactions to the comments about the difficulty for private inventors of finding an informed, competent, single point of access in the public sector, and the possibility of devising a brokerage role, either through NIDC or elsewhere; and the suggestion of some kind of award for entrepreneur work within universities. Yes.

There is some continuing interest in the occasion. I think it would be well worth publishing the short ACARD paper, after giving Dr. Spinks an opportunity to revise it in the light of the discussion. Agree? Yes

At the weekend, we will put to you reactions from several of those who were present, making suggestions as to how we might modify that format if you felt it would be useful to hold similar functions in the future - whether on different issues or repeating some of those raised this week.

Thanks on very much indeed. MTF

28 January 1981

I will also raise with DES the university issues.

NOTE OF A DISCUSSION AT THE PRIME MINISTER'S RECEPTION FOR INNOVATORS AND FINANCIERS AT DOWNING STREET ON MONDAY 26 JANUARY

The Prime Minister introduced a discussion lasting about 90 minutes. She confirmed that the Government were seeking ways to ease the development of new business, and improve the rate of creation of new jobs. After reading the case history of a project developed by an individual inventor, she had asked ACARD to produce a short report on exploiting inventions. Her guests had all seen a copy of the report, and she would like to use themes from this report to introduce a discussion on any issues which her guests felt could usefully be raised.

The following notes record the main themes that emerged in the discussion.

Problems in getting new ideas considered and the role of the NRDC

Potential innovators needed multiple access points to finance and advice. Any decision to back a new project was a matter of judgment: a very small proportion of new ideas were taken up, and no individual nor corporate judgment could be perfect. There were already a range of access points, but inventors sometimes failed to take advantage of these - for instance, 14,000 branch bank managers in the country would each apply personal judgment to an application, although someone seeking project finance might not go beyond his own branch. The banks officially now had more adventurous lending policies but the implementation of these varied. Firmer instructions to local managers were needed.

Individual inventors often had a limited appreciation of the process by which potential sources of finance would reach a judgment. An inventor tended to be absorbed in his own vision of his concept in operation: but a financier would be looking primarily for proven or potential management skills, and then at technical feasibility, financial viability, and patentability. The inventor often lacked the presentational skills required to sell his idea,

/perhaps

perhaps because of a failure to appreciate the key criteria. He needed to be able to marshal his ideas in the expectation of critical questioning. There was a need to educate inventors in this area: the NRDC might be able to play a part.

The inventor seeking finance found difficulty in relating to many of those who had to make an assessment of prospects for a new product. In the private sector, they might have to deal with a banker with no technical background - although ICFC, for example, were developing a national network of offices with young entrepreneurial managers. In the public sector, inventors tended to find that a decision fell between numerous committees, and that those who were apparently forming the judgment lacked both technical skills and entrepreneurial experience.

The inventor often needed more than finance; he wanted management advice, access to markets etc. Existing firms were best placed to provide these. The heads of small successful companies had the vision and drive required.

The ACARD report, whilst advocating multiple access points, limited itself to the existing institutional structure. Many inventors felt inhibited by this. On the other hand, the institutional investor was able to take on some high risk projects precisely because its range of investment provided cover.

Public sector finance was apparently available from a wide variety of sources, but with widely differing ground rules. The private inventor felt lost in a maze. There was scope for a brokerage function, to present a possible business "package" to the source most likely to meet his need: again this seemed to be a possible role for NRDC.

Inventions did not necessarily lead to innovation: innovation did not necessarily lead to business success. The individual invention could only play a small part in meeting national requirements for new products. A product which was to support an entire business would have to be very much better than one required merely to extend a product range. For the national economy, the crucial blockages might lie more in the area of

/how

how small businesses developed into larger ones.

The exploitation of university inventions

Our university and polytechnics structure had developed from traditions which provided no incentive for innovation. Promotion opportunities in universities depended on the traditional pattern of research followed by publication. The polytechnics had tried to emulate the universities. Where university staff were capable of developing and marketing ideas, there was little financial reward, given the virtual NRDC monopoly; even if they were in a position to cash in, the prevailing ethos would treat this as immoral. And it was difficult to find support for development work in a university. The British tradition of research leading to publication simply presented British results, free, to entrepreneurs in the other highly developed economies who were our main competitors.

One aid to change the traditions might be an award, on Queen's Award lines, for entrepreneurs within universities.

Those trained in the universities who had the potential to develop new products tended to be swallowed up into a small number of large firms, and then often in a service rather than a manufacturing role.

The universities tended to relate only to large business. Under present arrangements, their main effect on small business was only indirect, in the sense that most small businesses were developed by people breaking away from larger groups. But these were perhaps the people best placed to start new firms.

Tax Incentives

Despite some moves by the present Government, British personal tax incentives still heavily favoured life insurance, building societies and pension arrangements. The process of investment in

/new

new products needed not only comparable treatment but positive fiscal discrimination. On the other hand, those who argued for comparable treatment for new investment rarely seemed to suggest that the balance could be restored by withdrawing advantages from those forms of investment which now received more favourable treatment. Further, those involved in trying to invent new products were usually strongly motivated by ambitions for personal wealth. There was an important process of paring down new ideas to those few with real prospects. It would be a mistake simply to ease the path for other new inventions, thus creating a much higher failure rate. Tax reliefs for the costs of patenting could be of great assistance to the individual inventor - he often started work when still employed by others, and a provision for offsetting these expenses against PAYE might be useful. The proposals for changes in the stock relief system, set out in an Inland Revenue Green Paper, were likely to remove an important incentive to the growing small business. These proposals could have an extremely damaging effect if implemented in their present form.

More should be done to encourage stock option rewards for new start-ups and demergers. Section 54 of the Companies Act, which had been designed to discourage asset stripping heavily favoured larger companies.

Premises and Local Assistance

The environment to develop ideas was of great importance. Lack of suitable premises at acceptable cost was a major constraint. In present circumstances, many large corporations were shaking out workers, but accepted some responsibility for encouraging job creation in the areas where they were major employers. Such corporations could make an important contribution in helping to provide facilities in redundant buildings.

/There were

There were many ideas for new products and services around. But these ideas needed skilled assistance to extract money and services from the system. Local advisory organisations could help provide this. There was signs of healthydevelopments in filling this role.

This kind of service could help encourage the constructive investment of redundancy payments.

Conclusion

The Minister of State at the Department of Industry and the Chief Secretary to the Treasury both made it clear that they had listened carefully to the proposals raised in discussion, and that they were ready to take these into account in developing future policies.

The Prime Minister congratulated her guests on the quality of their contributions - both written and spoken - and invited them to write to her with any further reflections relevant to the issues discussed.

28 January 1981

10 DOWNING STREET

From the Private Secretary

MR. COURTNEY

CABINET OFFICE

Comments written on.

I enclose my summary note of the themes which emerged from Monday night's discussion. It would be most helpful to have any suggestions or improvements in the course of the afternoon.

MAD

(Copied to John Ashworth)

28 January 1981

NOTE OF A DISCUSSION AT THE PRIME MINISTER'S RECEPTION FOR ~~INNOVATORS~~ NEW INNOVATORS AND FINANCIERS AT DOWNING STREET ON MONDAY 26 JANUARY

The Prime Minister introduced a discussion lasting about 90 minutes. She confirmed that the Government were seeking ways to ease the development of new business, and improve the rate of creation of new jobs. After reading the case history of a project developed by an individual inventor, she had asked ACARD to produce a short report on exploiting inventions. Her guests had all seen a copy of the report, and she would like to use themes from this report to introduce a discussion on any issues which her guests felt could usefully be raised.

The following notes record the main themes that emerged in the discussion.

Problems in getting new ideas considered and the role of the NRDC

Potential innovators needed multiple access points to finance and advice. Any decision to back a new project was a matter of judgement: a very small proportion of new ideas were taken up, and no individual nor ~~corporate~~ judgement could be perfect. There were already a range of access points, but new innovators sometimes failed to take advantage of these - for instance, 14000 branch bank managers in the country would each apply personal judgement to an application, although someone seeking project finance might not go beyond his own branch. The banks ~~were officially~~ officially now had more adventurous lending policies, but the implementation of these varied. Former constructions ~~were needed~~. to local managers were needed.

Individual new innovators often had a limited appreciation of the process by which potential sources of finance would reach a judgement. ~~The basis of selection was likely to be assessment of~~ proven or potential management skills. An inventor tended to be absorbed in his own vision of his concept in operation; but a financier would be looking for ~~at technical feasibility, financial viability and perhaps patentability~~ as well as financial viability. The inventor often lacked the presentational skills required to sell his idea, perhaps because of a failure to appreciate the key criteria. He needed to be able to marshal his ideas in the expectation of critical questioning. There was a need to educate new innovators in this area: the NRDC might be able to play a part.

/The

The inventor often needed more than finance: he wanted management advice, access to markets etc. Existing firms were ~~the~~ best placed to provide these. The heads of small successful companies had the vision and drive required, ~~to the~~

The innovator seeking finance found difficulty in relating to many of those who had to make an assessment of prospects for a new product. In the private sector, they might have to deal with a banker with no technical background - although ICFC, for example, were developing a national network of offices with young entrepreneurial managers. In the public sector, inventors tended to find that a decision fell between numerous committees, and that those who were apparently forming the judgement lacked both technical skills and entrepreneurial ~~judgement~~ experience.

The ACARD report, whilst advocating multiple access points, limited itself to the existing institutional structure. Many inventors felt inhibited by this. On the other hand, the institutional investor was able to take on some high risk projects precisely because its range of investment provided cover.

Public sector finance was apparently available from a wide variety of sources, but with widely differing ground rules. The private inventor felt lost in a maze. There was scope for a brokerage function, to ~~bring him into contact with~~ merge ~~an~~ a possible business package to the ~~public sector~~ source most likely to meet his need: again this seemed possible to be a role for NRDC.

Inventions did not necessarily lead to innovation: innovation did not necessarily lead to business success. The individual invention could only play a small part in meeting national requirements for new products. A product which was to support an entire business would have to be very much better than one required merely to extend a product range. For the national economy, the crucial blockages might lie more in the area of how small businesses developed into larger ones.

The exploitation of University inventions

Our university and polytechnic structure had developed from traditions which provided no incentive for innovation. Promotion opportunities in universities depended on the traditional pattern of research followed by publication. The polytechnics had tried

/to emulate

And it was difficult to find support for university development work in a university.

to emulate the universities. Where university staff were capable of developing and marketing ideas, there was little financial reward, given the virtual NRDC monopoly; even if they were in a position to cash in, the prevailing ethos would treat this as immoral. The British tradition of research leading to publication simply presented British results, free, to entrepreneurs in the other highly developed economies who were our main competitors.

(1)

Those trained in the universities who had the potential to develop new products tended to be swallowed up into a small number of large firms, and then often in a service rather than a manufacturing role.

The universities tended to relate only to large business. Under present arrangements, their main effect on small business was only indirect, in the sense that most small businesses were developed by people breaking away from larger groups. But these were perhaps the people best placed to start new firms.

Tax Incentives

Despite some moves by the present Government, British personal tax incentives still heavily favoured life insurance, building societies and pension arrangements. The process of investment in new products needed not only comparable treatment but positive fiscal discrimination. On the other hand, those who argued for comparable treatment for new investment rarely seemed to suggest that the balance could be restored by withdrawing advantages from those forms of investment which now received more favourable treatment. Further, those involved in trying to invent new products were usually strongly motivated by ambitions for personal wealth.
There was an important process of paring down new ideas to those few with real prospects. It would be a mistake simply to ease the path for other new inventions, thus creating a much higher failure rate. But tax reliefs for the costs of patenting would be of great assistance to the individual inventor.
The proposals for changes in the stock relief system, set out in an Inland Revenue Green Paper, were likely to remove an important incentive to the growing small business. These proposals could have an extremely damaging effect if implemented in their present form.

→ further incentives (or the removal of disincentives) to demerging and spilling off parts of firms were needed.

Premises and Local Assistance

Premises and Local Assistance

The environment to develop ideas was of great importance. Lack of suitable premises at acceptable cost was a major constraint. In present circumstances, many large corporations were shaking out workers, but accepted some responsibility for encouraging job creation in the areas where they were major employers. Such corporations could make an important contribution in helping to provide facilities in redundant buildings.

There were many ideas for new products and services around. But these ideas needed skilled assistance to extract money and services from the system. Local advisory organisations could help provide this. There were signs of healthy developments in the filling this role.

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Conclusion

The Minister of State at the Department of Industry and the Chief Secretary to the Treasury both made it clear that they had listened carefully to the proposals raised in discussion, and that they were ready to take these into account in developing future policies.

The Prime Minister congratulated her guests on the quality of their contributions - both written and spoken - and invited them to write to her with any further reflections relevant to the issues discussed.

27 January 1981

Dup

c. L. Ashworth CPRS

Sci & Tech

MR. COURTNEY
CABINET OFFICE

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M. A. PATTISON

CS

28 January 1981

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The Prime Minister congratulated her guests on the quality of their contributions - both written and spoken - and invited them to write to her with any further reflections relevant to the issues discussed.

27 January 1981

Finance For Industry Limited
91 Waterloo Road, London SE1 8XP Telephone: 01-928 7822

Chairman

28th January 1981

R29

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

cc Dr Ashworth
CPRS

PM has seen
MF.

Dear Prime Minister

Thank you so much for inviting us to the discussion on the financing of inventors and innovation. I thought it was a very successful evening and many good points were made.

I thought you might like to have a few comments on issues raised during the discussion. I think it was Lucius Carey who said that it was important for decisions on financing innovation to be taken by individuals rather than committees. In ICFC some 65% of all investment decisions are taken by our area managers and controllers, who operate in our 18 area offices, without reference to higher authority, and these would include virtually all investments in new small companies.

Professor Hampshire emphasised the importance of university engineering departments cooperating closely with industry, but thought that this was virtually impossible in most cases because of the significance attached to academic research in pursuit of promotion. Closer relations with industry can, I believe, be achieved, even against academic tradition, provided the leadership is strong. This is borne out by my own experience long ago when I was teaching in the engineering department at Cambridge under Professor (now Lord) Baker, who very much encouraged industrial cooperation by his staff, and more recently as chairman of the council at Cranfield Institute of Technology where the vice chancellor, Sir Henry Chilver, has been most successful in encouraging cooperation with industry from which a substantial fee income is earned.

Several speakers criticised the clearing banks for not taking greater risks in investing in smaller companies and innovation. Our experience in ICFC is that they are now doing this to an increasing extent, so much so that they are

(continued)

very strong competitors in a field where ICFC used to be almost alone, at least in so far as equity investment was concerned. We in no way resent such competition which in principle is healthy, but I am sometimes a little concerned that with so many powerful financial institutions determined to show that they can obtain a share of this market, investments will be made on terms which are too fine. In due course this could lead to a situation where losses due to companies failing would be greater than the profits made from the successes, and this would clearly be an unhealthy situation.

In general, most of the discussion seemed to be related to the provision of loan capital and there was little emphasis on the importance of equity investment, which we in ICFC believe to be of great importance because it provides capital to a new company without requiring any reward until profits are being made.

In this connection, we welcome the proposals being discussed for encouraging equity investment in small companies through tax concessions and in other ways. This will provide new sources of risk capital and will, I hope, also attract experienced managers and business people to contribute to the growth of small companies. But we are concerned about the proposal for Government guaranteed loans. We believe this will distort the market, will encourage small companies to press for and receive loans to the detriment of equity investment. This, we believe, would be a retrograde step. I fully appreciate that there is a great deal of pressure from the small company lobby and through the Conservative Party for this facility to be made available but I would urge that before it is finally approved, further consideration should be given to the disadvantages which I have mentioned.

May I say again how greatly we all appreciated being included in your very successful party and how much we enjoyed the evening.

Yours sincerely

Caldecote

Viscount Caldecote

2.1.81

With the Compliments of

Professor G. P. Blair

Department of Mechanical and Industrial Engineering

The Queen's University of Belfast

Ashby Institute
Stranmillis Road
Belfast
Northern Ireland BT9 5AH
Telephone (0232) 661111
Telex 74487 or 747691

Professor B. Crossland, CBE, FEng, FRS
Head of Department (Ext. 4116)
Professor G. P. Blair (Ext. 4117)

c. DES
A. Duguid
R6/2

COMMENTS TO THE PRIME MINISTER SUBSEQUENT TO THE RECEPTION FOR 'INVENTORS AND INNOVATORS' AT 10 DOWNING STREET, WHITEHALL ON 26TH JANUARY 1981

Getting inventions into production provide two-fold approaches by all concerned for a successful course of action, namely nett profit to their Country by the sale overseas of the resulting manufactured hardware. Total sales, internally or externally, provide jobs, taxes and income. The two-fold approach is necessary because inventors and inventions come under two broad classifications;

(a) Those with working devices, prototypes or processes and who need finance, patent guidance, manufacturing, marketing and managerial expertise for any success to be achieved.

(b) Those with ideas, sketches, drawings or simply gleams in the eye who need technological assistance and assessment before they can get to the starting gate of (a) above.

I have little advice to offer for those at stage (a) but it was clear from the meeting on Monday evening that there were many people present who could and would have views to offer on implementation from stage (a) onwards. Indeed my only advice on this topic is that the last thing the inventor at stage (b) needs is to be faced with hard-headed, cynical and non-technological bankers, financiers and even engineering managerial types unconnected with the precise technological area of the invention concerned.

My experience lies mainly with the situation at stage (b) and I have some knowledge of it either on my own behalf or for others. The comment was made several times during the Monday 26th January discussions that the Universities and Polytechnics have a role to play in implementing stage (b); so has NRDC and the other consultants such as Cambridge, Patcentre, Ricardo, Weslake, Templewall, etc., etc. However, the academic establishments have a tremendous advantage over the commercial consultants, the real cost of carrying out such R and D work (with emphasis on the D) is very much less as the state has kindly provided the technologists, the facilities, the equipment and the technicians already to carry out such typical work in connection with a teaching role. Many University academics, I include myself in that number, spend their 'research' time in industrial development programs and you can tell easily 'which is which' by looking at the funding arrangements for their work. If the source of their finance, generally speaking, comes from industry then you can be pretty certain that the work is of engineering relevance and almost certainly is D rather than R. If the source of their finance is Science Research Council you can be almost certain that the work is of fundamental interest, quite probably of long-term usefulness, but rarely with immediate industrial application.

This is the box in which the British science or engineering academic sits; he or she cannot apply for funds to SRC for straight development work with an industrial application,for refusal will be automatic unless the academic concerned cunningly embroiders his application to make it appear as if he preferred to be a fundamental scientist but never a down-to-earth technologist. There is no doubt in my mind that most British engineering academics would much prefer to be involved in furthering industrial development work in conjunction with industry or helping the inventor and/or their own innovations at stage (b); this is impossible at this time for SRC will not invest even the most paltry sums in such work. I would add that for the inventor/innovator at stage (b) it is often

the case that miniscule sums of money are all that is necessary for the 'idea' to be shown to be promising or a dud, and yet it is in this area that help is the hardest to get even though the University or Polytechnic type would be delighted to get involved and to get his students involved and gain relevant experience through suitable projects.

What to do? My advice would be two-fold. The best approach would be to have an Engineering Research Council funded quite separately from SRC and given clear guidelines that it financed development work including the implementation of inventions. One might have a proviso that in the event of the invention getting to stage (a) and ultimate commercial success that the initial funding be repaid to ERC with/without interest but that the patent or idea remain the property of the inventor. Then academics who do have scientific or fundamental studies to carry out can still approach SRC in the conventional manner. The second best approach is to have ERC as a sub-set of SRC but I doubt that would be very successful.

Should this desirable change occur then I feel that the engineering and technological resources of Universities and Polytechnics could be effectively utilised for our national good in this matter as well as for other areas. In Ulster, because of our 'remoteness', the engineering industry in this Province is much more aware of Queen's University and its Engineering College and because of that we have very successful 'industrial development units' in both mechanical and electrical engineering which carry out real development projects for local industry in a manner rarely seen in the rest of the U.K.

Gordon P. Blair

PROFESSOR G.P. BLAIR
The Queen's University of Belfast

28th January, 1981

National Coal Board Staff Superannuation Scheme
Mineworkers' Pension Scheme

TEN BOUVERIE STREET LONDON EC4Y 8BA

Director - General of Investments

telephone 01-353 1500
extension 237
telex 885770

a Dr Ashworth ✓
PM has seen
MAP.

HRJ/ALR

27th January 1981

R29/1

The Rt. Hon. Margaret Thatcher, MP,
10 Downing Street,
LONDON

Madam,

May I thank you for inviting me to your reception last evening, and for the opportunity to meet the wide range of people involved in the field of innovation.

During our brief discussion I did allude to the activities of our own Pension Fund in the field of industrial and corporate finance. I would like to take the opportunity of sending you a copy of the small leaflet which describes the types of facility which we have available for industry and particularly the small company. The range of activities which we undertake is not dissimilar from that offered by the Industrial & Commercial Finance Corporation and its subsidiaries. We first entered the field of industrial finance in 1974 and I believe we have developed credibility in the market place. Unlike some of our competitors in this field we have in 1980 arranged seminars throughout the United Kingdom in centres such as Glasgow, North Shields, Cardiff, Manchester and Stoke in order that the small businessman and the local industrialist might be made aware of the facilities which we have to offer.

Our corporate plan provides that a minimum of 15% of our cash flow will be made available for this type of activity. Given that sufficient viable propositions became available, we would be willing to increase the portion of our funds allocated for this purpose. However, as you will have heard from others, the number of worthwhile and viable propositions that come forward for financing is relatively small, and, as I am sure ICFC will have told you, competition for these propositions has become quite intense. I am sure that we would all wish that individuals and companies in this country could come up with new product, particularly in the field of high technology, but at the moment build up in this area is slow.

CONTINUED

The Rt. Hon. Margaret Thatcher MP

27th January 1981

In the ACARD paper which we considered last night, reference was made to suitable premises being made available for the very small business, together with funds for plant and equipment. I would like to confirm what I mentioned to you, that our Pension Fund is now one of the largest providers of sheltered nursery factory units in the UK. We are currently involved in over 1 million square feet of these small nursery units in a large number of locations throughout the country. We have also agreed through the Department if Industry to provide the English Industrial Estates Corporation with up to £15 million for nursery factory units in the assisted areas. A further £3 million has also been earmarked for the Welsh Development Agency for similar activities, and we also have a scheme under consideration in Scotland with the Scottish Development Agency. It has been part of our policy since 1968 to give priority, all other things being equal, to the financing of viable projects in existing and former coal mining areas.

The range of our activities in this industrial field, which contains an above average degree of risk, is very wide. We are able, we believe, to do this because of the diversity of the rest of our portfolio, by both category and geographical distribution.

We hope that this note will indicate that we are not too cautious in our investment policy, particularly as regards the primary financing of the small and medium-sized business.

May I also thank you for your kind hospitality.

Yours sincerely,

H. R. JENKINS

enc

10 DOWNING STREET

From the Private Secretary

26 January 1981

I am writing on behalf of the Prime Minister to thank you for your letter of 26 January.

I know that Mrs. Thatcher will be most interested to read of the development of your company.

I am afraid it was not possible to add you to the guest list for tonight's function. That list was not intended to be in any way exhaustive, but merely offered a selection of people who would be ready to put forward views on the themes which the Prime Minister had in mind. If the occasion is successful, there will certainly be other occasions with a similar purpose. If not, I know that the Prime Minister will wish to look for different ways of making contact with people in the front line of developing new businesses.

M. A. PATTISON

R.J. Findlay, Esq.

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26 January 1981

I am writing on behalf of the Prime Minister to thank you for your letter of 25 January.

I know that Mrs. Thatcher will be most interested to read the case history of your product.

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M. A. ALLISON

K.R. Dunn, Esq.

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, Business 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

23

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 Consultants
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

Mr. JOHN LEE, MP — MR. BAKER'S PARLY. SEC.

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

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C.R.
Please check that
I replied. If so,
no.
(Con of file) MAP.

The Right Honourable Margaret Thatcher
10 Downing Street
London W1

January 26th 1981

Dear Prime Minister

I was fascinated, if a trifle disappointed, to read the press reports this weekend of your reception tonight for entrepreneurs and innovators. It seems you are seeking iniative, so I felt I should use mine, and ask whether it is not too late to issue one more invitation,...

My pedigree as a small businessman and entrepreneur ain't bad - I set up my company from scratch in 1974 with no outside help. It publishes 5 journals with a turnover of £4 million, a staff of 85 and very respectable profits.

On the innovation front, I am even better qualified to attend. Last year we sprinkled £150,000 on the troubled waters of engineering industry, launching an important new journal entirely devoted to innovation in engineering design. Few of your guests can have had so much direct experience in the psychology of encouraging innovation.

I understand this is the second such meeting you have convened and I felt I must speak up. I hope you will view my approach not as ill-mannered sour grapes (your advisers cannot be expected to know everything that is going on) but as a positive initiative in the hope that I can help (the enclosed material explains more fully).

— not kept

I sit by the phone in eager anticipation.

Yours sincerely

Bob Findlay

R J Findlay
Managing Director

Registered in England No 1180917 Registered offices 6-10 Eldon Street London EC2M 7LU

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R26/1

Registered office:
12 The Turnways,
Leeds LS6 3DU,
Yorkshire,
England.
Telephone: 0532 781903

The Private Secretary to the Prime Minister,
10 Downing Street,
Whitehall,
London SW1

kd /as

25 January 1981

Dear Sir,

Todays Sunday Times and Observer carried a report of a meeting tomorrow (Monday) at 10 Downing Street for the express purpose of discussions between innovators and government bodies together with financiers. I spoke today with the Duty Officer and this letter is addressed to you with the request that it be passed complete to Mrs Thatcher in the hope that it might be possible to consider my attendance at the evening meeting to which my contribution from experience could be of merit.

not kept.

Attached are brochures, leaflets, an editorials montage and a copy of the article in the 'Esso Farmer' which will introduce the product and a small part of the work entailed in bringing the project towards manufacture. What is not detailed is the complete failure of our funding, manufacturing, and government sponsoring bodies to cater for the needs of the private inventor.

In the four years of developing hydrovation, I have made contact with the NRDC, the NEB, most bankers, Sir Keith Joseph, my own M.P. Sir Donald Kaberry, all to no avail other than a possible reason for the change in NRDC advertising statements.

The Ministry of Agriculture have approved us, the COI have issued a film worldwide from which we have had considerable response, and newspapers and journals throughout the world have carried the story. Results so far are an order from the U.N. for Brazil and almost £2m of quotations. Ordinary enquiries in hand could be valued at some £4m. all of which could mature to firm business for 1981.

All this from a small workshop on my own. It would not be possible to state the frustrations and worry of trying to develop a product and perform all the functions of an organisation whilst at the same time maintaining a family and home. We have had to survive on an income of less than £1,500 a year.

continued/2

A Member of the Institute of Marketing, the Institute of Patentees, and other bodies, I have constructive views to offer which would appear to be completely within the framework of current legislation. I would state however, that the entire structure of bodies supposedly with briefs to aid the inventor are incorrect. They aid only the existing corporations and the academics who are insulated by permanent salaries.

Another similar conflict of opinion is in the confusion of intermixing entrepeneurs, innovators, and inventors. They are most unlikely to be the same people as their functions are dissimilar.

The concern for security is appreciated (and in fact applauded), should it therefore transpire that an invitation could be considered I offer the following names for reference none of which are aware of this letter:

Mr B. J. Stedman. MAFF (Late of External Relations, Whitehall Place)
Mr J. S. Robertson. MAFF Exports Technical Advisor (Horseferry Road)

MR E. A. Kirkby. Lecturer Plant Sciences, Leeds University.

Mr M. Richardson, Manager, Lloyds Bank, Arndale Centre, Leeds 6.

Mr S. Westmacott, of Antony Gibbs & Sons Ltd. Fredericks Place EC2

You would be welcome to ask the opinion of any or all of them direct.

Yours sincerely,

Kenneth Dunn

Kenneth R. Dunn
for Hydrovation Limited.

ENCL:

JFF

2

CONFIDENTIAL

DEPARTMENT OF INDUSTRY
ASHDOWN HOUSE
123 VICTORIA STREET
LONDON SW1E 6RB
TELEPHONE DIRECT LINE 01-212 3301
SWITCHBOARD 01-212 7676

PS/ Secretary of State for Industry

23 January 1981

Prime Minister

To be aware of 'X' for Monday night. (Mr Edge's letter is in the enclosing folder)

M Pattison Esq
Private Secretary to the
Prime Minister
10 Downing Street
LONDON
SW1

Dear Mike,

Mr G M Edge, Director, Patscentre International, copied his letter to the Prime Minister of 15 January to my Secretary of State. As Mr Edge will be attending the Prime Minister's Reception for Inventors and Innovaters on Monday night, you may like to include a short note on Patscentre in the Prime Minister's briefing.

2. Patscentre is a contract research organisation. It has an international clientele of 500 or so companies; the range of its work is illustrated in the attached brochure.

3. This Department thinks highly of Patscentre's work. The foreign contract business which Patscentre attracts is of course very welcome though it is a source of regret that whereas so many foreign companies make a beaten path to its door, so few British companies appear to take advantage of this centre of excellence.

X 4. The Prime Minister should be aware for her own information that this Department is considering arrangements whereby Patscentre could take over part of the work and staff of one of the Department's own research laboratories.

Yours sincerely,
Cecily Morgan

CECILY MORGAN
Private Secretary

ENCL

CONFIDENTIAL

Weekend

PRIME MINISTER

Your Reception on Monday 26 January

I hope you will find time to look at the folder for Monday night's entrepreneurs/ innovators function. It includes a short speaking note from John Ashworth to introduce the discussion at the beginning. It also includes papers volunteered by several of your guests. A lot of them are live-wire personalities, and although there may well be flaws in some of their arguments, it would be helpful if you can at least have a quick glance through the material over the weekend.

MF

22 January 1981

PRIME MINISTER

Reception on Monday 26 January

This reception seems to be having quite a simulating effect on those invited. This is what we intended, and I hope it proves productive. We are starting with a kind of informal seminar (with drinks served) in the dining room. You will be in the Chair. John Ashworth, who knows most of the guests, will sit beside you.

Flag A is a speaking note from which you might introduce the discussion.

Flag B is a copy of a letter from John Ashworth to your guests, covering a copy of the ACARD Report to you on the problems faced by innovators.

A number of your guests have been stimulated by the invitation to set down their own experiences. I have therefore added their contributions, and I hope you have an opportunity to glance through them at the weekend. They are:

Flag C : a paper by Dr. F.B. Mercer of Netlon Limited
Flag D : a paper by G.M. Edge of Patscentre International
Flag E : a paper by Andrew Smyth of Amstad
Flag F : a paper by Lucius Cary of Venture Capital Report Limited
Flag G : a paper by Edgar Biss
* (see additions overleaf)

The guest list is loose at the end of the folder.

It would be helpful if John Ashworth could have five minutes with you shortly before the reception.

MAD

22 January 1981

Two late contributions:

Flag H: a note from Mr. McIlroy of the Tyne and Wear Innovation and Development Co. Ltd. - an interesting and very recent initiative;

Flag I: a paper from Mr. Hiles. (John Ashworth advises that his written contribution is less useful than his work an an inventor!)

23 January 1981

W 02189 21 January 1981

TO: MR PATTISON

FROM: DR ASHWORTH

We spoke over the 'phone. I know this man and his work. I'm a bit weary of both - although his conclusions are often OK some of his methodology is dubious.

I would keep him and his report away from the Prime Minister at present.

A

See Dr Fox to PM 14.1.87

Mr Pattison

With the Compliments of

DR J M ASHWORTH

CENTRAL POLICY REVIEW
STAFF

Cabinet Office
Whitehall London
SW1A 2AS

Telephone 01-233 3000

THE TYNE AND WEAR

Innovation and Development Co. Ltd.

Please Reply to : Mr. P. K. McIlroy,
W.A.Fairhurst & Partners,
2nd Floor, Cragside House,
Heaton Road,
NEWCASTLE UPON TYNE,NE6 1SN.

Tel. 657112

21st January,1981

Dr. J. M. Ashworth,
Cabinet Office,
Central Policy Review Staff,
70 Whitehall,
LONDON, SW1A 2AS.

Dear Dr. Ashworth,

Thank you very much for your letter of 15th January, 1981 letting me know the format of the reception and discussion at 10 Downing Street next Monday.

I imagine that I was invited because of the Radio 4 interview that was broadcast on 7th January; I shall be very pleased to outline the initiative that we have taken here in Tyne and Wear, during the discussion.

In case I do not get an opportunity of explaining the background to our work here I attach a very brief summary which may prove useful to you when you produce a digest of what everyone has to say.

I am very much looking forward to the occasion.

Yours sincerely,

Peter McIlroy.

P. K.McIlroy,
Chairman

c.c. Dr.J.Hedley
Company Secretary

THE TYNE AND WEAR
Innovation and Development Co. Ltd.

PKM/21st January, 1981

STANDING COMMITTEE FOR ECONOMIC REGENERATION IN TYNE AND WEAR

In the face of growing unemployment in the established industries in Tyne and Wear and the apparent failure of previous initiatives, a Committee was formed early in 1980 with the intention of finding common ground and taking some positive practical measures aimed at the stimulation of new business and, consequently, the creation of new employment opportunities in the area.

The Committee was formed from the Regional TUC, the Tyne and Wear Chamber of Commerce and Industry, the Polytechnics, Tyne and Wear County Council and individuals drawn from local industry. The CBI was involved at the outset but decided to withdraw its active support mid-way through 1980 and the places previously filled by CBI representatives have now been filled by individuals. There is an approximate balance between the various interests represented on the Committee.

The first "concrete" evidence of the activities of the Committee has been the setting up of the Innovation Centre. This consists of premises containing basic machinery and small workshops and run by a qualified full-time Manager. Someone with an idea can come to the Centre, discuss it with the Manager and have it assessed by a small panel of individuals with the relevant expertise. The assessment will include :

- the technical feasibility of the idea;
- the commercial possibilities of turning it into a business;
- the potential ability of the applicant to follow the idea through.

If the idea is accepted for development, then the applicant will either be helped at the Centre or, if appropriate, will be put in touch with a laboratory or an existing firm with the machinery and expertise required. One of the most important functions of the Centre will be to advise the applicants on patenting and licencing arrangements.

A Company has been set up to run the Centre. The Board consists of ten directors representing each of the bodies making up the Standing Committee. The Company is being funded by means of a 25% grant from the County Council and a 75% grant from the Department of the Environment via the Inner Cities Partnership Fund. An approach has been made to the EEC and it is hoped that the Social Fund will be able to contribute to the training aspects of the work of the Centre.

THE TYNE AND WEAR

Innovation and Development Co. Ltd.

Please Reply to : PKM/AM

21st January, 1981

The main intention is to assist people within the Tyne and Wear area and a dozen or so approaches have already been made by potential local applicants. About the same number of people from other parts of Britain have made contact and it may be possible to assist some of them by arranging local links for the development of the idea.

The Company came into being at the end of 1980 and the Manager started work on 19th January, 1981. The premises are in process of refurbishment and extension. The first applicants should be able to use the workshops during April.

P. K. McIlroy,
Chairman

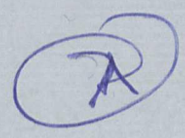
W 02187

TO: MR PATTISON

21 January 1981

FROM: DR ASHWORTH

You may be interested to see this reaction by Steven Dollond to Mr Biss' paper - which was quite critical of the NRDC. I have a very high opinion of Steven and I hope the Prime Minister will support him, and those like him, who wish to change NRDC's attitudes. I believe Steven has done a good job in the three or four years he has been at the NRDC and he deserves our support and encouragement. Wild suggestions to "close down NRDC" or "merge it with the NEB" do not readily lead to constructive action on the part of those, like Steven, in a position to be effective!



NRDC
National Research Development Corporation
PO box 236 Kingsgate House 66/74 Victoria Street London SW1 E 6SL
Telephone 01-828 3400 Telegrams Nardec London SW1 Telex 23580

Your ref

Our ref

Dr J M Ashworth
Cabinet Office
Central Policy Review Staff
70 Whitehall
London SW1A 2AS

19th January 1981

Dear John,

Thank you very much for giving us advance notice of Mr Biss's paper. I have never seen this case before but I can say that I sympathise with a lot of what he says.

I look forward to seeing you on 26th January.

Sincerely,

Steven Dollond
Marketing Director

HS

DR. ASHWORTH
CENTRAL POLICY REVIEW STAFF

I enclose another offering from one of the guests for 26 January.

As with the others, I will let the Prime Minister take a look at this over the weekend, and I should like to leave it to you to decide whether any wider distribution would be useful.

M.A. PATTISON

20 January 1981

HS

20 January 1981

I am writing on behalf of the Prime Minister to thank you for your letter and enclosure. I know that she will be interested to see this before next Monday's function.

M.A. PATTISON

G.M. Edge, Esq.

BF 22/1
MAD

Netlon Limited
Kelly Street Blackburn
England BB2 4PJ
Telephone 0254 62431
Telex 63313

FBM/LM

20th January, 1981.

NETLON

Dr. Mercer.

Mr. M. Pattison,
Private Secretary,
10, Downing Street,
London, S.W.1.

Dear Sir,

The Exploitation of British Inventions

I have been invited to attend the Prime Minister's reception at No. 10, Downing Street, on the 26th January, 1981. Having read the back-up papers provided by the Cabinet Office Central Policy Review Staff, I decided to draft a short note to the Prime Minister.

I am hoping that it may be possible for the Prime Minister to glance at these notes prior to the reception.

Yours faithfully,

F.B. Mercer.

Dr. F.B. Mercer,
President.

c.c. Dr. J.M. Ashworth,
enclosing copy notes.

Netlon Limited
Kelly Street Blackburn
England BB2 4PJ
Telephone 0254 62431
Telex 63313

20th January, 1981.

TO: The Prime Minister

FROM: Dr. F.B. Mercer,
President, Netlon Limited.

SUBJECT: THE EXPLOITATION OF BRITISH INVENTIONS,
RECEPTION AT NO. 10, DOWNING STREET,
26TH JANUARY, 1981.

NETLON

These notes were prepared prior to receiving a letter from Dr. J.M. Ashworth of the Cabinet Office Central Policy Review Staff and the restricted A.C.A.R.D. report which was enclosed with his letter. Having studied the A.C.A.R.D. report, I decided to forward this document as it is perhaps relevant to three areas which A.C.A.R.D. have considered in detail. Each of the three submissions is based entirely upon my own personal experience.

SUBMISSION HEADINGS

1. THE DEVELOPMENT OF CARPET TUFTING MACHINERY

I cite this development as it involved an attempt by a large, dominant and old established British industry to strangle at birth a technological advance in Britain in order to preserve the old industry.

2. THE NETLON PROCESS (EXTRUDED PLASTICS MESH)

I cite this invention as an example of the problems and pitfalls relating to the realistic appraisal of new inventions.

3. THE TENSAR PROCESS
(HIGH TENSILE STRENGTH POLYMERIC GRIDS FOR USE IN CIVIL ENGINEERING APPLICATIONS)

I cite this invention as an example of the most significant effect Government assistance can have in the early stages of research and development and exploitation of British inventions. It is perhaps one example of what is hoped to be achieved as a result of the Downing Street symposium.

.....

NETLON

SUBMISSION 1.
THE DEVELOPMENT OF CARPET TUFTING MACHINERY :

In 1954 I was responsible for the development of the first carpet tufting machine to be constructed in Europe. After the machine had satisfactorily completed its proving trials, I was approached by the Chairmen of two of Britain's largest conventional carpet manufacturing companies. Each asked me to sell out my entire interests because they did not wish carpets manufactured by this process to be sold on the British market because such carpets might endanger the high reputation for British Wilton and Axminster carpets, a reputation which had been built up over a very long period of time. At the same time the largest British synthetic fibre manufacturer refused to give any support whatsoever and quoted reasons which were almost identical to those of the carpet manufacturers. From what was said to me at the time, it became clear that the carpet manufacturers did not wish new technology to employed which in the medium or long term would cause a high proportion of their looms to become obsolete.

Their requests were turned down. I advertised the development of the new technology and its machinery in the carpet trade press. The small company I had formed with a capital of £1000, Tufting Machinery Limited, immediately commenced taking orders from medium-sized carpet manufacturing companies in this country, requesting 20% deposit with order. Within one month the company had a credit balance at the bank of £80,000 (1980 equivalent - £490,000). The company never looked backwards.

Prior to the recent recession, the carpet tufting machinery industry, which is all based in Blackburn and district, employed more than 2500 people. The industry has, since its inception, exported approximately £200,000,000 of machinery and four Queen's Awards to Industry have been awarded for Export Achievement.

SUBMISSION 2.
THE NETLON PROCESS :

This process produces plastics mesh structures directly in one step from the polymer melt to the finished product in contra-distinction to the manufacture of textile or quasi-textile structures requiring a multiplicity of individual manipulative steps. The products are used, for example, in packaging, agriculture, horticulture, fishing, fish farming, land drainage, and other uses too numerous to mention.

I invented the process in 1955 and the process was successfully reduced to practice within eighteen months. As I was heavily

engaged in the management of family textile businesses and the development of the carpet tufting machinery industry, I decided that the Netlon process should be "sold off".

The invention, (already the subject of patent protection), including details of the process, was explained in the strictest confidence to the then Main Board Development Director of the largest chemical company in Britain. I offered the entire worldwide rights for the sum of £10,000. The Development Director showed considerable enthusiasm but indicated that the invention must be assessed by the Chairman of the company's Plastics Division together with his technical and scientific advisers. Ten days thereafter I received a letter which stated, "Whilst the basic concept is ingenious, I am advised by Plastics Division that the process cannot be made to work on a commercial scale because polymer melts cannot be sheared in the way you propose. Thank you for your offer."

Within twelve months a manufacturing licence had been signed with a U.S.A. company which was then the world's largest chemical company. Twelve months thereafter a manufacturing licence had been signed with a Japanese company which was then, and is still, the largest chemical company in Asia. During the same period licences were signed in ten other countries with companies of various sizes. Today Netlon Limited has licensees in twenty-five countries. Even after twenty-two years, and to a large extent due to constant technological advancement, licences are still being signed. We are currently completing the construction of Netlon manufacturing facilities for the Yugoslav Government. The construction of a Netlon manufacturing plant for Mexico has recently commenced. A licence for a Netlon plant for the Hungarian Government was signed and ratified in December 1980. The Netlon invention created an entirely new worldwide industry. Including unlicensed countries (i.e. where no patent protection had been applied for) and where Netlon Limited has licensed the process, the invention is exploited in more than thirty countries. In excess of 4500 people are employed and global sales in 1980 will have approached £160,000,000.

The invention has resulted in a Queen's Award to Industry for Technological Innovation, a Royal Society Gold Medal (Mullard Award) and The Prince Philip Gold Medal for "Plastics in the service of man".

SUBMISSION 3.
THE TENSAR PROCESS :

I invented the Tensar process in the summer of 1978. It is a process for the production of polymer grid structures having the tensile strength (but not the tensile modulus) of mild steel. As

NETLON

with Netlon there is no metallic component in the structures. It will be used primarily in civil engineering applications and in the construction industry. The uses will include the reinforcement of concrete, the reinforcement of asphalt for highways, soil stabilisation, embankment construction, artificial islands in the Arctic to support oil drilling rigs, coastal protection, land reclamation and many other analogous uses.

At the outset it was realised that the cost of research and development and the progression through to a pilot plant stage would involve a sum of money which would be a formidable amount for a company of the size of Netlon Limited to support, but nevertheless the Company decided to proceed. After Netlon Limited had spent almost £1 million of its own money, it learned of the facilities offered by the Requirements Board. For some months the Company had been attempting to discover the full range of assistance which was offered by the Government but did not find the discovery of such information a straightforward matter. After suitable presentations, the Requirements Board agreed to finance 25% of the remaining estimated cost of the research and development project by way of a sum amounting to £783,000. Without such Government assistance the project would have moved much more slowly and far less efficiently and the Government's assistance is acknowledged as being of vital importance.

Applicational research in an area of such high technology is as important as the fundamental process and project research.

After lengthy negotiations, six Universities in this country have agreed to co-operate fully and a submission was recently made to the Science Research Council to sponsor this research under a co-operative research grants scheme, the S.R.C. proving £515,000 and my Company providing an equal amount. However, the scheme has not yet been approved by the S.R.C.

It is understood that for developments of an outstanding technological nature, bringing in their train major benefits to the public, E.E.C. support can be obtained to the extent of 50% of the entire research project. With considerable difficulty, the Company is attempting to discover which particular Department in Brussels handles these special projects.

.....

In these notes I have not attempted to put forward any constructive suggestions or proposals. If, after the Downing Street reception, it is thought that I could be of any assistance in the furtherance of the aims of this new concept, I shall be only too pleased.

F.B. Mercer.

Copy to Dr. J.M. Ashworth

820 MAP

CABINET OFFICE
70 WHITEHALL
LONDON SW1A 2AS

01- 233 6139

20 January 1981

RECEPTION FOR INVENTORS

We spoke yesterday about the modest publicity that might be given to this event. I now attach very brief notes about all those who were invited to the reception (I do not know which are coming) to assist you in this. I also attach the lists of addresses. The extra details are predominantly for the inventors since the financiers etc in general have titles which adequately describe their background and I would have thought that you will focus more on the inventors in any publicity anyway.

You were intending to get in touch directly with the Design Council about Mr Calvert and were also going to ask them about some of the names that they suggested. I would be grateful to see the information that they provide.

No doubt the Prime Minister will wish to have such brief notes on those present before the reception. I am therefore copying this letter and the list to Dr Ashworth and Mr Pattison.

R G COURTNEY

Mr N Gaffin
Press Office
10 Downing Street

Encs

PRIME MINISTER'S RECEPTION FOR INVENTORS

MONDAY 26 JANUARY 1981

Notes on Invitees

INVENTORS

Professor M French
R Kinnersley
R Hickman
A Smythe

to be provided by Design Council

P C Dowler

Inventor of new type of hotel room safe, with combination lock allowing access by guests and, if necessary, management. Recently started production with NRDC support.

P Gottley

Invented new form of gas detection equipment, employing microprocessor. Firm started in 1973. Now employs 50, turnover £1 million. NRDC finance. Latest product - portable flue-gas analyser for checking boiler efficiencies.

R M Hartley

Invented new way of processing bonded fibre wastes to create high quality fibre. Opened new factory in September 1980, with NRDC assistance.

M A Hiles

Inventor of 'Sorbothane', a polymer that simulates the energy-absorbing properties of human flesh. Now in production by BTR Industries. Used for seals, accoustic damping, orthopaedic shoes. Supported by NRDC.

F B Mercer

Invented new way of making nets. Plastic netting 'Netlon' now extensively used.

R Mozley

Inventor of new forms of mineral separation and treatment equipment, solids separators etc. Assistance from NRDC.

E Biss

Has invented new note weighing machine, controlled by microprocessor. Currently seeking finance to start production.

N Vinson

Founded Plastic Coatings Ltd based on new method of applying plastic to metal. Service on Crafts Advisory Committee and Design Council.

H Calvert

Prize winner in Schools Design Prize competition. Invented protable gymnasium. Ran family software firm while studying for A levels.

Professor M Hampshire

Professor of Solid State Electronics at the University of Salford. Co-founder of two companies - one independent, the other now owned by GEC - for exploiting Salford University inventions. Products: novel noise generator and electronic switching circuits for cars.

T J Parker

MD, Hiltcroft Holdings Ltd. Has developed, with industrial development unit of Salford University, novel containers for pharmaceuticals.

C A Davies

Chief Executive, Information Technology Ltd. Manufacturers of office technology products, turnover £10 million. Previously started company making automatic test equipment for computer industry.

B Allison

Chief Executive, Business Intelligence Services Ltd. Company supplies software to financial sectors. Founded 15 years ago, now employing 300, turnover £8 million.

L Brownlow

MD, Rodime Ltd. New company (founded 1980) manufacturing computer peripherals. American, previous experience with Burroughs.

ENTREPRENEURS

P Naylor

MD, Job Creation Ltd. This firm establishes small firms in redundant buildings, largely in depressed areas. Previously MD of BSC (Industry) Ltd, responsible for creating employment to cushion steel closures.

G Taylor

MD, TDC Development Ltd. Recently returned to the United Kingdom from 15 years venture capital experience in California. TDC in as off shoot of ICFC.

Dr J C Cain

MD, NRDC. Biologist.

S Dolland

Marketing Director, NRDC. In previous job, carried out comparison of small firms in United Kingdom and Germany for Anglo-German Foundation.

J Peterson

Head of United Kingdom branch of American venture capital company. Venture Founders Ltd. Major commitment in St Helens with Pilkington Trust.

I Mountchiloff

Finance for Industry Ltd. An off-shoot of ICFC.

P Redman

Abercrombie and Co Ltd. Investors

M T S Wallis

Assistant General Manager, Midland Bank Ltd.

I W Lovett

Manager, Small Business Unit, Barclays Bank Ltd.

R Duthie

Chairman, Scottish Development Agency.

CONSULTANTS

R Cutting
G M Edge
Professor G P Blair

to be provided by Design Council

INDUSTRIALISTS

Dr A Spinks

Chairman, ACARD. Formerly Research Director, ICI Ltd.

Sir Robert Clayton

Member of ACARD. Technical Director, GEC Ltd.

Lord Caldecote

Chairman, Delta Metal Co Ltd. Formerly Chairman of Design Council.

Sir William Mather

Former Chairman of Mather and Platt Ltd, a large engineering firm in Manchester. President of UMIST.

MISCELLANEOUS

J L A Cary

Founder of Venture Capital Report, a journal that presents business propositions needing support.

R Rayner

Secretary, Institute of Patentees and Inventors. This body advises inventors on protecting their ideas.

P K McIlroy

President, Tyne and Wear Chamber of Commerce and Industry. Chairman of Board of Tyne and Wear Innovation Centre which provides a workshop and advice for people wishing to test ideas.

GOVERNMENT

Dr J M Ashworth

Chief Scientist, CPRS

Miss A Mueller

Deputy Secretary, Department of Industry, with responsibility for small firms.

Dr R Franklin

Deputy Chief Scientist Officer, DOI. Responsible for NRDC.

A Lovell

Under Secretary, Treasury. Responsible for aspects of industrial policy.

R G Courtney

Principal Scientific Officer, Cabinet Office. Member of (Ad Hoc) Secretariat.

W 02179

TO: M PATTISON 20 January 1981

FROM: J ASHWORTH

I attach a draft of the Prime Minister's opening remarks for the 26th. I also attach a list of the two people whom I have asked to introduce each section - I assume that they will all accept this job.

You say in your note that I will be 'MC'. I imagine you mean by that that I will prompt the Prime Minister in her role as chairman. I hope she is happy with that thought. Is there any chance of my having a few words with her before things start on Monday so that I know what exactly she wants?

Looking at the list of Ministers you have invited makes me wonder whether Mr Neil MacFarlane of DES should not also come? Could you advise me please.

GUESTS INVITED TO INTRODUCE TOPICS

Topic	Lead	Second/Reserve
1	Dr A Spinks	Mr J Peterson
2	Mr P Gotley	Mr E Biss
3	Professor Hampshire	Mr T Parker
4	Mr G Taylor	Mr I Lovett
5	Mr P Naylor	Mr P McIlroy

1a MAP

PRIME MINISTER'S RECEPTION FOR INVENTORS - 26 JANUARY 1981

OPENING REMARKS

Welcome.

I am very pleased to have the opportunity of meeting you tonight. As you know, a principal aim of the Government's economic policies has been to stimulate individual initiative by encouraging the formation of new businesses and enabling their owners to retain more of the wealth that they have created. Factory closures and unemployment may take the headlines, but as I go round the country I am constantly impressed by the vigour with which people are working in small firms and their determination to maintain what is often very rapid growth. We clearly have to look to the country's smaller firms, and particularly those in areas of new technology, to take up much of the labour now being shed because of the rundown of our older industries.

2. But a number of people have said to me that in Britain there are barriers to the exploitation of new ideas, that it is more difficult here than in other countries to start firms and make them succeed. Clearly we want to remove these if we can although I suspect that the influence of Government may in some areas be very limited. I asked ACARD to advise me on the problems of inventors and very small firms. I understand that you have all seen the Council's report and I want to discuss it tonight since it seems to cover the main issues quite comprehensively.

3. There are, I think, five main themes in the report:

The problems that exist in getting new ideas considered.

The role of the NRDC. Gourley

(8) How universities can exploit their ideas. Henderson

Tax changes that would help small firms. - Taylor

Problems of buildings and the role of local advisory organisations. Naylor.

4. Let us deal with each in turn. We have about an hour to cover the five. Before we start, though, let me just say that I fully recognise the difficulties that most firms face because of the value of the pound, high exchange rates and so on. The Government are not complacent about these but let us tonight concentrate on those factors that prevent small firms from being started or from flourishing, rather than those that affect big and small alike.

5. Now I think that some of you have been asked to open up the discussion on each point. Dr Spinks, would you like to introduce the paper and start us off on the problems of getting ideas considered?

DRAFT

Prime Minister's Reception for Innovators and Financiers,
Monday 26 January

The Prime Minister introduced a 90 minute discussion. ~~In the course of it, five main themes were introduced with briefed prepared statements:~~ This was structured around five topics highlighted in the ACARD report on problems of inventors were too

The problems that exist in getting new ideas considered

The role of the NRDC

How universities can exploit their ideas

Tax changes that would help small firms

Problems of buildings and the role of local advisory organisations.

The discussion was not confined by the themes introduced, and the main points to emerge were spread throughout the discussion. In the course of discussion the following main themes emerged:

Presentation often represented a major hurdle in selling an idea to those who could help finance and develop it. The innovator approaching a potential investor needed to be able to marshal ideas in the expectation of critical questioning. Not surprisingly, many innovators lacked presentational skills. It might be that NRDC should accept some educational role here.

/Multiple Access Points

Multiple Access Points were important for innovators, and potential developers and financiers recognised this. Whether an ~~approach~~ project was taken up on the basis of gut reaction or more considered group decision, judgment was involved: a very small proportion of new ideas were taken up; no-one would claim that judgment was perfect; it was therefore right to have a wide range of sources for funding. It was nevertheless wrong to claim that access points were limited at present - for instance the clearing banks had 14,000 branches and each manager would have to form his ~~own~~ personal judgment on projects presented to him.

The basis of selection used by most potential sources of finance was likely to be an assessment of management skills. Those with inventions to sell needed to understand this. The Government's servants or bankers were not likely to be overwhelmed by the innovator's own vision. Some organisations, like ICFC, were developing national networks of offices with young entrepreneurial managers: innovators might find it easier to relate to these managers, although they would still be primarily looking for management record or potential.

New innovators felt trapped by the existing institutional structure. But the institutional investor was in a position to take on some high risk projects because the institution's range of investments and some gambling. In addition, high growth industries of the future were likely to depend on the use of a range of technology outside the scope of individual innovators. Only a positive approach by large existing companies or public sector institutions could provide the facilities and support to

/bring

bring together the necessary work.

The structure of tax incentives still sucked funds into the life insurance, pension arrangements, and building societies. Comparable tax incentives needed to be provided for investment in new products and new businesses. There was, however, the problem ~~of~~ that proposals for such incentives ~~individually~~ usually ignored the assumed ~~that~~ possibility of restoring balance ~~could be restored~~ by withdrawing advantages from investments which were already tax-~~prevailing~~ privileged. Personal wealth motive

Developing and marketing of new products could often require a public/private sector mix of funding: the process of putting together such a package tended to involve one decision point for the private sector but multiple decision points in the public sector. There was scope for some brokerage function between the innovator and public service sources of finance: NRDC might be in a position to play such a role.

Do not get hung up on small man.

Invention did not necessary lead to innovation and innovation did not necessary lead to business success. A product which was to be capable ~~to~~ of supporting a business needed to be a much better one than was necessary simply to extend a product range. For the national economy, development of small business crucial

Our university and polytechnic structure did not provide incentive for innovation. The promotion opportunities depended on traditional academic work; there was little financial reward for marketable ideas developed within a university, because of the virtual NRDC monopoly, even if innovators working in this

/environment

environment were able to cash in, the prevailing ethos would treat this as immoral. Those who exhibited the potential to develop new products tended to disappear into a small group of large firms - often in a service rather than manufacturing role.

Our tradition of research leading to publication simply presented the results to the entrepreneurs in the other highly developed economies

Unwi relate to large business
small business grows from large.

—

Large corporations often ready to provide

K.B. Our small business network
Chief Sec: have heard: minds not made up: stock relief
P.M. Stimulate risk taking
Wride

Venture Capital Report Ltd

Head Office: 2 The Mall
Clifton
Bristol BS8 4DR
Tel. Bristol (0272) 37222

Dr J.M.Ashworth
The Cabinet Office
Central Policy Review Staff
70 Whitehall
London
SW1A 2AS

19 January 1981

Dear John,

Thank you for your letter, and I will look forward to seeing you at the Prime Minister's reception.

I read the ACARD report, on which you assisted, with great interest, and I support most of the conclusions. However, on one point the report seems contradictory: on the one hand it says that the number of decision points should be increased (absolutely right), and on the other that NRDC should have access to up to £50m (sic) from the exchequer (concentrating too much muscle in one decision point - absolutely wrong).

I know that governments and therefore possibly those whom they choose to advise them, will prefer dealing with one large bureaucracy rather than with many small independent bodies, but in this case, as the earlier analysis stated, we need to increase the number of people acting independently in the field. If ten bodies of whom NRDC might be one, had access to £5m each, I believe the effect would be very beneficial. I believe I could find you ten such bodies, and will happily volunteer to be one myself. If the money were to be given to NRDC, then it would be better given to 10 independent financial centres within NRDC, which would stimulate competition and encourage enterprising decisions.

Above all, inventors need rapid response and advice, and (best of all) active involvement from people who have started successful small businesses themselves, preferably in the same field of endeavour so that the investors understand the technology and have contacts in the market. I do not believe that NRDC contains such people.

Here I am glad to say that projects continue to be funded: one recent project had 17 approaches, and we had one grumbling letter from another entrepreneur whom we wrote up on December 1, who had his money (c. £50,000) two weeks later from a VCR subscriber, and wrote complaining that he had only had four approaches! However, there are still good projects (in my view) which we write up which are not being funded, and I would very much like to change this.

PTO.

One bad thing is that the number of VCR subscribers has fallen slightly to 440, and although we are having a campaign (12,000 letters later this week) to try to obtain more, it does mean that we are only just financially viable - not a good thing since there is much we could do with more funds, such as lowering our price so increasing the number of decision points still further, opening regional offices so enabling us to cover more projects, and employing one person to spend time encouraging inventors in universities and elsewhere to make profitable businesses from their inventions.

Yours,

Lucius.

J.L.A.Cary

HS

R.A. SMYTH
23/1

DR. ASHWORTH
CENTRAL POLICY REVIEW STAFF

I enclose a copy of a paper from Andrew Smyth of Amstad, prepared for the Prime Minister's function on 26 January.

I will show this to the Prime Minister over the weekend, together with other offerings. May I leave it to you to give it any other circulation which you feel useful?

M.A. PATTISON

19 January 1981

BC

BF 22/1

MAP

CABINET OFFICE
Central Policy Review Staff

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

W 02177

15 January 1981

Dear Steve,

? Maurice Hiles paper at 16.12.80

One of those invited to the Prime Minister's reception on 26 January has sent me the enclosed paper. I do not think it is suitable for general circulation (as he seems to wish) but I do think it appropriate for me to send it to you, Mr Franklin (DOI) and Mr Taylor (TDC) on a confidential basis.

Yours ever

John

DR J M ASHWORTH

S Dollond Esq
NRDC
Kingsgate House
Victoria Street
London SW1

cc Mr Franklin, DOI
Mr Taylor, TDC
Mr Pattison, No 10
(for information)

Mike — This is a lucid and typical description of the difficulties. If the Prime Minister had the time she might well be encouraged to read it.

I have just had lunch with a bright young lawyer who practises in Oxford who has just started a magazine called "Intellectual Property Law". He is reading about the law, lawyers and Patent agents. Do you think there's any point in having him along as do you think we've got enough lawyers already!

John

Mr Pattison

cc Mr Coffin
BF 22/1 MAP
19.1.81

With the Compliments of

John Ashworth

CENTRAL POLICY REVIEW
STAFF

I attach, for information, the letter I have sent to all those invited to the Prime Minister's reception on 26th.

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Whitehall London
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15.1.81

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CABINET OFFICE
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W 02175

15 January 1980

I was pleased to learn that you will be attending the Prime Minister's reception at 10 Downing Street on 26 January. I thought it might be helpful if I gave you some further guidance on what the Prime Minister hopes to accomplish.

As the note enclosed with your invitation indicated the Prime Minister has been concerned by representations made to her about the continuing difficulties faced by private inventors seeking the commercial exploitation of their ideas. She asked the Advisory Council for Applied Research and Development (ACARD, Chairman, Dr Alfred Spinks) to advise her on these matters and I attach their report. You will note that this document is marked "Restricted". This means that you should regard it as a privileged communication and not inform others of its existence or contents. I hope you will be able to read this report before 26 January because it is the Prime Minister's intention to cover the topics discussed in it during the first part of the reception.

When you arrive at No 10 Downing Street you will be given a name tag, a list of those others attending, and shown into the Dining Room where refreshments will be available. The Prime Minister will then make a few introductory remarks and invite one of your number to introduce the first set of topics drawn from the ACARD report. This introduction should be brief and to the point; general discussion of this set of topics will then follow for some 10–15 minutes.

The Prime Minister will then invite someone else to introduce the second set of topics and so on. We have selected five sets of topics:
(paragraph numbers refer to the ACARD report)

i. getting ideas considered (paras 10-13 & 16-17)

ii. the role of the NRDC (paras 15, 19 & 22)

iii. the exploitation of university inventions (paras 6 & 7)

iv. fiscal incentives (paras 24-26)

v. premises and local assistance (paras 28-29)

so this part of the proceedings should last about an hour. The purpose of this structure is to enable us to have a ~~resonably~~ reasonably coherent discussion of the issues which ACARD has identified. We do not in any way necessarily wish to limit discussion to the issues identified by ACARD and I hope you will make additional points where appropriate.

Following this informal "seminar" the Prime Minister will then lead the way into the Pillared Room where more refreshments will be available and the reception will continue informally, with the Prime Minister and her colleagues circulating amongst you all.

Because the reception is organised in this way, it will be important to start the "seminar" reasonably punctually. It would therefore be most helpful if you could arrive at Downing Street promptly for 6.30 pm - although the Prime Minister will quite understand if some of her guests are unable to be there from the beginning.

We hope to have a number of other Ministers present on the 26th but I cannot tell you at this stage who they will be.

I have written separately to those who will be invited to introduce each of the five sets of topics outlined above, but if you are not one of those, I hope that you will nevertheless come prepared to make a contribution and help us make this an informative and stimulating, as well as enjoyable, occasion.

DR J M ASHWORTH

BF 22/1

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EKONOMISK FÖRETAGSLEDNING (EF) AB

M. Edge.

The Rt Hon Mrs Margaret Thatcher
Prime Minister
10 Downing Street
London

15 January 1981

R19

Dear Prime Minister

Recognising that there will be other worthy and committed souls besides my own vying for your time at the reception which you are holding on Monday week to discuss innovation and related topics - I felt I could do no better than to send you a copy of an exchange of correspondence between Sir Keith Joseph and myself following Sir Keith's much enjoyed and appreciated visit to Patscentre Cambridge in October 1979.

This correspondence summarised the problems and opportunities related to innovation in the UK as seen by ourselves and which remains largely unchanged since then. An important change and development, however, has been the establishment by the Prudential and ourselves of Prutec:

Prutec, on the basis of its own broad technological and investment strategy, is able to take the initiative in responding to an established market need for a new product or process. It can do this by investing in an R & D/production engineering programme leading ultimately to the project being hosted by a UK based company for manufacture and marketing.

This approach, which really is an innovation in its own right, transforms the traditional concept of a funding agency from an essentially passive role into an active, even aggressive participant in industrial product and process development.

.../...

I have enclosed an article by Christopher Lorenz which describes the Prutec concept in a rather more eloquent and detached way than my own.

I am grateful to you for the opportunity to participate once more in these discussions - the previous being at the Dorchester. Since that time, I am glad to say that our business has continued to develop well - we now have our own laboratories in the USA, Belgium and Australia, as well as Design Units in France and Germany. In addition, we are presently doubling the size of our Cambridge building to enable us, for example, to extend our Biotechnology facilities into recombinant DNA and to provide more sophisticated optical semiconductor development equipment.

I look forward very much to meeting you once again.

Yours sincerely

G M Edge
Director - Patscentre International

Copied to Sir Keith Joseph

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EKONOMISK FORETAGSLEDNING (EF) AB

The Rt Hon Sir Keith Joseph
Secretary of State for Industry
Department of Industry
Ashdown House
123 Victoria Street
London S W 1

1 October 1979

Dear Sir Keith

When you visited Patscentre recently I promised to write to you with a summary of our opinions on three topics

- Innovation and Invention
- Patscentre problems associated with penetration of the UK market
- Notes on the impact of biochemistry.

This letter reviews as concisely as possible the first two areas but I felt, on further reflection, that the impact of Biochemistry on industry will be so extensive that any attempt by me to summarise our views by letter will be so superficial as to be misleading and unhelpful to you. We are, therefore, preparing a report which will cover Biochemistry more thoroughly than I could possibly do in a letter designed to rest only briefly in the 'Pending' tray.

We will send this report to you as soon as we can, probably by the end of October.

Returning to the first two subjects of this letter, I will first remind you of the crucial distinction between innovation and invention which is fundamental to our own approach to product development:

Innovation is the creative assembling of existing science and technology in response to a need.

Invention is a similar creative assembling of existing science and technology in the absence of an established need.

Obviously there are overlaps and exceptions but by and large, in our experience, these definitions hold true and are extremely helpful in determining a strategy for a new product (or process) development programme for an industrial company.

As an aside: it is important to distinguish between needs and wants. For example - in the USA, and elsewhere, there has been a need for energy effective passenger cars for some time. At the same time the ultimate purchasers have not actually wanted such a vehicle. The need converted to a want only when queues developed outside the petrol station (and as quickly disappeared when supplies recommenced).

Unfortunately, it is common, if not the norm, for these definitions to be seriously confused leading to a totally inappropriate strategy in respect of technological change within a particular industrial company.

The plight of the individual inventor is familiar to all of us - having committed himself totally to his invention he then treks from company to company with mounting frustration, stemming quite clearly from his not having accurately perceived a commercial or social need for his idea and in the inability of those organisations he meets to consider his idea in response to their own needs.

On a larger scale, this leads to criticism, often unjustified, of organisations such as the NRDC. They can certainly sponsor an idea and bring it forward in a clear and demonstrable way but, in the limit, unless the company to whom they present the concept can assess it against a structured view of their own needs, then frustration will again ensue.

Patscentre's dogma is based upon our definition of innovation and we have developed the approach which I described to you as 'strategic product development', in which the needs and constraints are established before the expensive and risky trail of research and development is embarked upon.

This brings us naturally to the second point of our discussions - a majority of companies whom we encounter in the UK are simply not organised to deal with new product development in a strategic and effective way.

What a majority seem to want is to be presented with a shopping list of new inventions and concepts from which they will make a choice based upon arbitrary criteria - even emotional criteria such as hunch or 'judgement'. PA are simply not prepared to present such lists and this has lead over the years to our undertaking a large proportion of our work for companies outside the UK,who are prepared to take a structured and thoughtful approach to new product development. Some examples of such companies which I mentioned to you at our meeting include Bosch (Germany), Electrolux (Sweden), Siemens (Germany), Thompson-CSF (France), Caterpillar (USA), Corning (USA), General Electric (USA), Longines (Switzerland) - a current list of some 500 world-wide.

I make this point not to impress but to counter an opinion often expressed amongst UK companies that:"outside resources are not required because we have substantial in-house R & D facilities".

I will summarise some of the differences we identify which, in respect of their approach to product development, contrast UK companies from their equivalents particularly in Scandinavia, Germany, Switzerland and France.

1 Awareness

This is fundamental. Many companies are simply not aware that such a highly creative act as innovation can be controlled in the same way as any other business activity. More seriously, many are not aware of the potential of innovation and technological change to enhance 'added value', to improve operating margins, reduce process costs and so on.

2 Organisation

Because product development is perceived as an ephemeral, intangible activity, the organisation structure tends to isolate the R & D function from general business activities. This then creates divisions within a company where Marketing, R & D, production engineering, product design, are considered as entirely separate activities each controlled by individuals who may not even be in day to day contact.

Such rigid structures are one of the most serious threats to a company's ability to respond to change.

The approach taken by successful continental European and American companies is to matrix the new product development function across the whole organisation, enabling the Product Manager to assemble or disassemble his team rapidly as the situation dictates.

Furthermore, the R & D function is frequently seen in the UK to include that of producing new product concepts for presentation to the 'Board'. This approach is itself conceptually identical to that of the inventor and, without the clearly established 'need', the concepts may be rejected or accepted arbitrarily, leading either to further frustration by the R & D Director or to his defensiveness when his development programme goes adrift - in which case he will try to preserve that development programme at all costs. This leads naturally to

3 Risk

The new product development trail is extraordinarily risky. We believe that our approach minimises that risk but, even when we have gone through an elegant establishment of need, market definition and the rest, crash - the development programme is unsuccessful.

In the UK we find often an almost childlike faith in the abilities of an R & D organisation to succeed and an equally childlike rage when things go wrong. Really this stems right back to the rather amateurish "gambling" approach to product development future.

As a director of Bosch said to me five years ago - "We will give you three projects to start with and we expect you to fail on all of them. If you succeed on one then we will be impressed but it will not be essential. What we shall examine is how you fail." (As it happens, in this case the luck which supports the strategy was on our side).

It is of great importance that British companies learn once again that risk is an inevitable, but manageable, part of industrial development. They certainly knew it once but over the years the entrepreneurship has declined, to be replaced by 'professional managers' who ignore the origins of their own companies.

The 'City' has to take its own share of the responsibility for this low risk attitude. A director of a very well known public company in London said to me recently: "We must not let our brokers hear that we are considering diversification out of our traditional area - it will cause rumours and our share price will decline."

It seems that there is also a need for 'awareness' amongst those advising industry.

I feel that I have gone on too long or you may feel that I am complaining - I am not. We are very happy that we undertake the multi million pounds worth of product development business for industry that we do within the UK. We have had some very successful product development within our own country and, when everything goes together, success in the UK can be spectacular (so indeed can the catastrophes). We, of course, continue to try and develop our business within the UK and overseas within our commercial constraints and we are presently putting the final stages to the development of our own Patscentre in the USA.

However, if you would like me to expand further on anything I have said or written then please ask.

In conclusion, I would like to make one suggestion:

New technologies are offering British management opportunities for growth and for profitable business development. They also pose challenge and problems which can be daunting. Whilst there is ignorance as to the implications for employment, whilst companies are unaware of the lessons learned and the competitive examples set by others in managing change, there will be only a slow and inadequately complete attack made on the management of change within British businesses and it it possible that you may feel there is an opportunity here for your Department to play a constructive role in encouraging the dissemination of better knowledge of how to handle and manage technological change. I would be interested to hear your views on what sort of initiatives might be taken.

I look forward to the opportunity of meeting you again before too long.

Yours sincerely

Graham Edge

G M Edge
Director - Patscentre International

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Secretary of State for Industry

18 October 1979

G M Edge Esq
Director
PatscentreInternational
Cambridge Division
Melbourn
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Herts SG8 6DP

Dear Mr Edge.

I was most grateful to you for your splendid letter of 1 October, and for the interesting and stimulating ideas and thoughts that it contained. We will look forward to reading your ideas about the impact of biochemistry, which is certainly something to which we will be giving a lot of attention. It will require a great deal of collaboration between companies in different fields, different Government Departments (e.g Industry, Health and Agriculture, not to mention Education and Science) and practitioners of different disciplines. So your view as an informed and skilled observer of the market as well as the technology will be especially valuable.

We entirely accept your view about innovation and the reasons for difficulty and frustration. We also believe that the problem has changed in shape; it was much easier, thirty years ago, to put a product on to the market that fulfilled a need, and then to do nothing while this need was converted into a want.

Many people in the R & D field have lived in this earlier period, and I suspect they sometimes (and understandably) feel that the failure of this process these days is in some way unfair. This may be quite a powerful factor in leading to the battering of heads against brick walls, to which you so eloquently refer. I am discussing with my officials the questions of how I can encourage those who see the new shape of things, and how to deal with constraints. These practices include the internal procedures in big organisations, though I recognise that they are often necessary to provide both the cashflow and the capabilities to turn small enterprises with potential into big enterprises with really significant profitability. We shall value your contributions to this process and I gather that Duncan Davies is planning to come and discuss with you our developing ideas when they have got a bit further.

/I should ...

We should also like to take up and analyse further the three headings under which you analyse our UK weaknesses. The pattern of your own market is a cause for concern. We are doing a good deal of work to learn from the Americans, the Japanese and the continental Europeans about the matters raised in your penultimate paragraph, and we should like to discuss these with you also. At some stage we shall wish to form a view about the best ways in which contract organisations, inhouse developers, and public sector technologists can each play their part. Not everything in the past is bad, and we have quite an outstanding record in this country for getting innovative propositions into initial profit especially in the process industries. Our tasks are thus:(a) to spread this capability, especially into the areas of mechanical and control engineering;and (b) to do better in retaining the profit earning capacity of these initial successes as the businesses grow. But retention of market share, from the base of a small economy, is not as easy as in a large economy as we were in the last century, and from which we have carried over some habits.

Yours,

Ken Roach

FINANCIAL TIMES 20.6.80

The Pru backs new technology

BY CHRISTOPHER LORENZ

IT IS almost as if the City has decided to put Sir Keith Joseph out of his misery, and restore his apparently wavering faith in the willingness of the private sector to develop and exploit new technology, thereby helping Britain to survive in the world's industrial rat-race.

On Monday the Industry Secretary suggested to the National Economic Development Council that it may, after all, be necessary for even a Tory Government to provide State support for industrial innovation, in its various stages—not only to stimulate more basic research, but also to accelerate the development and introduction of new products and processes.

Yesterday Britain's largest single investor in quoted securities, Prudential Assurance, came up with its own way of providing finance for companies—especially small and medium-sized ones—which are unable or unwilling to fund sufficient research and development projects to ensure their long-term survival in the market place.

White heat

Of course, the Pru has been hatching its plan for many months, and is not putting up £20m simply to steady Sir Keith's nerves. Nor, on its own, will its initiative generate much technological white heat in national terms.

Yet its action is both courageous and significant, for industry as a whole as well as for the City. It is courageous in purely financial terms because the Pru is prepared to wait rather longer than usual to secure a commercial return from its investment: some of the projects in which its new Prutech subsidiary will invest are expected to produce no return at all for at least five years, and some for as much as a decade. This shows that the Pru understands the basic rules of the technological game, but it is highly innovative stuff from a traditionally conservative City.

The move is equally courageous for its tacit recognition that, while it possesses an unusually strong investment research team, the Pru needs outside advice on technological issues.

There is plenty of evidence of the City's general technological ignorance, for example, the violence with which technology-based companies tend, as a group, to swing in and out of fashion on the stock market; more specifically, the short-term view generally taken of the few long-standing technological favourites (Racal, ICL); and, needless to say, the record losses now faced by Lloyd's over computer leasing contracts.

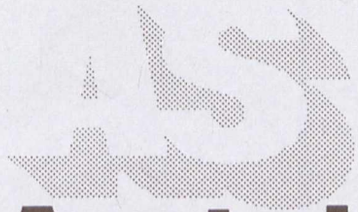
Now, by going into partnership with one of Britain's most highly-powered centres of technological excellence—Patscentre, a laboratory and consultancy subsidiary of P.A. International—the man from the Pru is charting a course round the problem.

It is always possible that the new venture is little more than political window-dressing in the face of the current fashion for small companies and the imminent publication of the Wilson Committee's report. Over the last two years there have been plenty of venture capital projects which smacked strongly of such a motivation.

In this case, the Pru deserves more charitable mention. Not only would £20m be a large amount of money to commit to a publicity stunt, but Patscentre is convinced the Pru is in earnest—which is more than can be said of its view of some of the similar partnership projects put to it by other financial institutions over the last year or two.

One of the things that swayed PA into acceptance was its realisation that the Pru really is prepared to wait for a return; without this, almost any investment in the development of high technology products and systems is doomed to failure—a point that many venture capital organisations have still to learn.

Once he has got over his initial delight, Sir Keith may begin to wonder whether the Pru is effectively trying to pull the rug from under the feet of the long-established National Research Development Corporation, which exists to help individuals and companies exploit bright technological ideas. Though the Pru would deny such an aim, in one sense its venture will have the edge over the NRDC, since on some technologies Patscentre possesses greater in-house expertise and resources.



Amstad

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Telex 896691

The Secretary (Invitations)
10 Downing Street
Whitehall
London SW.

15th January 1980

R 16/1

Dear Sir,

Thank you for your invitation to attend a reception at 10 Downing Street, on the 26th January. I should be very pleased to attend.

Knowing the Prime Minister°s reputation for wishing to hear a wide variety of viewpoints, I have prepared some notes on our company°s experiences in trying to establish a new product. I fully appreciate the demands on the Prime Minister°s time, but I would be grateful if you could forward these notes to her office. In this way, it will at least give her the option of knowing in advance of some of the views of people involved in innovation and invention in this country.

Once again, my thanks for your kind invitation.

Yours faithfully,

Andrew Smyth

For Amstad Systems Ltd.

Amstad Systems Ltd

Director: Andrew Smyth
Reg in London No 1088859
Registered Office 82z Portland
Place London W1N 3DH

FINANCE FOR INNOVATION.

Notes for the attention of the Prime Minister

From: Mr. Andrew Smyth, Managing Director, Amstad Systems Ltd.

Ref: Reception, 26th January 1981, 10 Downing Street.

SUMMARY.

Amstad Systems Ltd. was formed in 1979 to manufacture and market a unique type of "perch" seating. The pivoting seat represented a genuine innovation in the field of public furniture and is ideal for areas of restricted space, such as transport interchanges, stadiums etc. The product's exceptional characteristics, won Amstad a 1980 Design Council Award. Its launch was greeted enthusiastically by the press, being featured in many national newspapers, TV and radio - several dozen press cuttings have also been received from the foreign press.

Since its launch, orders have been placed with great success by most of the major UK transport organisations, and the company has continued to introduce new products. In addition, trial orders have been supplied to about sixteen countries overseas,and a licencing contract, guaranteeing minimum royalties, has been signed with Japan. The company now has appointed agents in Hong Kong, Australia, France, Spain, Holland and Germany, and active negotiations are continuing with many more.

SEARCH FOR FINANCE.

Amstad attempted to raise money to establish the company, and finance its product development. The company prepared detailed, computer-produced financial reports and forecasts, and approached every institution listed by the Bank of England as being a source of development capital. In addition, approaches were made to the clearing banks, as well as other sources of aid, such as the local authority fund, the Small Business Advisory Service, the London Enterprise Agency etc.

The company anticipated an initial loss for the first two years, thereafter leading to a very profitable operation, which, more importantly, had world-wide potential. In spite of this, none of the company's approaches was successful, and indeed the application was seriously considered by only very few of those organisations approached.

From its experience, Amstad would offer a list of significant factors affecting the search to finance innovation:

1. Most Banks and other financial organisations feel that it is the innovator's job, not merely to supply the innovation, but also to supply the initial finance to develop and launch the product. They felt that their involvement would come at a later stage, when the product had proved profitable - this is obviously too late for many innovators.

2. The organisation prepared in principle to finance an entirely new product, generally required a very rapid return on investment, of the order of 2-3 years.

3. The fact that different products take different times to establish themselves in particular markets, was not generally recognised or catered for.

4. Even though Amstad was attempting to establish an international company, as well as an international product, little sympathy was shown for this objective.

5. Generally organisations, being cushioned from the type of problems encountered by the new company, have very little understanding of their actual day-to-day problems and resources.

6. The current economic situation does not basically affect the search for development capital. It appears to be inherent in the system that there is a general failure to understand that a new company needs all the help it can get, and without it would find it difficult to survive.

7. It is demonstrably untrue, as stated by many banks, that any viable proposition, properly supported and presented, will succeed in raising money. Those that fail are generally not around to make their views known.

8. We do not claim that an institution specialising in development capital investment will show a sufficient return from backing a wide variety of projects. We are merely aiming to show that we represent a company which had a viable new product, which failed to obtain any financial backing.

General Problems Facing New Companies.

In Amstad°s experience finance represents by far the major obstacle to the introduction of new products by new companies. There are, however, two other areas which give rise to problems:

1. Premises: There is a general shortage of small industrial premises, which can often be a major problem. Amstad is lucky enough to have a new industrial unit, leased from the London Borough of Southwark, but being in inner London, would like the opportunity of deferred rates payments.

2. Help from Embassies: Amstad°s attempt to establish overseas markets has met with a very mixed response from British Emabssies overseas. Many have been totally unhelpful, stating spurious market objections, and many have been ill-equipped to find potential licencees or agents. There does not seem to be a general and universal sympathy by embassies to new companies or products.

A more detailed outline of the reception by financial institutions to Amstad°s request for finance is given overleaf.

Finance for Innovation - Notes for the Prime Minister - 3.

CLEARING BANKS.

Both the Midland and NatWest refused to offer any overdraft facility for the company. Barclays, upon application to the banks°s Chairman, agreed a small facility, but asked for the entire account to be removed within six months. Other reactions were as follows:

1. None of the banks accepted the Director°s house as security for a loan, even though the value of the house considerably exceeded the loan requested. The reason given was that the house was the family home, and that bad publicity would accrue to the bank if the security were ever called in.

2. The fact that the Director had worked for the company for several years without pay, did not, in the bank°s eyes, represent an investment in the company.

3. The banks refused to lend to a company which was losing money, even though such losses were temporary. They all took the view that the Director should raise sufficient finance from private sources to establish the company.

4. There seemed to be a lack of awareness by bank managers about how an innovator could set about financing his product. Saying "No" seemed to be sufficient.

Other Financial Organisations.

Amstad approached numerous merchant banks and investment organisations all of whom expressed great interest in the product and the company°s business plans, and expressed the hope that the company would succeed.

1.Most organisations expected a faster return on investment than Amstad could offer. Since Amstad°s major customers are local authorities it takes a long time to penetrate the market, and yet Amstad is in competition for funds with companies which have very rapidly accessible markets.

2. Most organisations approached exist to provide finance for already profitable companies, rather than to provide finance for development.

3. The amount of money requested as an investment was too small for many of the organisations approached.

4. Many organisations had a totally unrealistic view of the resources available to the new company. One suggested the hiring of consultants at over one hundred pounds per day, another requested the input by Amstad of two man-weeks of time for the preparation of a second business plan.

5. Reasons given for a refusal of an investment were often very idiosyncratic. One organisation gave as a major weakness of the company that it had only one product. Another criticised the fact that new products were being developed.

6. Amstad°s final considered view is that the best way to raise finance is to start from a position where it is not needed.

pcl

The Polytechnic of Central London
School of Management Studies
35 Marylebone Road London NW1 5LS Telephone 01-486 5811
Telex 25964 Telegrams Polytechnic London W1

date

14 January, 1981

reference

addressee

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

telephone ext

243/221

Dear Madam,

I was very interested to hear your radio interview on January 4th concerning the policy of the Government to encourage the growth of small companies regionally and you also mentioned that ICFC have made available a great deal of money last year for the same purpose.

We have here been concerned with studying the problems of industrial innovation for some time and recently wrote our report on a two year study for the Leverhulme Trust Fund concerning the commercialisation of inventions from non-industrial sources. I take the liberty of enclosing our conclusions and recommendations and copies of the complete report are available to any of your colleagues who may be interested.

As you may note, we have made comparisons with Sweden and France and have also begun a study in Japan and we believe, as you will see from our recommendations, that a great deal more can be done in this country to bring about the right climate for industrial innovation. I hope that you may find our proposals to be of interest to you.

Yours sincerely,

Manfred Fox

Dr. Manfred Fox

Enc.

INVENTIONS FROM NON-INDUSTRIAL SOURCES

(Conclusions & Recommendations only)

Complete report to the Leverhulme Trust Fund

of two year study

June 1977-June 1979

by

M. Fox

M.L. Caglar

A.B. Robertson

The Polytechnic of Central London
School of Management Studies
35 Marylebone Road
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October 1980

Conclusions

Table 10 shows the success and failure rate in the UK in commercialising inventions, according to the assistance which the inventor received. Sometimes more than one agency played a part and all the contributions are then included in the total. We have defined success as an invention which reached the market. This is a very minimum definition of success, which takes no account of market penetration and which we have had to adopt as we have usually lacked knowledge of the latter. Many of the inventions are recent, so that market penetration can only become a significant measurement later. The table therefore only gives a comparative measurement of success of the six different means involved for getting an invention off the ground.

TABLE 10

UK SUCCESSFUL AND FAILED INVENTIONS

	NRDC as MARKETER	NRDC as BANKER	UNIVERSITY ASSISTANCE	INDUSTRIAL LIAISON BUREAU ASSISTANCE	INVENTOR ACTED ALONE	INDUSTRY PLAYED IMPORTANT PART
SUCCESS	10	6	12	9	27	10
FAILURE	22	5	7	6	20	4
*SUCCESS RATE	31%	55%	63%	60%	59%	71%

* Probability analysis (Chi Square) shows a 95% significance for the factors shown.

As we saw in Table 9, the inventor had to carry the burden of the main marketing effort himself in many cases and therefore the largest number of inventions in Table 10, concern him. The middle four columns are broadly speaking in the same success range, but the low figure in the first column and the high figure in the last, require comment, which we shall make in the appropriate section below.

1. The Scientific Community

Our scientific tradition and the general environment of freedom and non-conformism in which it has grown up, has placed this community in the very fortunate position of possessing a relatively large, creative scientific base, as evidenced by the oft-quoted large number of Nobel prize winners and more modestly, in our sample. It constitutes an extremely valuable asset and it is one of the few real assets left to our country, which is often the envy of others. In the two other countries which we have undertaken to study, we found conditions for the Swedish scientific academic to be much more circumscribed than here. In Japan there is a belief in the need to build up a large academic scientific base such as we have, for generating their own ideas, following the highly successful absorption of Western technology over the past thirty years.

We are fortunate that our university grants system permits the use of general university funds for research, with the freedom that this implies. In Sweden, such money is used almost entirely for education and administration, so that research funds must be sought from other sources, mostly the National Swedish Board for Technical Development (STU), in which case a research project is very closely directed towards a specific industrial objective. In Japan also, most of this money is used for education, so that industry is usually the source for larger research projects.

Yet again we are fortunate in having a well developed system of Research Councils and similar bodies which can give large sums of money for academic research from the public sector (Science, Medical and Agricultural Research Councils) and the private sector (e.g. Leverhulme Trust and Wolfson Foundation amongst others).

2. Institutions for the commercial exploitation of academic inventions.

National Research Development Corporation (NRDC)

a) The university relationship

Whereas there are several sources of research funding, we find that when the exploitation stage is reached

we arrive at a bottleneck, as there is effectively only one channel, NRDC. (TECHNICAL DEVELOPMENT CAPITAL have this year established TDC Development which is starting an activity in this field.) As we mentioned in the first year report, the only university industrial liaison bureau which we found effectively carries on this activity is at Edinburgh University. Conventional sources of risk capital funding, the merchant banks regard this particular risk as much too high. There is the added complication that the exploitation of research council funded research must go to NRDC. This obligation is an anomaly since the introduction of the Rothschild customer-contractor principle in 1972, under which Government Research Establishments (GREs) now negotiate property rights directly with any company for whom research is being carried out. Over and above this however, GREs have also felt free since that date to patent and exploit through licensing, their own inventions, without NRDC. Ironically this is true even for those GREs, which like NRDC are responsible to the Department of Industry, such as the Warren Springs Laboratory, NEL and NPL.

A university should be equally free to choose.

Under the present system NRDC is obliged to examine the exploitability of all research council funded research and the rights only revert to the university if, after six months, NRDC chooses to relinquish them. When NRDC does take on exploitation, it gives no guarantee as to the degree of consultation with the university and the marketing effort which it intends to deploy or indeed the type of arrangement which it is prepared to make with the university. Thus the university and the inventor are placed in an impossible position in which they are obliged to sign away their rights at the outset, leaving them no bargaining power whatever. The result is often one of extreme frustration for people who wish to be scientifically creative. We have found such situations too frequently for them to be ignored. In one case, a university inventor unwilling to sign away his rights, before finding out how efforts would made to commercialise his invention, persisted for two years and then had to bow to the inevitable. In this particular instance, it led to the break-up of a very creative team of workers, who on their own had already attracted industrial contract work for their invention. Not many inventors or university authorities are prepared to put up such a long struggle but the degree of frustration is no less when it is shorter.

b) <u>As marketer to industry</u>

NRDC's outlook is greatly affected by the large

income it has received from licensing the antibiotic cephalosporin and the expectation of similar success from the synthetic pyrethroids, "the great inventions". There appears to be no grading of other inventions, in terms of,

i) the standing of the researcher
ii) the scale of the research deployed
iii) competitive research elsewhere, which may be known to the researcher
iv) the value of the invention to British industry to capture a new market
v) the opportunity to start new companies or even new industries.

Hence, there does not appear to be the same commitment to achieve successful commercialisation for the others, as for the "great inventions" and this explains the low success rate shown in table 10.

In terms of day to day practice it means that

i) an invention is not canvassed sufficiently widely and intensively to industry
ii) when a licencee has been found, the very act of making a licence agreement appears to give sufficient proof of"success" without an investigation as to whether the particular company is the right one, or whether the invention would not have been better exploited by fostering competition between several licencees,
iii) insufficient pressure is brought to bear on the licencee to develop the project for the market and in particular to involve the inventor in problem solving, with NRDC's active mediation. In other words, NRDC's interest should extend to seeing the complete process through to the achievement of successful production and marketing, but its interest has often ceased much earlier.

c) As banker

NRDC shows a much better record here, but whereas relatively small sums of £30,000 are readily agreed to, there does not seem to be sufficient care in making an assessment of the requisite larger sums which may be needed to complete a project to industry's satisfaction or to match competitive research elsewhere. The presence of an industrial partner is welcome evidence of industrial interest, but NRDC should be much more enterprising in continuing to finance development when there is no partner, or when, often for non-technical reasons, he withdraws.

Foreign institutions

We have mentioned our study in Sweden, the beginning of our study in Japan and the symposium at which we also heard of the new French practice.

NRDC's Swedish equivalent is the National Board of Technical Development (STU), which lends money to the inventor who retains title to his invention and who seeks to exploit it with financial assistance. He thus remains a free agent who can engage the agency of his choice (including STU) to exploit his invention. In the event of success he repays his loan with interest.

The Swedish Regional Development Fund was started in July 1978 and is characterised by a physical universality which enables it to finance an invention from the early laboratory stage to product marketing and by a human universality which permits it to deal on the same terms with the private inventor, the university research worker and the small company. The fund must confine itself to bad risk situations where there is no security.

The French experience which was described at our symposium was the re-birth of ANVAR, the NRDC equivalent which had been born as a body in most respects indistinguishable from NRDC and after ten years of its life was given a new life this year in which it bears little resemblance to NRDC and a strong resemblance to the Swedish Regional Development Fund. The new ANVAR is regionalised with effective decision making and spending power in 22 offices, decisions being quickly reached for funds up to £50,000 at the local level and above this, with no limit, in Paris. It deals with private inventors, university inventors and small companies and does not insist on taking title to the invention, but gives loans which will be repayable if the venture succeeds. Regionalisation began in a pilot scheme four years ago and already the results are striking. In the past, development projects with industry were in a ratio of 80/20 between large and small companies. Now this ratio is 50/50. In the past the proportion of disgruntled inventors was very high, above 90 per cent, whereas now it is in the region of 50 per cent. In inspiring the new scheme, an ex-managing director of ANVAR, M. Berard, insisted that the immediate goal of commercial viability must be entirely absent.

Both Swedish and French schemes expect a very high failure rate in their first few years in financial terms, but both Governments are confident of giving a very large stimulus to creating a good climate for industrial innovation in the medium term. The overriding objective in France and Sweden is the creation of the climate, in contrast to NRDC's search for commercial viability.

3. Department of Industry (DoI)

Research funding is channelled through the Requirement Boards. However, very little goes to the universities, as most of it is spent at Government Research Establishments. There is however here a financial disincentive to innovation, as any income derived by the Establishment from this source is deducted from the Requirement Board's funding.

4. The inventor at the university and in research establishments.

Our first major point concerns the assistance for the inventor. We have shown that the largest effort to market an invention to industry is made by the inventor. Although he wishes to make a scientific and technical contribution he is not normally fitted to carry out the whole painstaking work involved in this process, for which professional help is required.

The second major point deals with the inventor's reward. Although the profit motive which animates commercial activity is absent in academic life, it is important to consider the rewards to the academic inventor who can produce profits for industry and so is at the origin of the production of wealth. The academic inventor's share of any commercial income varies widely. Some universities permit him to take the whole of the income because they give no assistance in exploitation; others have schemes for dividing the income between the university, the department and the inventor. Others still will negotiate the inventor's share for each particular invention. Some expenses could be deducted before the income is shared, but if the expenses are large, as for extensive patenting, then this deduction should be made over a period, at a time when this represents a small proportion of the inventor's income.

There is an anomaly in the situation of the inventor who carries out academic research at the university and the inventor who does similar work in a research establishment owned by a Research Council or a Government department. This anomaly is compounded by the role of NRDC. It can be simply demonstrated by the two inventions which are currently the most important for NRDC. Cephalosporin from Professor Abraham and his colleagues at Oxford University and MRC research and synthetic pyrethroids from Dr. Elliott and his colleagues at Rothamstead Experimental Research Station. With a share of NRDC's considerable income from Cephalosporin, Professor Abraham has been able to establish a large Trust for Education and Research at Oxford University. However, the income from Dr. Elliott's invention is not shared in this way by NRDC with ARC and the inventor.

Wherever such anomalies exist, they should be

remedied so that the inventor and the institution at which he works are fairly rewarded.

6. The industrial company.

We have found the high success rate shown in table 10 to be due to the inventor having ready access to industry, either because he came from the relevant company or industry to university or because he had other friendly or professional relations, directly or indirectly. Otherwise companies often find it difficult to come to grips with academic inventions and not unnaturally would like to be able to deal with them in the same way in which they deal with inventions offered to them under licence by other companies. They therefore find it much easier to deal with a professional person employed to act on the inventor's behalf. This reinforces, from industry's point of view, the point already made on behalf of the inventor, for consistent, professional assistance. Having started on this proper footing it is important for industry to realise that it must judge the value of the invention by its state of development and commercial potential and pay for it, according to these criteria, not expecting it to be cheaper because it has academic origins rather than industrial origins. If it wishes to retain the services of the inventor for continued advice, industry should do so under an appropriate consultancy agreement. Industry must be willing to continue to work closely with the inventor with the help of his professional intermediary, until the product is satisfactorily launched on the market. It is unfortunately quite common for industry to proceed independently and then find the usual technical problems which could only be satisfactorily resolved by both sides working together.

Recommendations

We would recommend that concerning

Department of Industry

1) The Department follows the Swedish example (described on page 55) and permits its Regional Offices to use money now available for plant investment, also for assistance to innovate, for the private inventor, the academic inventor and the small company. Provided that it closely follows the principal features of the Swedish scheme, such a regional scheme would produce a radical improvement in the climate for industrial innovation and hence its results.

2) The Requirement Boards spend much more at the universities on research projects, particularly those which have reached an advanced stage and therefore no longer qualify for Research Council and NRDC funds. In this way the Requirement Boards could play an important part in bridging the "pre-development gap".

3) The Requirement Boards which spend large sums in financing the various functions of Government Research Establishments permit the Establishments to retain money earned from innovations, instead of deducting this, as at present, from funds allocated, so that there would be an incentive to innovate.

Universities

4) The universities establish mechanisms to provide professional assistance for the academic research worker to exploit his invention, in the way that for example, Edinburgh University is doing this, with the great advantage of the strong, personal link that is formed at the university level. Another benefit is the income which this activity provides. An important feature for encouraging the inventor would be a standard form for sharing income.

National Research Development Corporation (NRDC)

5) In conformity with the independent position taken by the Government Research Establishments at the adoption of the Rothschild customer-contractor principle in 1972, the universities assume the same independence for Research Council funded research, so conferring the great advantage of freeing NRDC and the academic research worker from forced situations, which can be frustrating for both.

6) Research Stations of the Research Councils follow the same course.

7) When NRDC handle inventions for Government Research Establishments and Research Council stations, the income from inventions is shared with the institute and hence the inventor, in the same way as with the university.

8) When NRDC agrees to exploit an invention, it does not take title to it, but makes a loan to the inventor for the necessary finance for patenting and further development. The loan is repayable with interest on successful commercialisation, on an increasing scale with time, so that in the early years the burden is lighter. No repayment is due if the project fails.

9) NRDC adopt a decentralised organisation with many decision-making offices in the regions, on the lines of the "New ANVAR" (described on page 64) with the important attendant advantages which the French have found.

cc Sue
Goodchild
Mr. Gaffin

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10 DOWNING STREET

From the Private Secretary

DR. ASHWORTH

CENTRAL POLICY REVIEW STAFF

BF 19.1.81

We spoke earlier this week about the Prime Minister's reception on 26 January.

I told you that she had agreed to begin with an informal seminar which will be in the Dining Room here. At some suitable point, the Prime Minister will invite everyone to move into the Pillared Room for a more normal form of reception. We will arrange for drinks to be discreetly circulated during the "seminar".

You have agreed to act as MC, sitting beside the Prime Minister. We have invited several Ministers. If any expect to be available promptly, we will also ask them to sit with the Prime Minister. You will be writing to those invited to the Reception, forwarding a copy of the ACARD paper. You agreed to tell the guests that the Prime Minister hopes to open with some informal discussion, and that it would therefore be appreciated if as many as possible could aim to arrive promptly.

I should be grateful if you could let me have a note by 19 January giving some brief suggestions for introductory remarks by the Prime Minister and themes for discussion in the first 45 minutes or so.

MAP

14 January 1981

78, Lansdowne Road
London W11 2LS
Tel: 221 7340

Mr. Pattison
to see

The Secretary (Invitations),
10, Downing Street,
Whitehall,
London SW1

13 January 1981

R 15/1

Mr. Edgar Biss will be happy to attend the reception on Monday, 26 January. He has prepared the attached paper for the Prime Minister's consideration and would agree, if it helps the discussion, to its being circulated to the participants on the basis that its contents remain confidential.

INVENTORS, INVESTORS AND THE STATE

A Case History and Discussion Paper.

Edgar L. Biss to Prime Minister

13 January 1981

1 Me and My Project

I am 45 years old, have a degree in engineering and was, until 12 months ago, managing director of a medium sized electronics company. My company had twice in the recent past won the Queens Award for export of electronics to Japan and was an acknowledged leader in its technology. Ownership of the company changed in 1976; my relationship with the new majority shareholders deteriorated and in December 1979 I was suddenly, and without any form of compensation, without a job.

During the month I gave myself to consider my future, I developed ideas on how to evaluate money in terms of its weight. If my idea was correct, a machine could be made on which a cashier could place a random quantity of money of a particular denomination and, so long as the machine knew the denomination and, in the case of banknotes, whether they were new or used, the value of the money could be instantly and precisely displayed.

I quickly established that no such machine existed and that at a selling price of around £400 it would be addressing a world market of arond 1 million units.

To realise the project technically would require:-

i) the development of an ultra-sensitive, robust and very cheap weighing device;
ii) copious research into the weight of banknotes and coins related to age, wear and climatic conditions;
iii) the derivation of a programme by which a microprocessor could translate the weight (modified by the relationships established by the research) into a statement of money value;
iv) aesthetic design and production engineering to create a cost-effective product with international appeal.

By the end of January 1980, I had designed and tested a prototype weighing device which was so successful that it would serve not only for the money-counting project but ought to be adopted by the many manufacturers of conventional retail and laboratory scales.

I prepared a detailed prospectus on the establishment of two projects, namely:

...../Cont'd.

a) the development of the money-counting machine, aiming at a sales level of £3 million p.a. within 3 years;

b) the development of weighing cells for use by a) and for worldwide sale to others, aiming at a sales level of £2 million p.a. within 3 years.

Armed with my prospectus and some rudimentary prototypes, I set about seeking the finance with which to make it all happen.

2 The Funding Package

I estimated that £½ million would be required to establish both projects at a worthwhile level. By the end of 3 years, I estimated that pretax profits would be at a rate of £1,5 million although £120,000 would be lost in the first year of the operation.

I felt confident in approaching financial institutions for £250,000 on the basis that:-

i) I had a good track record in high-technology projects, both as to the completion of the developments and the profitability of the resulting products;

ii) I could procure £50,000 to invest in the project myself;

iii) I could probably probably procure £200,000 from the Public Sector in the form of loans and grants given that the heavily advertised Government and Quango offers were honest.

It would be the contribution of the Public Sector that would probably be the deciding factor and I estimated this broadly as follows:-

NRDC	offers to fund 50% of the cost of developing new-technology products and charges a levy on sales to achieve a commercial return. I expected £130,000 from NRDC and expected to pay them back £200,000 by the end of the 4th year.
Dept. of Industry	offers a grant of 25% of the cost of developing micro-processor based equipment or new processes. About £60,000 could be expected from this source.

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Welsh Office — offers every kind of help in relation to jobs created in a Development Area. I was happy to locate the two projects in Cardiff and they would create around 80 jobs within 3 years. A grant of £80,000 seemed appropriate.

BSC Industry Ltd. — offers a variety of assistance packages to companies offering work in steel closure areas. A suitable factory is available on the site of the recently closed East Moors Steelplant. I hoped that this might be available for a period rent-free and would be fitted out to reasonable standards for early occupation.

Initial contacts with the private and public sector gave me every reason for confidence and I felt sure that I could muster commitments for my £½m. by May.

3 The Financial Institutions

I discussed the projects on the telephone with some two dozen banks and investment companies. Naturally, not all were interested in venturing risk capital at that particular time or at all. Nonetheless, the following institutions were sufficiently interested to follow the discussions by meetings and the institutions asterisked embarked upon detailed investigation.

*ICFC
Barclays Merchant Bank
*Barclays Bank
*Midland Industrial Finance
*Scottish American) in consortium
Scottish Western)
Hill Samuel
*American Express Bank
Citicorp
Electra House Investments

The non-asterisked institutions generally were not in a position to put up venture capital except one who would consider investing but required 60% of the equity as well as commercial interest on the investment.

...../Cont'd.

Only one satisfactory offer has been received. The other banks rejected the proposals, sometimes after months of negotiation. Generally, there would have been offers available to back the less ambitious of the two projects if the other could be shelved.

Despite the generally negative attitude taken to any start-up project and the inordinate length of time taken by the one institution that has finally backed the projects, the private sector institutions generally behaved in a responsible and serious manner. They generally were quick to advise of negative indications and their reasons for them. Only two of the private sector institutions behaved in a manner which I could criticise as being incompetent or unprofessional, though all of them are fundamentally "bad news" for the development of new industry or new products.

4 The Public Bodies

All of the Public Bodies I contacted are conspicuous - compared with the Private Sector - by the vast sums of money they spend on advertising the help they are prepared to dispense to businessmen who will do whatever it is they are set up to promote. They were, without exception, cordial in their reception of my enquiries and helpful in getting me to prepare mountains of financial and general information and to fill in their forms, most of which are designed in terms of large companies who seek Government subsidies to assist them to do what they would do anyway.

Sadly, each of the Public Bodies -

NRDC
Dept. of Industry (MAP)
Dept. of Industry (MAPCON)
Dept. of Industry (PPDS)
Requirements Board
Welsh Office
British Steel (Industry) Ltd.

in their performance in almost every way gave the impression of being unable to deliver any of the help they advertise, hopelessly inadequate in their

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organisational ability to deal with a project and skilled only in using rules and doctrinal ideology to avoid making decisions or discussing problems. The civil servants and employees of all of the organisations with whom I have dealt share an outlook so uniformly unreal that one may be forgiven for believing oneself to have entered a lunatic world when one deals with a number of these agencies at once.

5 Current Position of Project

I have proceeded with the technical development at a rate dictated by my personal ability to borrow. Inevitably, I am months behind the schedule which proper funding would have made possible and the costs have escalated because of the extended timescale. Nonetheless, I have made prototype samples of both the moneycounter and the weighing cells which have been successfully demonstrated to potential customers. Response has been alarmingly favourable, particularly from American banks for the money machine and European scalemakers for the weighcells. My greatest fear is that customers will want to see a modern factory and might be turned off for ever when I have to show them my tiny workshop.

During the last weeks of 1980 I received formal offers of adequate financial support (£190,000) from financial institutions, subject to a number of conditions the most difficult of which is the requirement that the Public Sector should provide the support which I have requested of them.

The Welsh Office has offered the right amount of support for the weighcell project but subject to our issued share capital being twice what the banks and I have said will be provided.

The NRDC have offered a fraction of what theu said they would offer and wish to make even that subject to having an option for 10% of the equity in the money-counting project - even though they know the Bank have already taken a 25% slice.

The Department of Industry have made their offer, itself adequate, subject to a host of conditions amongst which is the requirement to raise loans vastly in excess of anything which is contemplated.

British Steel Industry can do nothing.

...../Cont'd.

Since the Public Bodies all know the shape of the funding being arranged, their offers with conditions they know to be outside the possibilities of the package are tantamount to killing the whole thing dead.

By the time of your reception on the 26 January 1981, the civil servants may have relaxed their conditions or I may have finally given up. In the meantime, I have overdrawn my personal means and will be left high and dry with two beautiful new products and no means to exploit them. Except possibly to emigrate.

6 What Could Government Do?

Massive resources within the Government are currently deployed to exhaust the slender administrative means and frustrate the initiative of the individual promoter of projects.

My project has been formally evaluated by 5 banks and 7 different Government agencies; but whilst the banks each use a single, usually competent evaluator to assess all aspects of the project, the Government agencies invariably use two or more assessors of a much lower level to evaluate separately the commercial and financial aspects of the project. If my projects do succeed in raising funds, the funders will in fact have used 1 assessor from the private sector and 10 from the public sector.

What is needed is a fast and effective agency to which the initiator of a project can turn; having evaluated and possibly reconstructed the project with the initiator, this agency should then broke the project in both the private and the public sector to achieve the funding package which has been agreed.

The organisation best constituted for this role is the NRDC but that organisation is hopelesslye underpowered to fulfil the function. Let us assume for the mement, however, that NRDC could be reconstituted. How ought it to operate as Project Broker?

Firstly, all contact between the Initiator and NRDC should be through a single Broker, who should have the skills, status and rewards of the managing director of a successful business. A Broker's time should be rigorously assigned with fixed proportions devoted to vetting new inputs, preparing Cases with satisfactory initiators and presenting them, in concert with initiators to a vetting Board. A supporting staff would research for and serve the Brokers.

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Cases passed by the Board would automatically qualify for all of the Government assistance packages, subject to gaining the private sector backing called for by the agreed funding package. The Case could thus be presented to the Banks with the benefit of a professionally produced prospectus ratified by an independant Board and backed by a firm statement of the public funds available for the project.

NRDC would fund this Brokerage service partly from a service charge for carrying out the work and partly from a Joint Venture Scheme cn broadly the lines that it currently advertises.

The advantages to the Initiator of such a scheme are:-

i) he would be dealing always at his own level and with only one agency;
ii) he would be able to negotiate - or know that he had failed to negotiate - a composite package of funding without any part being subject to success elsewhere except that the whole Public Sector Package would be subject to achieving the whole Private Sector Package;
iii) the procedure would be as quick as the quickest of current procedures and possibly quicker.

The advantages to the public would be:-

i) about 90% of the civil servants by number currently employed on this kind of work would be released for duties more appropriate to their ability and temperament;
ii) the number of new projects reaching the production and job-creation phase would multiply dramatically.

The difficulties in the proposal are mainly connected with the shortage of persons available to become Brokers and the disparity between the qualities of such persons and the qualities of the existing executives in organisations such as NRDC.

Brokers could be recruited from the Banks who would have to vet fewer proposals if the NRDC Brokers could rely on a more efficient approach to the Banks than initiators currently make. My 24 banks resulting in 5 assessments could probably have been reduced to 5 banks and 3 assessments had they been well chosen.

The reconstitution of the NRDC would best be tackled by outside consultants under the direct briefing of a Minister to whom the task would be assigned.

APPENDIX I

PERFORMANCE OF FINANCIAL INSTITUTIONS

Barclays Merchant Bank (Jan. 1980)

Helpful but not in a position to support any start-up.

Hill Samuel (Jan. 1980)

As above.

Electra House Investments (Jan. 1980)

Helpful but level of risk not in keeping with their current portfolio.

Midland Industrial Finance (Feb.-April 1980)

Highly enthusiastic and helpful at first but project successively passed to 3 executives, each of whom started from sc ratch. Finally rejected money counter because it was too new and weighcell project because it was too small.

Scottish American/Scottish Western (Feb.-March 1980)

Great interest shown but evaporated when updated projections were produced. They seemed to think the project had to stay constant to be valid.

ICFC (May 1980 - Jan. 1981)

Exhaustive, exhausting, thorough but incredibly time consuming. Prepared to back both projects but subject to taking 25% of equity and many fairly tough conditions.

American Express Bank (April-July 1980)

Exhausting, superficial and time consuming. Prepared to back weighcell project but only subject to unacceptable conditions. Only prepared to back money counter after it had been launched.

Citicorp (August 1980)

Might be interested in backing projects but would require 60% of equity.

Barclays Bank (Oct. 1980)

Advertised venture capital funds available. Short, sharp investigation. Projects rejected on basis that only £50,000 per project could be made available in the scheme and if we succeeded we would need much more. Offered normal banking services.

APPENDIX II

PERFORMANCE OF PUBLIC BODIES

NRDC (Jan. 1980 - Jan. 1981)

Initial meetings indicated that if I could show that my project was to exploit a new technology and was able to provide a costed programme of work, the NRDC would enter into a joint venture, contributing 50% of the total spent and expecting a levy on sales in return. It would take some 6 weeks to prepare the case. I submitted the money counting project. I received absolutely no response for 6 weeks then various excuses about pressure of work. After 10 weeks and impatience, the indication was that reason for delay was that there was no validation of my sales forecasts. My assertion that sales forecasts for a product which did not yet exist could not be validated impressed no-one. Clearly, the NRDC would not support research and development until there was a marketable product with which to do a market survey. I cobbled together a reasonably convincing prototype by May 1980 and demonstrated it to 3 American and 3 British banks. Response was good but not good enough for NRDC who insisted on letters stating intention to buy product. By November, the leading British supplier of money checking equipment was asking for sole marketing rights but still the NRDC dallied. They have finally offered £30,000 (against the minimum of £80,000 my projections indicate I need from them) and asked for the levy plus 10% of our equity - which has never been mentioned in the last 12 months. Only two weeks ago, they verbally offered £60,000 in front of ICFC. The reason, it appears, has nothing to do with the project or its merits, but relates to the level of meeting which can sanction different amounts. It has only taken 12 months for the executive in charge to fail to write his paper for the meeting that could sanction the sum required to fund the project.

DEPARTMENT OF INDUSTRY (MAPCON)(JAN.1980 - SEPT. 1980)

Applied for £2,000 consultancy 16 Jan. 1980. Promptly rejected on basis we appeared to know what we were doing. Requested to rephrase our brief to indicate ignorance or stupidity. Immediately (31 Jan.) complied. No work permitted until Dept. of Industry offer letter. This arrived 14 April - 3 months after application.

...../Cont'd.

DEPARTMENT OF INDUSTRY (MAP)

Visited Dept. of Industry on 4 March 1980 and met Mr. Jonathon Solomon, who was full of enthusiasm and promised speedy and favourable treatment of our application. Six months and seven case officers later, I approached Mr. David Mitchell, Parliamentary Under Secretary at the Department, to try to find out why the Department was finding me so difficult. Whilst waiting for his response, a rejection - lacking any explanation - was received. I re-applied and suddenly found the Department listening. It took only 4 weeks now for the application to get before a sanction meeting, though it took a further 6 weeks for a letter to be written to advise us of the outcome. This broadly grants the sums for which application was made, but subjects the grants to conditions which no-one has ever suggested could be met.

WELSH OFFICE (12 March 1980 - Jan. 1981)

An application for Section 7 Assistance for both projects was submitted in March 1980. This provided for 116 jobs to be created. At a meeting in April, it was made plain to me that the Welsh Office considered the projects too ambitious and would only consider an application for the weighcell project, though the other project might follow.

An application for the weighcell project (£50,000) was submitted in April and rejected in June. It was resubmitted and on 22 July an offer was made by the Welsh Office of £20,000, subject to seven conditions. On the basis that £50,000 was necessary, this was equivalent to a rejection and was rejected. A scaled down project and application for £30,000 was applied for in September 1980 and on the 4 December the Welsh Office advised that £30,000 was offered, but subject to an issued and paid up share capital of £40,000 against the £20,000 that was in our application.

We have not applied (yet?) to the Welsh Office with respect to the money counting machine.

BRITISH STEEL (INDUSTRY) LTD.

This organisation has staff, offices and an advertising budget. It is difficult to see what else it has in the way of will or power to do any of the things it advertises and talks about. It apparently cannot even offer rent-free periods on its own property because these would be deducted from any Section 7 Assistance granted.

File

cc: NR Ingham 13/1

10 DOWNING STREET

From the Private Secretary

12 January 1981

We spoke on the telephone earlier today about the Reception to which you have been invited on 26 January. This is a Reception to which the Prime Minister has invited a number of people concerned with innovation and finance, and Dr. Ashworth of the CPRS will be writing to you and to other invitees about this next week.

Let me say once again how very grateful the Prime Minister was for the material which you sent with your letter of 29 December. As you will have seen, she has drawn on this extensively in various interviews over the last ten days.

TL

Viscount Caldecote, DSC.

B/F 2/3/81

Top copy of letter sent under MAP comps to Professor Ashworth saying we would like copies of his letter and ACARD paper sent to Professor Blair.

VLB

16 Feb

PPS

Department of Mechanical and Industrial Engineering

The Queen's University of Belfast

Ashby Institute
Stranmillis Road
Belfast
Northern Ireland BT9 5AH
Telephone 661111 (STD 0232)
Telex 74487 or 747691

Professor B. Crossland, Head of Department (ext. 4116)
Professor G. P. Blair (ext. 4117)

11 January 1981 K14/2

Mr M Pattison
Private Secretary
10 Downing Street
London

Dear Mr Pattison,

Thank you for your acknowledgement of my communication and I would like to inform you that I did not receive the original documents for the meeting such as the ACARD report, letters, etc and even at this stage I would appreciate a copy of the papers, letters, etc., sent to the participants for the meeting of January 26 at Downing Street.

Yours sincerely,

Professor G P Blair

MFJ

D. CARY
Venture Capital
Report

CC CPRS

BU 23/1

9 January 1981

I am writing on behalf of the Prime Minister to thank you for your letter of 6 January. This was timely. I am sure that she will be interested to see Venture Capital Report before she meets you and others concerned in this field on 26 January.

MAP

J.L.A. Cary, Esq.

cc Mr. Goffin

PRIME MINISTER

Reception for Innovators and Entrepreneurs

You were a little disappointed with the shape of the guest list for 26 January, and you said that you did not want to extend the evening.

We have added a few names which have come to our attention more recently, and we have also now invited three Department of Industry Ministers and three Treasury Ministers. Are there other Ministers or back bench MPs you would like to include?

Even though this will now be a 1½ hour reception, John Ashworth has argued strongly that we should give the occasion some structure. Many of the guests are "achievement- oriented" - ranging upwards from an 18-year-old who won the Design Council's Schools Award and was then discovered to be running his family business after his father's death (he describes himself as too busy to go to university). If you simply give them a drink, they may leave with an impression that you have shown interest, but that the Government still takes a dilettante approach to their interests. The numbers are quite modest. If you were to receive in the normal way, and then circulate for a while in the White and Blue Drawing Rooms, we could then invite everybody to move into the Pillared Room where chairs had been set out. You could say a few words. You might explain that your guests had been invited because of your concern that innovators outside established companies/organisations often felt deprived of Government backing and private sector finance. Several case histories had brought this home to you. You had asked ACARD to present a quick report to you on the subject (we will send all the guests copies of that about a week ahead of the party). You had had a chance in the first half hour of the party to have an informal word with most of the guests. You would like to spend the next three-quarters of an hour or so with a slightly more structured discussion on a number of relevant questions. You could then go on to suggest two or three themes, and treat it as an informal seminar.

An alternative approach would be to divide the guests in advance into about 4 groups, selected to discuss different topics, and with a Minister earmarked for each group. After everyone had had an initial

/ drink

drink, we could ask them to spend half an hour plus in a group of about 10 people on an individual topic, and we could leave time for a brief round-up before people left at around 8 o'clock.

Neither format would produce conclusive discussions. But it would ensure that your guests all get a fair opportunity to make their personal points to you or a Ministerial colleague, in the course of a serious discussion and not merely as cocktail chat. I do think it is worth operating along these or similar lines. Do you agree?

9 January, 1981.

VCR

Venture Capital Report Ltd

Head Office: 2 The Mall
Clifton
Bristol BS8 4DR
Tel. Bristol (0272) 37222

6 January 1981

The Prime Minister
10 Downing Street
Whitehall

Dear Prime Minister,

Since I believe you are currently considering the question of funding inventions in the UK, I enclose a copy of Venture Capital Report for your interest.

VCR was established two years ago with the intention of providing a market place in which inventors could put forward their ideas and business plans to potential investors. And it does work, as the statistics we have recently supplied to the Cabinet Office (at their request) indicate.

Nevertheless, I consider that there are still good projects which remain unfunded in the UK.

I look forward to seeing you on January 26.

Yours sincerely,

Lucius Cary

J.L.A.Cary

2 The Mall
Clifton
Bristol BS8 4DR
Tel. Bristol (0272) 37222

Venture Capital Report August 1980

1. Ski equipment distribution — £12,000

An entrepreneur with £15,000 from the sale of his 50% share in a ski equipment and hire shop has £100,000 worth of orders, and seeks £12,000 working capital for a ski equipment distribution business. He offers 25% now, and will sell further equity if he requires further capital in his second year.

2. Printing machine — £25,000

An entrepreneur has produced a unique system for printing gold, silver and colour on many materials, which is designed for sale to individuals and families wishing to supplement their income. £25,000 is needed to finance an increase in the working capital requirement. 51% of the equity is offered.

3. Bathroom centre — £160,000

An expert on the bathroom market requires £160,000 to establish a centre in London specialising in up-market bathrooms and accessories. 80% of the equity is offered.

4. Reprographic Camera and Lighting — £32,500

An engineer with long experience of printing camera technology has designed a sophisticated reprographic camera and a lighting system which substantially increases the effective size of cameras. He seeks £32,500 for a commercial launch of the lighting system, and offers 60% of the equity. He would also like a manufacturer and about £200,000 to launch the camera.

5. Diamond Mining Machinery — £5,000

An entrepreneur with long experience of mining machinery purchased the rights to some old diamond mining machinery in September 1979. He has supplied two small orders for £6,000, and has quotations out for £600,000. He seeks £5,000 to undertake an overseas trip to clinch one of several possible large orders. He offers 20% of the company.

6. Intelligent Typesetting Terminal — £30,000

An ex-IBM computer technologist with 7 years experience of typesetting terminals seeks £30,000 (+ £20,000 of his own) to develop an improved system. He already has a firm order for two terminals. He offers 40% of the equity.

7. Jigsaw Puzzle Manufacturer — £30,000

A jigsaw manufacturer requires £30,000 to expand its marketing operation and enlarge its series of puzzles. 25% of the equity is offered.

8. Luxury Weekend Holidays — £20,000

A creative cook with much experience of foreign guests is converting her house to include luxury suites for foreign weekend visitors. She needs £20,000 to complete redecoration and furnishing, and offers a share of the profits.

9. Tipping Skip — £18,000

The managing director of a company engaged in the manufacture of mechanical handling equipment has designed a new type of skip that is loaded on to a trailer and hauled by an ordinary car. £18,000 is needed to launch the product, and up to 50% of the equity is offered.

Venture Capital Report

No. 21 August 1980

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Note to Subscribers

The information contained in Venture Capital Report is obtained primarily from the entrepreneurs associated with projects. Its accuracy cannot be guaranteed by us. Neither can we take the risk element out of investments simply by writing about them. Before making an investment in a project described or advertised in VCR, subscribers are advised to verify all material information for themselves and to seek such professional advice as may be necessary. VCR are not agents for any of the people whose enterprises are published and no information so published constitutes an offer or invitation to the public or to readers of VCR to subscribe for shares or debentures in that enterprise.

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2 The Mall
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Venture Capital Report

Half yearly index of Projects

July-December 1980

July 1980

1. Battle Modelling — £12,000

An entrepreneur who owns the world's largest model of the Battle of Waterloo, which was displayed at Woburn Abbey in the early 1970's, seeks £12,000 to put the model on permanent display in Bath, and to complete work on other large battle models. 60% of the equity is offered.

2. Bus Company — £90,000

Three entrepreneurs have carried out detailed research and now seek guarantees for £90,000 to launch a bus company in a provincial area on routes not operated by the local nationalised Bus Company. 60% of the equity is offered initially.

3. High Reduction Drive — £25,000

An engineer has a licence to develop applications for a high-ratio, high-torque, high-efficiency, light and relatively simple to manufacture drive for which Borg Warner may take the US licence. £25,000 is sought to finance the manufacture of prototypes for specific applications in the UK and Europe. A majority of the equity is offered if desired.

4. Short-term Money Management — £40,000

An ex-Discount Market Broker wishes to establish a company which will undertake the management of short-term funds in the money markets for a fee. He seeks £40,000 to establish an office and for working capital, and offers 50% of the equity.

5. Warehousing — £25,000

A transport company with a warehousing subsidiary seeks £25,000 to lease another warehouse for a specific storage and distribution contract. 30% of the equity of the warehousing company is offered.

6. Digital Display Map — £75,000

A team of entrepreneurs seek £75,000 to take their prototype hand-held electronic mapping display device through the next stage of development for a commercial launch. They offer 40% of the equity.

August 1980

7. Ski equipment distribution — £12,000

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September 1980

16. Potato Chip Dispenser — £200,000

A company has designed a machine for accurately weighing and dispensing hot potato chips. More than 30 are in operation in the UK, and a letter of intent has been signed with a major US food company for manufacture and marketing in the USA. £200,000 is required to finance marketing and production in Europe, and to establish agreements to cover the remainder of the world. Up to 30% of the equity is offered.

17. Video Disc Travel Marketing — £400,000

Two entrepreneurs with marketing backgrounds seek £400,000 in addition to their own capital to launch a video disc service to travel agents, enabling the public to see a short film of resorts and hotels. A pretax profit of £10m is forecast for year 5. 25% of the equity is offered.

18. Engineering Business for Sale — £400,000

A firm of steel fabricators which made a profit of £150,000 in 1979 is seeking to sell part or all of the company.

19. Director required. Suede selling — £15,000

A cleaner of suede and leather garments wishes to find someone to run a business selling coats and jackets by mail order. The special feature of the service will be that cleaning of the garments will be guaranteed, and at a reduced rate. He wishes to start with a market test costing £5,000, and seeks someone to conduct this, and provide a bank guarantee for further finance if the test is successful. 51% of the equity is offered.

20. Hotel Tableware Manufacturer — £250,000

A 163 (2) company engaged in the manufacture of china for the catering trade seeks £250,000 to launch two new types of china product. The Board will recommend to existing shareholders that 25% of the equity is offered.

21. Computer Graphics — £80,000

A BBC employee with experience of graphics and computers wishes to establish the most sophisticated computer graphics company in the UK, and to sell the service. He seeks £80,000 for hardware and working capital and offers 75% of the equity initially.

22. Food Distributor — £75,000

An existing food distribution company wishes to raise £75,000 so that it can import its products directly, omitting the existing import house, so reducing its costs and increasing net profits tenfold.

23. Video Gaming Machine — £50,000

As part of a programme to find new commercial products, a large high-technology company has developed a range of video gaming machines based on the ideas of the promoter, who has exclusive worldwide rights to market the machines, which are now almost ready for launch. He seeks £50,000 to order an initial stock for final field trials and for working capital. 25% of the equity is offered.

October 1980

24. Photomultiplier Tubes — £90,000

An entrepreneur has worked under the umbrella of a small high-technology electro-optical company to develop a manufacturing process for photomultiplier tubes. The first batch, some of which have been sold, has exhibited good or outstanding operational characteristics. £90,000 is now sought to realise the commercial potential, and 40% of the equity is offered.

25. Video Cassette Mail Marketing — £500,000

A company set up to sell major feature films on video cassettes via mail order seeks a bank guarantee for £500,000 in return for 60% of the equity.

26. Phantascope Binoculars — £15,000

A university lecturer has designed two types of binoculars which produce unusual visual effects, and he wants to see them manufactured and marketed as toys. This could be done either by an established firm in return for a royalty, or by an investor who would run a small manufacturing business. 50% of the equity is offered.

27. Publishing — £100,000

A team of people who have been employed in publishing a trade magazine have identified a market which they wish to service with a new magazine. They require an investment of £100,000 to launch the magazine, and offer up to 49% of the equity.

28. Agricultural Mailing List — £30,000

A young man with 8 years experience and who has a half share in a new word processing/direct mail bureau, wishes to compile a list of farms in England. He will use this for marketing by direct mail. He requires £30,000 and offers 50% of the equity.

29. Record Cleaner — £5,000

An ex hi-fi retailer seeks £5,000 for a marketing campaign to increase sales of his Design Centre selected record cleaning device, more than 2,000 of which have already been sold. 30% of the equity is offered.

30. Woodworking Company — £75,000

A company founded in 1972 and which achieved sales of £600,000 in its latest financial year, has suffered a recession-induced decline in orders and has liquidity problems. It believes the past and proposed rationalisations will ensure its future prosperity, and seeks £75,000 for working capital, offering 50% of the equity.

November 1980

31. Fishing rod — £110,000

A revolutionary new fishing rod design has been successfully test marketed. £110,000 is required to finance production and provide working capital, in return for 33.3% of the equity.

32. Selling Hand Dryers — £3,000

A salesman aged 20, currently earning approx. £6,000 selling coffee machines wishes to establish a company to sell warm-air hand dryers. He will invest half his savings in this and seeks an additional £3,000, for which he offers 40% of the equity

33. Shipowning — £250,000

An entrepreneur who has spent all his working life in shipping, seeks £250,000, to be repaid over three years, to supplement his own £50,000 to purchase a ship (approx. 80% mortgage) to fulfil time-charter contracts which he receives daily. 75% of the equity is offered.

34. Garage/Dealership — £15,000

An old-established garage and car dealership which achieved sales of £700,000 in 1979, and in which ICFC have an investment, was acquired by three new directors in January 1980. One of these has now left. A new sleeping partner or active investor is required to take over his equity holding of 25% for £15,000

35. Computer Consultancy — £50,000

A company which started operating in March 1980 to give independent advice, mostly to first-time computer users on which systems to use, seeks £50,000 to launch a vigorous sales campaign. 60% of the equity is offered initially

36. Stone Cladding Company — £50,000

A company which stone clads domestic buildings, requires £50,000 to finance the purchase of plant and materials to meet demand, and to provide working capital. A minimum of 35% of the equity is offered

December 1980

37. Industrial Consultancy – Zimbabwe — £7,000

An entrepreneur who lived for 25 years in Zimbabwe, and worked in industrial insurance, wishes to set up technical, management and marketing consultancy services to cater for the growth following independence. He needs £7,000 for a trip to turn initial enquiries into contracts, and offers up to 66% of the consultancy company to a UK based firm with useful contacts.

38. Software Publishing — £100,000

The editor of a successful computer magazine wishes to market computer software in the same way that book publishers market books. He has assembled a small team and some programs to start with, and seeks £100,000, offering 75% of the equity

39. Lenticular Translators — £20,000

An entrepreneur has produced a sample batch of lenticular cards in which the image changes depending on the viewing angle, showing 30 English phrases, with the second image being their Spanish equivalent. He now seeks £20,000 to develop the idea commercially, and offers 60% of the equity.

40. Old People's Home — £48,000

An entrepreneur, the owner of a spacious, 'listed' building in North Shields has planning permission to convert it into a a 50+ person old people's home. He requires £48,000 to enable the necessary conversion work to be carried out, for which 30% of the equity is offered.

41. Computerised Supermarket Trolley — £50,000

Two organisation and methods men and an electronics engineer have designed a computerised supermarket trolley which they estimate will reduce time at checkouts by up to 82.5%. Ideally they seek a large multinational company with the power to exploit their ideas, but initially need £50,000 to conduct an in-store working trial. They offer 85% of the equity.

43. Solarium — £40,000

An electronics company has fully developed a solarium, which it does not have the capability to market effectively. The company therefore wishes to sell the complete product including dies, moulds, stock of parts etc for £40,000. Alternatively it is prepared to manufacture the solarium for a company wishing to market it.

44. Cosmetics Manufacturing Company — £60,000

An independent and old-established company manufacturing a leading brand of hypo-allergenic cosmetics, requires £60,000 to organise a national sales campaign and to provide working capital to meet expected demand. A controlling interest is offered initially.

45. New Independent Brewery — £100,000

An independent brewery with on-site pub breweries seeks investments of £100,000, with which to purchase freehold pubs for conversion. The investor will own the property, receive rent, and share capital gains.

Ski equipment distribution £12,000

Dexter Bree, 29, requires £12,000 for working capital for his recently formed ski equipment import and distribution company, Zero-Plus Enterprises. He has £15,000 from the sale of his share of a ski equipment shop, and has spent this on stock. He has £100,000 worth of orders.

History

In 1976 Mr Bree bought a half share in a ski shop in Highgate in London, which was run by a Mr Bill Kent, who as a keen skier with some finance of his own, ran the shop for enjoyment. Mr Bree was working in the City when he heard that Mr Kent wished to sell the shop, but after chatting to his flat mate, an old university friend, they decided that they would be keen to give up their jobs and buy the shop from Mr Kent.

Mr Kent, whom the two young men knew personally, lent them the £29,000 to purchase the business, and Mr Bree and his friend each took a 50% share. They employed sales staff, and travelled looking for products. Turnover in 1979/80 was about £50,000 from the shop, and £70,000 on equipment hire. (Hiring equipment was not their idea, but Mr Bree says that they were the first shop to develop it, hiring ski suits nationwide to schools, and selling small accessories.) In 78/79 their profit on a £90,000 turnover was £37,000. Turnover in Mr Kent's time, in 1975/76, was £20,000, with no profit, and Mr Bree feels that he did well in improving turnover so dramatically over four years.

He says that when they heard of the opportunity they 'felt enterprising', and wanted to run a small business.

The Project

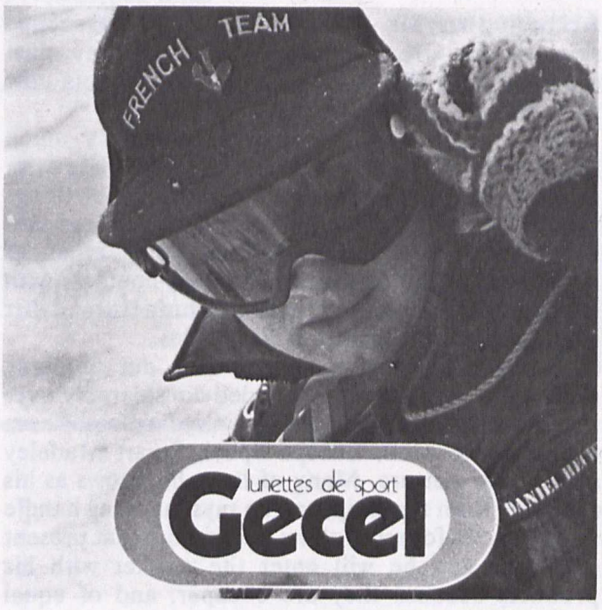
However, he had no wish to remain a shopkeeper, and he sold his share in the shop in 1980, paying back Mr Kent and being left with £15,000. Experience in the shop had shown him that the market was dominated by several expensive leading brands, but on trips abroad to Trade Fairs Mr Bree discovered that there were other equally good products at half the price, since the brand names were unheard of. He felt that these new products were worth promoting, but that the shop did not offer enough scope for them, and he therefore now wishes to capitalise on this knowledge and establish a business to import and distribute the new products. He already handles 12 leading products, for four of which he has negotiated sole agency: and he has £100,000 worth of orders.

He began researching the new products in 1978, and formed his present company, Zero-Plus Enterprises at this time, but it remained dormant until the end of 1979, when he started building it up as an active business.

Progress this year

Mr Bree's trips abroad whilst at the shop were to Trade Fairs and manufacturers in Grenoble, Geneva, and Munich, and since he left the shop he has made four trips on his own account. He has spent about £3,000 of his own savings on setting up the business so far. This includes a smart printed price list and other stationery, and in his office he has installed a typewriter, phone, answerphone, and telex. He works from his own house, in Wood Green, on which he has a mortgage. The £15,000 he received from the sale of the shop is committed to stock already ordered.

As a start to his new business he attended the British Ski Trade Show in March 1980 in Harrogate. He paid about £400 for a stand there, and had samples of all the articles on his price list, including goggles, socks and underwear, skipoles, apres ski boots, mittens and gloves, hats, sunglasses, altitude cream and other accessories. His fiancée helped him man the stall, and he received about £50,000 worth of orders. His main line, Gecel goggles from Geneva, were received he says 'with relish' by the trade, and also by his competitors in the distribution field.



Gecel goggles

This 'relish' led, a week later, to an approach from Frank Bryan Ltd of Worcester, who were very keen to get hold of the goggles. They went straight to the manufacturer, who declined to deal with them as Mr Bree had the sole agency. Frank Bryan therefore came back to Mr Bree and asked for sole distribution rights for the goggles, for the UK.

Mr Bree says he had to decide whether to keep the product to himself, 'take the long winding path and make a profit in five years', or get an established arrangement now with Frank Bryan and sell a lot, though losing some of his profit margin. He decided on a bird in the hand, at a reduced margin.

Mr Bree's sales at the show are exempt from the agreement, and were 10,000 (goggles alone). Frank Bryan has sold 15,000 goggles, and should sell a further 10,000 this year, all through Mr Bree. The average trade price of the goggles is £1.50, so that the sales value of the goggles to Mr Bree has been about £50,000.

Mr Bree has an initial five year agreement with Frank Bryan, but if they fail to sell their quota of 25,000 this year, it is written into the contract that they stand to lose their distribution rights.

Frank Bryan are manufacturers making cricket balls and boxing gloves, on which Mr Bree says they virtually have a monopoly. He has visited their factory in Worcestershire. Mr Bree is very happy with this deal, since it lends weight to his project, and will be largely self-financing.

Mr Bree's other sole agencies are in ski boots, poles, and altitude cream.

Mr Bree has an agreement with the distributors he used at the shop, Atlas Express, for warehousing and distributing the goods. Warehousing will cost 8p/square foot/week, but he is uncertain how much space he will need. He estimates however that the total cost will be something under £5,000 per year.

The Market and Competition

According to Mr Bree there are 500,000 active skiers in the UK, and he estimates that they must spend at least £20 each p.a. (après ski boots cost £15), giving a market of £10m.

The general sports market is obviously much larger, and could be tapped at a future date with different products. Most ski shops sell other things in summer, such as camping gear, and Mr Bree sees possibilities of diversifying with other types of equipment in the future, once he has contacts with outlets. The Gecel goggle manufacturers for example also make motorcycle goggles.

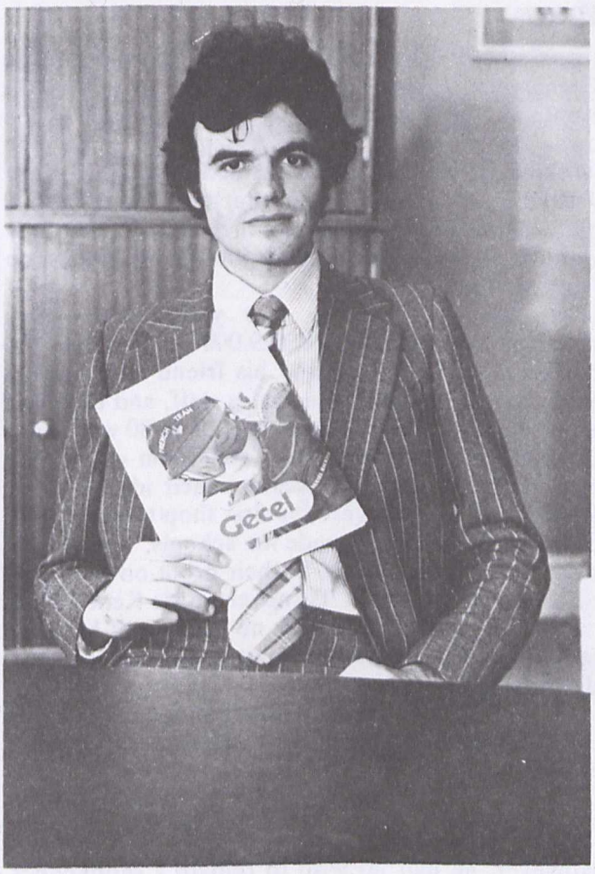
Mr Bree lists the names of four out of many companies which have 'expanded considerably over the past four years with the growth of skiing.' These are Fry & Cowell, Europa Sport, Stuart Madeley and Active Leisure. Many of them he knows as his suppliers from the shop, and he says that they handle sole agencies for most of the best products at present available, and he will enter the market with his products because they are cheaper, and of equal quality.

The Man

Dexter William Bree is 29 and single, though engaged to be married.

He has a degree (the second highest in his year) in economics from Manchester University, and his first job was as an Investment Analyst for stockbrokers Kitcat and Aitken. He passed the Stock Exchange exams in 1974, but left Kitcat and Aitken after three years because they wanted him to specialise rather narrowly. He then became Investment Analyst and Fund Manager for Schlesingers, the investment bankers.

He left them in 1976 to start up the shop, selling his share in this in 1980.



Dexter Bree

Mr Bree speaks fluent French, having always had an interest in the language, and having shared a flat with two Frenchmen. He played tennis for his university, but now devotes himself every Saturday to his cricket team, which is in the Essex league. He skis, because he says he must use his products, and when not doing any of these things, relaxes to music.

Mr Bree makes a point of attending the Sunday Times Business to Business exhibition every year, where he met VCR, and believes in private enterprise, taking what he claims, not perhaps without justification, to be a dynamic attitude to business problems. He presented the information for this article fully and clearly, which is not always the case.

Mr Bree is currently rather short of cash, having spent his savings on the office and Harrogate show, but by getting a lift as far as Paris he managed to make a goodwill visit to the Gecel factory in Geneva, to place an order and meet the Director, who had several times asked him to come over.

Financial Data

Mr Bree has produced the following figures:

	1980	1981	1982	1983
Turnover	100,000	200,000	300,000	500,000
Margin	20%	30%	30%	30%
Cost of sales	84,000	150,000	230,000	385,000
	16,000	50,000	70,000	115,000
Expenditure				
Admin	3,000	6,000	10,000	12,000
Vehicles	2,000	4,000	6,000	8,000
Storage	2,000	5,000	6,000	8,000
Salaries (1)	5,000	10,000	12,000	15,000
Pre tax profit	4,000	25,000	36,000	72,000

(1) If Mr Bree needs a 'Joe Lackey' to break boxes, shift stock in the warehouse etc, he will be paid out of this figure, which would otherwise be Mr Bree's salary.

Mr Bree's order book stands at almost £100,000. Frank Bryan's share is approximately £37,000, leaving about £60,000. Of this, £15,000 are Mr Bree's own Gecel sales, financed by the manufacturer. Of the £45,000 left, the cost is about £30,000, financed £15,000 from Mr Bree's capital, £10,000 by a bank overdraft, and £5,000 of trade credit.

Mr Bree will pay for his orders in August/September, and deliver to his clients in October for payment in 30 days nett. He should therefore receive money from them by mid-November. After this his sales will finance any re-orders he needs to make, and the £12,000 he requires is to cover his overheads for the first year. At the end of the first year he hopes to have about £20,000 in the bank.

At this point he and/or an investor will have to decide whether the business requires further capital for orders, or whether it can manage without.

Mr Kent, Mr Bree's original investor, sold the ski shop in order to go into the ski equipment import trade, and Mr Bree cannot therefore now ask him to invest, as he is in direct competition. Mr Kent is now, according to Mr Bree, the fourth or fifth largest importer.

Financial Structure

Mr Bree is offering 25% of the equity of Zero-Plus Enterprises in return for the £12,000 he seeks. He will also offer an investor a director's fee of £1,000 p.a., and distribute 25% of the profits, say, after 3 years when the business is fully under way if the investor so wishes.

Mr Bree will accept a service contract defining his terms of employment in the company.

If further finance is required at the end of year one, Mr Bree will give a further 5% of equity for every £10,000 invested. He is therefore keen to find an investor who has some extra cash in case it is needed. He feels that he does not need anyone working with him, but would be delighted to come to an arrangement with someone who had special skills to offer, such as intimate knowledge of the market.

Mr Bree has seen ICFC, who offered to finance him, but at terms he found stiff.

Contact address

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1 Northbrook Road
London N22 4YO **Tel: 01-881-1250**

Printing Machine

£25,000

Peter Kent, Managing Director of Goldprint Ltd, seeks £25,000 to finance an expansion of his business. 51% of the equity is offered.

Printing Machine

The company sells a hand operated gold blocking machine which produces distinctive business cards, playing cards, matchbooks, blanks of which are also supplied by the company, and will print a whole variety of personalised gift items. It also carries out a full gold blocking and traditional letterpress printing service.

The gold blocking machine is handfed and can process 650 cards, or 500 matchbooks an hour. The machine although not patented does claim to have some significant advantages over other machines on the market.

1. *It is at least as efficient as any other machine.*
2. *It is of a simple and rugged design which minimises maintenance and enables any repairs that might be necessary to be carried out by a competent do-it-yourself enthusiast.*
3. *As it is designed specifically for the home market, it is a good-looking machine, and extremely clean to operate.*
4. *It is attractively priced, with a short payback period for purchasers. The typical cost/profit structure that is applicable when using the machine is shown below for a typical order of 100 Business/Visiting cards. This explains the popularity of the machine:*

	£
100 cards cost (average)	0.65
Foil material for 100 cards costs (average)	0.20
Thus raw material for 100 cards costs	0.85
Selling price for 100 printed cards	5.75
Profit for 100 cards	4.90
Working time approximately 20–30 minutes.	
Thus for an order of say 500 cards	
Selling price £5.75 × 5	28.75
Less 25% for quantity	7.50
Less material costs £0.85 × 5	4.25
Profit on 500 cards	17.00
Working time approximately 1 hour.	

Mr Kent does not consider the lack of patent protection to be important, as the basic type of process is not new, and the production of the machine is carried out by an associate of Mr Kent's, who also helped with its design.

The Market and Competition

The machine has been designed specifically for sale to the cottage industry, where Mr Kent claims that there is no direct competitor, as the other machines which carry out gold blocking are much larger, more expensive, messier and aimed at the industrial user. The cost of the machine, which includes all the necessary equipment, including materials to start printing, is £795 plus VAT.

Mr Kent has been able to sell an average of one machine a week since he started the business in 1976. He hopes to be able to boost this to at least 70 or 80 machines a year when he can devote all his time to marketing, and should be able to exceed the 100 mark when he is able to sell on the Continent. This will lead to a corresponding increase in the sales of repeat materials.

Mr Kent proposes to market mainly in Germany and France, and also to make some sales in Belgium, Holland and Switzerland, where he claims that it will be possible to sell 40–60 machines per year. The initial step is to acquire a full time agent in Germany and France, who will be prepared to invest £2,000–£3,000 in the business to purchase a demonstration machine, plus spares, and a stock of raw materials.

The Man

Peter Henry Kent is 56 and has been Managing Director of Goldprint since its incorporation in 1977.

Mr Kent with some of his work.

He worked with the BBC for 20 years, interrupted by a period of army service, where his experience included working as a transmitter engineer and a period as a producer of radio programmes. He also spent 6 years with the Nigerian Broadcasting Service and trained Nigerians in the skills required for broadcasting before returning home when he resigned from the BBC and spent a period marketing various products before moving into estate agency. He opened a new estate agency office for his employers before setting up on his own account with a partner. This business flourished and they also operated a mortgage brokerage and property development company, but it was caught in the property crash of 1973/4; and although all their debts were repaid in full, it necessitated selling the business which is when Mr Kent entered the gold blocking business.

Since 1977 he has devoted all his time to Goldprint. He started by operating a gold blocking machine and selling gold blocked cards very successfully, until he looked at the blocking machine which he has redesigned and developed into his existing product. The Goldprint organisation has now expanded to include 3 full time employees plus Mr Kent, and his wife on a part-time basis.

Mr Kent is married and has no children; when he has time he sails or swims.

Mr Kent at the machine.

Financial Data

Goldprint has a 15 year lease on a 2,400 sq ft warehouse and office complex on a trading estate near Abingdon, to which the business was moved in 1979. As well as selling the machines from this office, the company maintains its stock of raw materials ready for despatch, and the gold blocking business, plus a traditional letterpress in order to give an all-round service to customers.

The business has grown as reported in the annual audited accounts.

	31.3.78	31.3.79	31.3.80 (unaudited)
	£	£	£
Sales	38,051	49,639	52,097
Gross Profit	9,460	14,934	n/a
Overheads	9,204	15,271	n/a
Net Profit	256	(337)	

The 1980 figure was affected by the move of business premises, which occupied a large amount of Mr Kent's time that normally would have been devoted to selling; and to the absence of the Sunday Times which has been significantly the most effective promotional media, each entry producing sufficient orders to provide 2 months work.

The business at the moment is spread approximately thus:

	%
Machine sales	41
Raw Materials sales	29
Printing services	30

The profit mark-up per machine is 77%, and raw materials mark-up 100% for Goldprint.

Mr Kent is convinced that if he can increase the turnover, this will lead to a disproportionate rise in profitability, and in order to increase sales he is proposing to sell Goldprint's machines on the Continent. The continental agents would receive a commission on each machine sale, and sell the raw materials at a profit, in return for which they would remit 5% of their materials turnover, which would be approximately 10% of their profit, to Goldprint at the end of each month.

The expansion programme will necessitate an increase in working capital, and Mr Kent is looking for an investment of £25,000 to finance the extra stock required, and to enable the company to pay for either an administrator whilst Mr Kent is away marketing the product, or to pay for a salesman whilst Mr Kent manages the business at Abingdon.

He forecasts the following figures for the year to 31.3.81

		£	£
Sales–	Machines (70–80) @ £800		60,000
	Materials		30,000
	Printing		18,000
			108,000
Purchases			
Machines	(70–80) @ £450	35,000	
Materials		35,000	
			70,000
			38,000
Overheads		28,000	(1)
Net Profit			10,000

(1) The overheads figure includes £6,000 for remunerating the additional employee or investor, but no provision has been made for Mr Kent's emoluments, which in 1979 were £4,000.

Mr Kent believes that the market is enormous, and Goldprint is in a prime position to take advantage of the demand for small lucrative businesses which can be run from home. Although Goldprint can finance its expansion from its existing business, Mr Kent would prefer to expand more rapidly. Therefore he is seeking an investment which would enable him to employ either a salesman or an

administrator, and to purchase the stocks necessary to service the increased level of business which this extra person will produce. If the investor wished to undertake either of these roles himself in return for a salary, Mr Kent would be delighted.

The audited balance sheet at 31.3.79 was:

	£	£
Fixed assets		2325
Current assets		
Stock	9060	
Debtors	1399	
	10,459	
Current liabilities		
Creditors	8985	
Bank loan	1552	
" overdraft	2235	
Directors account	191	
	12,963	
Net Current liabilities		2504
Net liability		179

Financial Structure

Mr Kent is prepared for some flexibility in determining the financial structure of the company, but has suggested the following:

Name	Contribution	%	Debenture
Kent & Family	Company	51	—
Investor	£5,000	49	20,000

The investor will subscribe £5,000 for a 49% shareholding in the company, and hold an interest free debenture of £20,000. He will also be a director of the company receiving a fee.

When the debenture has been repaid Mr Kent would like the right to increase his shareholding to 70% on payment of an amount to be negotiated with the investor. Thereafter an agreed % of company profits would be distributed if the investor so wished.

If it is possible, Mr Kent would like an investor with an active interest in the printing industry, who could help the company in a practical way.

Contact address

P. H. Kent
Goldprint Ltd
76A Milton Trading Estate
Abingdon
Oxon OX14 4EF **Tel: Abingdon (0235) 832179**

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A Bathroom Centre £160,000

Max Pike who has an extensive knowledge of the market in bathrooms, requires £160,000 to establish a centre in London to take advantage of a gap that he has identified in the market. 80% of the equity is offered.

The Concept

As a result of running a small chain of suburban bathroom centres around London, Max Pike has identified a gap in the market at what he terms the medium luxury level. He believes that the best method to capitalise on this opportunity is to open a centre in London which will specialise in selling bathrooms as complete units as well as individual accessories.

The concept is to establish in one place an environment where all the variations on a bathroom theme can be exploited, and where related designs and fittings could be displayed. He estimates that a 3-4,000 sq. ft. unit would be required, of which 30% would be used as a warehouse for stock. A particular selling feature of the centre would be that customers would be offered a complete bathroom package, which would include design and selection of fittings. The installation, however, would be carried out by recommended plumbers or the customers' own plumbers or builders. Sales would be achieved by employing designers/salesmen who would normally visit customers at their homes. Mr Pike believes that well-motivated designers would be able to achieve a high level of sales.

The Market

Mr Pike has carried out an extensive survey of the market in bathrooms and he has compared it to that of kitchen fittings. Briefly, his findings show that bathrooms and kitchens will be and have been major beneficiaries of the increase in affluence in the West. He believes that bathrooms today stand where kitchens stood 15 years ago, and are now poised for significant growth.

Max Pike with the designer and her van

Further, while the number of houses built in the UK is declining, people are spending greater sums on improving their existing properties. He therefore expects the more expensive end of the market to prosper relative to the lower end which is dominated by builders merchants. In addition, with the high costs of moving house, people will increasingly opt to stay put, and to spend the equivalent on their existing property.

In the summer of 1979, Norlond, who operate a chain of builders merchants around London, carried out a survey which showed that the one fifth that specialised in bathrooms and kitchens, were netting over twice as much as the others. At the same time Mr Pike's own company, Susanna Bathrooms, commissioned a survey of customers' requirements.

The main findings were:

(1) Customers want a complete bathroom rather than individual fittings.

(2) Status, one-upmanship and envy are forces which encourage customers to invest in expensive bathrooms.

(3) They frequently spend double what they originally intended, as they feel that it enhances the value of their property by more than the actual cost.

(4) They regard the scale of cost as modest compared to other property expenditure.

The luxury bathroom market, which is defined by Mr Pike as those bathrooms for which the materials cost between £1-30,000 will only form a small part of the overall market. At Susanna Bathrooms the average sale is over £2,000 at 1979 prices. The typical customer lives in London and the South-East of England, is likely to be married and between 35 and 55 years old.

Market Size

There are according to a JICTAR survey in April, 1979, 2.9 million ABC1 people in London and the South, which is greater than the Midlands and North combined. Pike has calculated that of the 2.9 million, 400,000 fall into the 35-55 age bracket, and approximately 115,000 are house owners. Assuming that each household carried out an investment in a bathroom every 15 years, the annual market size is 7,733.

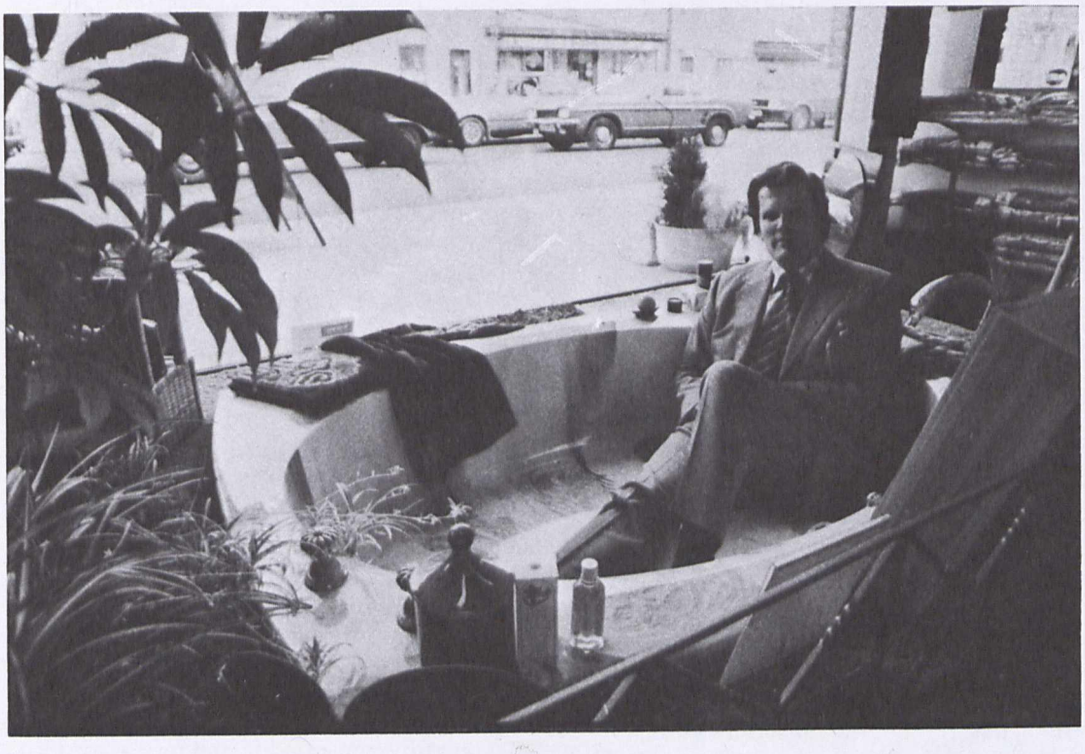
The Competition

There are a large number of builders merchants supplying bathroomware at up to £1,000 each. In addition there are a number of specialists in the ultra luxury end, £5-40,000 of which Bonsack of Mount

Street is the best known. None, however, specialise in Pike's intended segment, the £2-5,000 range.

The Man

Max Pike is 37 and married with one child. After education in London and Kenya, he had a number of jobs in Africa before returning to the UK in 1965. In 1966 he joined Burmah Oil as a marketing assistant working on industrial projects and promotion of Castrol products in garage forecourts. In 1970 he joined the Thompson Organisation as Marketing Executive and Promotions Manager. He helped organise and launch Yellow Pages controlling a budget of nearly £1 million p.a. In 1973 he joined Rupert Chetwynd and Partners as Account Manager, handling the advertising programmes of The Financial Times, Lloyds Bank and Wrighton International (kitchen furniture) among others. In March 1978 he joined the Randalls Group of Builders Merchants as Group Marketing Manager and assistant to the Chairman; they were taken over by Whitecroft Ltd. soon after and he became Managing Director of their luxury bathroom subsidiary, Susanna Bathrooms. His brief was to investigate the market and devise a project for the company's development. The current recession has led to this project being deferred. His private interests include studying, music, photography and all things Corsican.



Max Pike

Financial Data

Mr Pike has produced a programme for the opening of the centre and the employment of designers as follows:

Month 1	Acquire Shop
Month 4	Open Shop with 1 designer and 2 assistants
Month 11	Employ second designer
Month 19	Employ third designer

Sales

It has been assumed that each shop assistant will achieve 1 sale of a £2,000 bathroom per week and that each designer will achieve weekly sales of £3,000.

The projected profit and loss account shows the following for the 1st year:

Year 1	£
Income from shop	121.0
from designers	70.0
TOTAL	191.0
Expenditure:	
Purchases	98.4
Commission	6.7
Vehicles	6.4
Vehicle running cost	2.3
Selling costs	28.8
Advertising	50.0
Administration	26.8
Establishment	26.6
Printing	4.0
Sundries	1.2
TOTAL	251.2
Loss for year	60.2

Year 3	£
Income from shop	434.8
from designers	624.6
TOTAL	1,059.4
Expenditure:	
Purchases	692.2
Commission	37.1
Vehicles	11.6
Vehicle running cost	9.6
Selling costs	53.9
Advertising	50.0
Administration	39.1
Establishment	76.2
Repairs	6.4
Printing	5.2
Sundries	37.5
TOTAL	1,018.8
Profit	40.6

The budgeted capital investment required in the 1st year is £90,000 and the detailed cash flow statement prepared by Mr Pike shows a maximum deficit including start-up costs of £158,800 and therefore he requires £160,000. This same cash flow also shows that by month 36, the capital investment will have been repaid and that the working capital investment will have been reduced to yield a surplus of £42,000 on current account

He believes that the sales figures in the cash flow are conservative and therefore present an unduly pessimistic appearance and he is confident of exceeding his forecasts.

Financial Data

Max Pike is prepared to adopt a flexible approach in the accommodation of an investor's needs. 80% of the equity of the venture together with a directorship would be available provided that a scheme was agreed at outset, whereby Mr Pike would have an option to repurchase shares once profit targets had been achieved.

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Reprographic Camera and Lighting £32,500

Jack Denner has developed a series of improvements for reprographic cameras, which he has incorporated into the camera on which he provides a service to the trade. He now seeks £32,500 for the commercial launch of one of these, a lighting system, and would also like to find much more money and a manufacturer to launch the complete range of improvements. He offers 60% of the lighting company.

Product 1 – The Lighting System

The most common method of printing photographs today requires that the photograph be printed as a series of dots varying in size from nothing (all white) to full size (all black). In newspapers the spacing between dots is large, and they may easily be seen with the naked eye.

To produce the plate used for printing, the photograph is first analysed and then placed in a reprographic camera (cost £90 to £30,000+) its image being passed (enlarged or reduced to the appropriate size) through a transparent screen printed with a dot matrix, and so directly on to photographic film or paper, so producing a 'dot' positive or negative of the photograph.

If a 'dot' positive is produced this may be pasted up directly on to the camera ready artwork, with the phototypeset text, which is then used to make the plate from which, for example, this page and its twin were printed.

If a dot negative is produced, then spaces are left in the artwork; the negative of the page is then produced, and the various dot negatives are cut into the film at the appropriate places.

Of these two methods the former, in which dot positives are pasted directly on to the artwork, is much the quicker and most convenient. However, it also requires better cameras and camera work if final quality is to be maintained. This arises largely because it is more difficult to produce accurate dot-for-dot reproduction at the extreme edges of large printing spreads which contain several photographs, than it is to reproduce dot negatives of each photograph separately, using only the centre of the camera's field of vision, and to cut these in individually.

This difficulty of lack of resolution and loss of definition when photographing at the edges of a large page is caused chiefly by lighting problems. The ideal lighting pattern required has a certain intensity of light at the centre of the page, and then steadily increasing light intensity towards the edges with maximum intensity being reached at the corners. All but the most sophisticated reprographic cameras attempt to achieve this using four lamps with reflectors shining directly on to the page, and simply fail to achieve the characteristics required.

The Focalux system

Part of this proposal concerns the Focalux lighting system developed by Mr Denner, in which the light from four lamps with reflectors is directed away from the page on to two large reflectors whose surfaces have been carefully angled and treated in certain parts to alter the reflectivity to produce exactly the intensity characteristics required. A light meter will verify this.

Mr Denner recently tested an inexpensive reprographic camera and found that he was able to produce accurate dot for dot reproduction over only 25% of its area using the lighting system with which it was supplied. Having fitted the Focalux lighting system, this area was increased to 120% of the rated area. Likewise improvement was made to the camera covering power for ordinary line work.

This simple fact has profound economic consequences. Reprographic cameras are expensive, and their cost rises rapidly as their size increases. For example a basic A3 camera may cost £1,000, and an A2 camera of the same quality £2,000. The Focalux lighting system will retail for £300, plus £50 for fitting if desired, and will increase the effective size of the dot for dot copying area of an A3 rated camera from A4 to 120% A3, and will completely eliminate 'fall-off' at the edges.

The Focalux system is covered by a provisional patent which will be uprated to a full world-wide patent in the course of this year.

The Market

Mr Denner estimates that there are 20,000 reprographic cameras in the UK, roughly 100,000 in Europe, and even more again in the US. Annual sales of new cameras in the UK are estimated at 2,000 per year.

Mr Denner believes that existing camera owners will purchase the Focalux system to uprate their cameras, and that manufacturers will begin fitting his lights to their cameras.

He has already made an agreement with one manufacturer, who sells some 300 cameras per year, under which he will purchase their basic camera at trade price, fit his lights, add a few other refinements and then sell the uprated camera at an uprated price. They have agreed not to copy these improvements.

Mr Denner estimates from the enthusiasm that he has received from the industry that he will be able to sell 600 Focalux systems in the UK in the first full year of sales. The potential world-wide should be up to 15 times this figure.

Product 2 – The Advanced Reprographic Camera

Mr Denner has also developed an advanced reprographic camera which cuts the operation time of most conventional cameras by a factor of 8, and incorporates the following principal advantages:

1. Magazine loading
The photographs to be processed are loaded into 'magazines', or trays each containing 8 or more photographs depending on size. A label gives the desired size of enlargement or reduction for each photograph. An operator may prepare magazines for processing at a remote location while the machine is in use.

2. Automatic feed.
When the magazine is ready, it is fed into the machine, the photographs being held in place by a vacuum line, and then fed automatically into the machine.

3. Automatic sizing and focussing
As each photograph comes into position, the label is read by the machine, and the photograph is automatically sized and focussed on the plate.

4. Direct probing
Light sensitive probes are then inserted into the lightest and darkest part of the image. Depending on the readings, two adjustments are made, one to set the aperture, another to set the 'flash' time. Since in this camera, unusually, the photograph is mounted above, and the image is produced face down, the probes rest on the surface of the plate and are therefore struck by direct light, rather than by light which has passed through a ground glass plate. This gives great accuracy and control over dot size.

5. Speed of exposure
The plate is then uncovered and the exposure made. This is short since powerful lights are used, filtered through dichroic filters which remove the infra-red wavelengths. Flash is provided simultaneously by a ring of lights round the lens.

6. Accurate calibration
No two screens are identical, and before a new screen is used, a test card is first run, and the positive produced is compared with this, and the probes calibrated to give the readings required to give accurate reproduction with that particular screen. These calibrations are remembered electronically, and may be dialled in by pressing a single switch whenever that screen is used.

Mr Denner has developed this machine at a cost of about £100,000 over the past four years, and has demonstrated that it works by providing a service for local printers and publishers, producing sized positive dot images from their original photographs. He is able to adjust the degree of shadow and highlight to match the requirements of individual printers, whose needs vary depending on the quality of their own plate-making equipment, and the skill with which they use it.

It was as a result of encountering the problems of fall-off at the corners and 'burn-out' at the centre experienced by printers, using his own dot positives, that he investigated this phenomenon and discovered by measurement, the shortcomings of existing lighting systems. This led directly to the development of the Focalux lighting system.

The half-tone projector under operation

The Man

James Railton Denner is 61 and was educated at Queen Elizabeth Grammar School in Devon, after which he joined the Exe Valley Electricity Company with whom he served an electrical apprenticeship.

He remained with this company for 16 years, ending as the Meter and Test Superintendent with a staff of 16. During this time he studied Electrical Engineering at Exeter Technical School, and became an Associate Member of the Institute of Electrical Engineers at the youngest eligible age of 26.

He then spent five years working in a laboratory/design environment for two companies in the electrical industry: Venner Ltd and EMI, and developed an idea on which Venner took out a patent. He left EMI in 1954, and started a print business with his wife.

Once in business, he immediately began designing improvements for the machinery with which he was working, and he took out a patent on a phototypesetting system in the 1950's. In 1959, having reached a peak of 10 employees at one point, he sold the print business, in order to concentrate on the more specialised field of colour separation.

He invented and developed a system of direct screening for colour separation, on which he wrote a report for the Ministry of Technology and read a paper at the University of Aston for the Institute of Printing, and in recognition of his contribution he was made a Fellow of the Institute of Printing. In order to improve this system he began experimenting with reprographic cameras, and when by the end of the 1960's it became clear that scanners would largely replace direct screening for colour separations, he introduced a camera, the Focamatic, which was an automatic focussing camera.

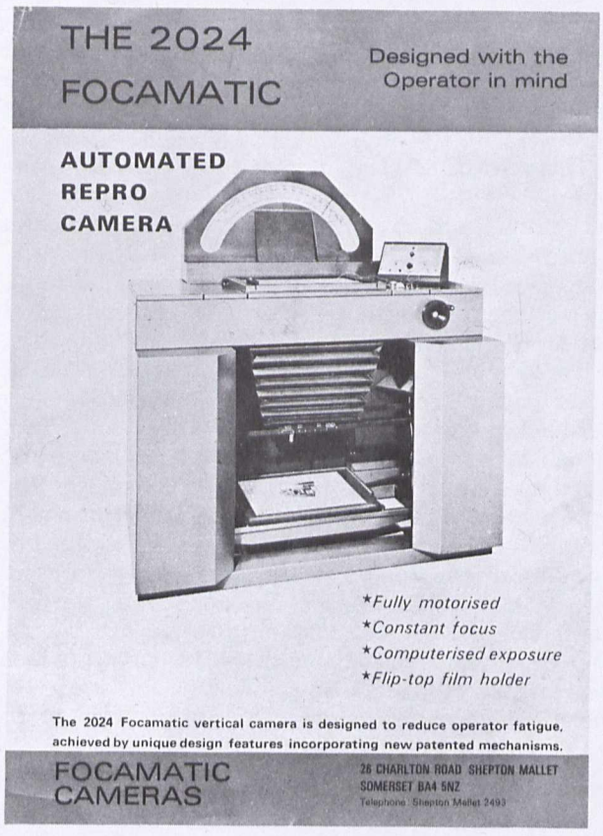
See Note page 15

Mr Denner removing a Focamatic test chart from a vertical camera.

See Note page 15

From 1975 until the present, Mr Denner and his wife have been offering the service to the trade already described, of preparing dot positives from photographs. The various improvements discussed above were developed by Mr Denner to enable him to offer a better service to the trade.

Mr Denner has one 18 year old son, and with his family enjoys sailing.



Brochure for the Focamatic camera

Financial Data

Sales of Duprite Ltd, Mr Denner's trading company, have fluctuated considerably over the years, as the income earned from his screen positive service has been augmented by the sales of items of equipment and royalties. In the last few years the sales have been:

1976	47,000
1977	32,000
1978	21,000
1979	38,500
1980	39,800

Mr and Mrs Denner and a retired headmaster are the sole employees of the company, and apart from their modest living expenses, all revenues have been reinvested in development.

Mr Denner believes that this development has now reached a point at which there is real commercial potential, both in the lighting system and in the advanced automatic camera.

The economics of the verbal agreement with the camera manufacturer are as follows. (N.B. This is for uprating the inexpensive camera only and should not be confused with the sophisticated automatic camera.)

	£
1. Purchase of basic camera	670
2. Stiffening casing +structural modifications (1)	64
3. Focalux lights.	
Cost to Mr Denner	100
Total Cost	834
Sale price	1,300
Gross margin	466

(1) The sheet metal work is undertaken by a local firm who have the necessary disciplines in mechanical and electrical engineering.

The economics of the Focalux lighting system are as follows:

	£
Purchase	100
Denner margin	100
Sold to distributor	200
Distributor's profit	100
Sale to customer (1)	300

(1) Some people in the industry have advised Mr Denner that for this degree of improvement, a price of £500 would be more appropriate.

Thus if Mr Denner can achieve the sales of 20 uprated cameras and 600 lighting sets which he believes to be easily attainable in the first full year of trading, in the UK alone, the gross margin would be as follows:

20 cameras×£466	9,320
600 lights×£100	60,000
Total gross margin	£69,320

In the second year he hopes to achieve sales of 40 cameras and 4,900 lights, yielding:

40 cameras×£466	18,640
4,900 lights×£100	490,000
Total Gross Margin	£508,640

From this the main expense to be deducted would be marketing, but Mr Denner believes that word of the lighting system will spread rapidly through the printing world, so reducing his marketing expenses.

Mr Denner would be able to introduce the lighting system slowly by himself, but he does not wish to do this if possible, mainly because he does not wish to be removed from the world of development engineering. He has just begun advertising the Focalux system in the trade press.

Therefore he would like to find a lively investor, preferably a company with an international marketing network, who would undertake the marketing of the Focalux lighting system. In return he would ask for a modest royalty and a share of the equity of the company. A bank has prepared a cash flow projection based on the lighting system only, which shows a maximum cash requirement of £23,000 after nine months.

Therefore Mr Denner is seeking £32,500; £25,000 to finance this working capital requirement, and £7,500 to purchase the initial stock of equipment which he now possesses.

Financial Structure

Mr Denner has no firm views on the financial structure of the company to be established to exploit the Focalux lighting system, but he is happy to yield a controlling interest to a suitable investor. He would be quite content with either of the following arrangements.

1.

Name	Contribution	%	Debenture
Denner	Technical support Use of Patents	40	
Investor	£5,000 £7,500 for stock	60	20,000

Mr Denner would receive an annual retainer of £7,000 for technical support, and a royalty of 5% of net invoiced sales would be paid to his company Duprite Ltd.

2. Alternatively Mr Denner would be happy to surrender the rights to all or part of this royalty on payment of a lump sum. He estimates that the cost of developing the automatic camera and the lighting system together have amounted to £110,000, of which perhaps £20,000 is attributable to the lights. The company would undertake to distribute a certain percentage of its annual profits to the shareholders.

Because the automatic camera represents a much greater investment of technical ingenuity, Mr Denner would himself prefer to concentrate on this. However, because it would also require much greater resources to manufacture and launch, and because the payback period would therefore be much longer, he is prepared to concentrate on the lights exclusively if necessary to begin with.

From the total UK market of about 20,000 repro cameras, there are perhaps 1,000 potential users of this particularly sophisticated camera, 5,000 in Europe, and 10,000 in the US. If he were to sell a camera to 10% of these, this would be 1,600 cameras. The price would probably be £25,000, which would yield sales of £40m.

If a substantial company, and preferably one with international links and the many in-house manufacturing skills required were to show interest, the potential gains could be much greater than for the lighting system.

Contact Address:

J. R. Denner C.Eng. MIEE, FIOP
Avenue House
26 Charlton Road
Shepton Mallet
Somerset **Tel: (0749) 2493**

Note: These passages, contained in the original which was circulated to subscribers, have been removed from this complimentary copy. The passages contained information of a confidential nature which Mr Denner would prefer was not widely disseminated to non-subscribers.

Diamond Mining Machinery £5,000

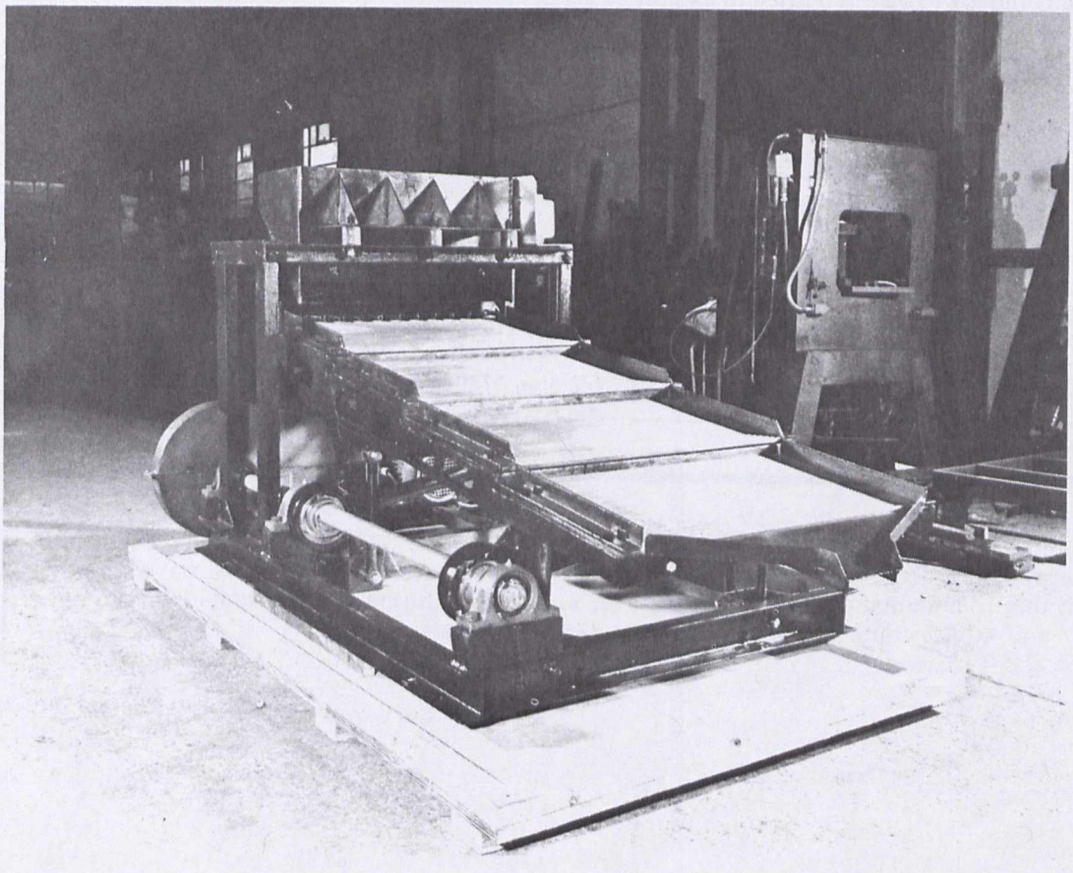
Eric Somerville spent 16 years working in a mining machinery company. He purchased the drawings of some of their diamond mining machinery in September 1979. Having already supplied two small orders, he now has quotations out for £600,000. He seeks £5,000 to travel to Brazil and Africa to clinch one of two possible large orders. He offers 20% of the equity.

Diamond Mining

Diamond mining machinery ranges from highly sophisticated x-ray machines for separating diamonds automatically from rocks (diamonds fluoresce in x-rays), to very basic methods of picking them out by hand-panning. Both methods are in extensive use throughout the world.

The machinery with which Mr Somerville is concerned is in the middle ground. Starting with the usually alluvial deposits containing diamonds, a typical sorting process using Mr Somerville's machinery might be as follows:

1. The sand, gravel, clay and rocks are passed through a broad mesh screen which removes the rocks larger than 15 inches in diameter.
2. The remainder then enters a crusher reducing the size of rocks to 4".
3. This residue is then passed up a conveyor belt into a horizontal rotary washer, and much of the clay and sand is washed away.
4. The slurry then passes through a screen of about 1" mesh into a washing pan or pans from 4' to 20' diameter. The larger rocks are recirculated via a crusher back into the horizontal washer.
5. The pan rotates, and the concentrates rest on the bottom, where they are slowly knocked outwards by bumping against angled teeth. When they reach the edge, clean and free of mud, they drop through a hole and into a box which is locked. The slurry containing tailings (waste) in small particles in suspension, drains through the centre of the pan.
6. The concentrate is then placed at the top of a vibrating inclined grease table (see picture). The concentrates are slowly jogged down this table, which is usually boxed in and locked. The ridged, solid brass tables are covered with a 1" layer of special grease which has an affinity for diamonds. At hourly intervals the box is opened and the diamonds which have remained in the grease are extracted. The gravel will have passed on down the table.



The vibrating grease table sold by Mr Somerville to a customer in Venezuela.

While large diamond mines such as Kimberly, are well known and operated by large sophisticated companies, there is much diamond mining which is conducted, often in great secrecy, in many places of the world, by very small operators.

Russia recently ordered sixty mining machines from one UK company who usually sell only a few such machines in a year. China has reported deposits of diamonds over large areas of remote country, and in Africa and South America there are many remote diamond mines in operation.

In such remote areas, the machinery used must be extremely robust, and able to operate with the minimum of attention for years on end, out in the open. Mr Somerville's machinery has this capability.

The Man

Eric William Somerville is 63, and is a chartered engineer, a Fellow of the Institute of Mechanical Engineers, and has been a member of the Institute of Marine Engineers.

After West Kensington Grammar School, he completed a Mechanical Engineering apprenticeship before joining Chatteris Engineering works aged 21 as a draughtsman and assistant to the manager. When he joined in 1938 the company employed 20 people.

Although he had intended to join the RAF in the war, Chatteris switched its activities to munitions, and he became General Manager of the company, which started to make tank turrets, guns, and shell hoists, and conducted experiments in gun engineering. The workforce grew to 200.

After the war, he had the problem of filling the order book, and began looking at the pre-war products which had included diamond mining machinery. He set off on a European tour, and came back with numerous orders. Though the workforce had declined to 150 by 1950, the company continued to prosper, selling many products, including railway rolling stock and the diamond mining machinery.

In 1950 Mr Somerville wished to marry, and applied for a pay rise of £1 per week. This was refused and he resigned in a huff on a Sunday night.

He joined the engineering firm Stothert and Pitt as Assistant General Works Manager, but left after five years when he was unable to get his ideas for new products accepted, to join Babcock and Wilcox with a specific brief to obtain more products.

He achieved this with considerable success, but by 1960 the company had so many orders for power stations that the need for new products diminished; he subsequently joined Pegson Ltd, where he had more experience of gravel and mining machinery. He left when company politics became more important than engineering and after a brief spell with Hardy and Padmore, became the manufacturing manager of the US owned Yale company making fork-lift trucks with a workforce of 600.

After three years with this company, during which he achieved considerable success, turning a backlog of orders into short manufacturing delivery times, he retired to Cornwall in 1970, at the request of his wife who complained that she never saw him.

Eric Somerville

He has lived in Cornwall ever since, acting as a consulting engineer for a number of large companies, mostly on a retainer plus daily rate basis. He earned £10,000 in 1979.

Financial Data

Mr Somerville had always had faith in the long-term potential of the diamond mining equipment which he helped to design, and used to make at Chatteris in the late 1940's. In 1979 he approached them to see whether they would consider surrendering the drawings to him, since they had long since ceased producing the equipment.

In September 1979 he purchased all of the drawings relating to this equipment (over 300) from Chatteris for £2,000, and immediately began writing letters to possible users. He then waded through the drawings, sorting out the wheat from the chaff, and making some new drawings himself.

In October he received his first firm order for a vibrating grease table. He sold this for £5,200 to the client in Venezuela, the cost of manufacture (which was subcontracted) being £3,000, and the cost of packaging and transport to the dockside being £500. The cost of some new drawings was £200, but this cost would not be incurred next time.

Mr Somerville says that he particularly likes this form of trade since he will not undertake the manufacture until he has an irrevocable letter of credit, and he is able to borrow against that letter at 3% less than the base rate with his bank, who Mr Somerville says are most helpful, and who lend in this manner in the cause of promoting exports. The money is released to him on the day of shipment.

His second order was from the Crown agents, to supply spare parts for old Chatteris equipment in Ghana. This was only for £440, but the margin was higher.

He has now written 200 letters, many to his old customers and friends, and has received enquiries

for which the quotations he has submitted total £615,200.

For one particular order in Ghana for more than £200,000, several letters have been exchanged and Mr Somerville believes that his correct course of action is to fly out to press home the order. However, he has already spent £10,000 on the whole project, and is daily wondering how far he should pursue it. Would a trip be simply another £2,000 wasted with no order?

He would like to find an investor to put up £5,000 and possibly join him on the trip to Ghana, and thence to South America where there is another prospect, to test the market properly. He says that if he cannot find anyone willing to provide the money he will go anyway, but he would prefer to spread the risk.

In view of his age, he would particularly like a younger investor who would be able to take an active part in the business if the need arose, probably in exchange for a larger shareholding.

Financial Structure

The £5,000 will be spent entirely on marketing, including at least one foreign trip and possibly two, and on letters and administration in this country aimed at securing an order. An order with an irrevocable letter of credit is then self-financing.

Mr Somerville proposes to form a new company for this project, and suggests the following:

Name	Contribution	%
Somerville	Project so far	80
Investor	£5,000	20

The investor would be a director of the company and receive a fee. The company would undertake to distribute 50% of the profits each year if the investor desired.

As an alternative, he would be prepared to sell the entire project to a company for £30,000, and would agree to provide technical consultancy and support for a five year period for a fee.

Contact Address:

E. W. Somerville C.Eng., F.I.Mech.E., M.I.Mar.E., M.I.M.
The White House
Zennor
St Ives
Cornwall **Tel Penzance (0736) 794305**

Intelligent Typesetting Terminal £30,000

David Dew has a combination of skills related to typesetting and computers which make him ideally suited to develop an improved word processing terminal with a typesetting capacity. He seeks £30,000 to supplement his own resources to develop one, and offers 40% of the equity.

The Product

As a result of his long experience of computers and computer typesetting, Mr Dew believes that there is a need in the market for a terminal retailing for about £10,000 which would carry out the functions of word processing and typesetting, producing an output suitable for direct entry into many of the industry's standard typesetting machines.

To the charge that the typesetting market is already competitive and that terminals with full editing and text display capabilities exist, he replies that the market is dominated by large companies selling comparatively expensive equipment, which is often compatible only with that particular manufacturer's typesetter. He believes that by moving much more quickly than a large company can to take advantage of new microprocessor related hardware, he will be able to produce a

The Lynwood terminal

system which will offer most of the advantages of the larger systems at a much lower price, and will be designed to produce output for use by the majority of typesetters.

Among others, the 'DD' terminal, as he has christened it temporarily, will have the following features:

1. Full word processing capability.
2. Horizontal scroll as well as vertical scroll. This enables the exact line breaks to be viewed, and large pages can be made up.
3. Tabulations and text will be displayed as they appear, subject to the small limitations of letter spacing on the screen.
4. The ability to display the whole screen in a larger size of screen text for ease of reading. Also italics, bold, underlining, and several other screen face features will be standard.
5. Automatic copying of all text entered to discs for safety.
6. A number of other innovative features will also be incorporated, but he does not wish to mention these here, for fear of alerting the competition.

Mr Dew has researched the hardware carefully, and started from a base of considerable knowledge. He has chosen the Lynwood Alpha as offering the best combination of characteristics including a 16 bit microprocessor which offers double the speed compared to the normal 8 bit microprocessor; smart appearance with a detached screen, and up to 192K bytes of RAM. With three mini-floppy double density double-sided discs, this hardware will cost him £4,000 installed in a desk.

Mr Dew proposes to write the program by himself, using a Data General machine, which he has already ordered at a cost of £15,000. This has hard disc drives with 5 MBytes of storage, since although the final program may occupy 100K of RAM, the source code will contain comments, and so occupy perhaps 2-3 MBytes.

The Data General machine is due to arrive in September, and Mr Dew aims to have fulfilled his first order to Germany for a 2 terminal system by December. However this order specifies only very limited text handling facilities, for which the programs are already largely complete in his mind.

He estimates that the full program will take six months to complete.

We spoke to one of Mr Dew's former managing directors, who has had experience of Mr Dew's capability as a programmer, who said (paraphrased) "Mr Dew has a very special combination of qualities with a knowledge of computers and the needs of the typesetting market. Mr Dew is also a very hard worker, who when absorbed in a project will work a 14 hour day. I have the highest regard for him, and great confidence in his ability to implement his development programme satisfactorily."

The Market

Mr Dew is very familiar with the market, having worked in it for the last seven years. He is aiming this machine specifically at the smaller printer employing from 10 to 100 people, many of whom have their own typesetting capability.

He believes there were 2,200 intelligent terminals sold in Europe in 1979, of which some 50% were to printers in the 10–100 employee bracket. By 1983 he estimates that the corresponding figures will be 4,300 and 60%, giving a potential market of 2,580, of which he believes he will be able to secure a minimum of 5%, or 130 machines.

The key question will remain whether the market will in fact buy such terminals at £10,000, which will be the final retail price. Mr Dew is confident that it will, and points to his existing advance order as much better proof than most people could offer at this stage of a similar project.

The Man

David Dew is 44 and was educated at Stowe School and Corpus Christi College Cambridge, where he received a first class honours degree in the Mechanical Sciences Tripos.

After five years as a mechanical engineer, he entered the computer world where he has remained ever since, joining IBM in Liverpool. In 1968 he went to work for IBM in America on their own computer information systems.

Having completed a brief spell for Eastern Airlines in 1971, he decided to return to the UK, largely because of his children's education, and joined ICL as a Department Manager with a staff of 30.

David Dew

In 1973 he met an old friend from IBM who persuaded him to join Harris–Intertype Ltd (now Harris Systems) to organise the technical support to their complete typesetting systems in Europe. In this role his staff grew from 6 to 20, and he was promoted to European Systems Director in 1976. During this time he also wrote a large typesetting program.

In 1978 Harris effectively shifted the management of its European activities back to the US, and not wishing to move back, which would have been necessary for the advancement of his career, he left and became a freelance consultant.

His initial contracts came mostly from Harris customers who needed modifications and improvements to their systems, and also from Harris itself. He earned £26,000 in the year to September 1979, and will earn about £12,000 this year, since he has been concentrating increasingly on this project.

Mr Dew is married with three sons, and enjoys skiing. His wife will work in the business as office manager.

Financial Data

When the programs are developed, the economics of a sale will be roughly as follows:

	£
Cost of hardware	4,000
Dew's gross margin (1)	3,000
Price to distributor	7,000

(1) To cover the cost of further software development and support.

The price to the customer will therefore be between £9,000 and £10,000 allowing for a margin to the distributor of between 20 and 30% on sales, which is good in the industry.

The cost of developing the program will be about £32,000, which includes £15,500 for the Data General hardware, and running costs of £3,000 per month for 8 months, less the profit on the first order. The detailed cash flow shows a peak requirement of £44,000 for this stage, after ordering the hardware to supply the first order but before payment, but Mr Dew believes he could obtain export finance for this under the Midland Bank export finance scheme for small companies, or straight bank finance.

Once the program is complete in month 8, payments from orders will begin to be received in month 13, and an additional £15,000 will therefore be needed for running costs, the assumption again being that bank finance may be obtained against firm orders.

The total finance required is therefore about £50,000.

In year 3 Mr Dew believes he will be able to sell 144 systems and (in 1980 prices) the income statement would then appear roughly as follows:

Gross Margin 144 + £3,000		432,000
Salaries (himself + 3 specialist staff)	45,000	
Mrs Dew	4,500	
Other overheads, including travel, exhibitions & mktg.	75,500	
	125,000	125,000
Net profit before tax		307,000

Financial Structure

Mr Dew has few spare resources of his own with his children to educate, but he is prepared to take a second mortgage on his house in order to be able to invest £20,000 in this project himself.

He proposes the following;

Name	Contribution	%	Debenture
Dew	1,200	60	18,800
Investor	800	40	29,200

His own terms of employment will be defined by a service contract. The company will agree to distribute a certain % of profits each year if the investor wishes. The debentures wil be interest free, but first available profits will be used to repay them if either debenture holder so wishes. The investor will be a director of the company and will receive a director's fee of £7,000 per annum after year 1. Mr Dew will take a life insurance policy which will cover death or disability, to protect the investor in the event of an accident during the program's development.

Contact address

D. G. Dew
10 Harcourt Close
Henley-on-Thames
Oxon
Tel: (04912) 5672

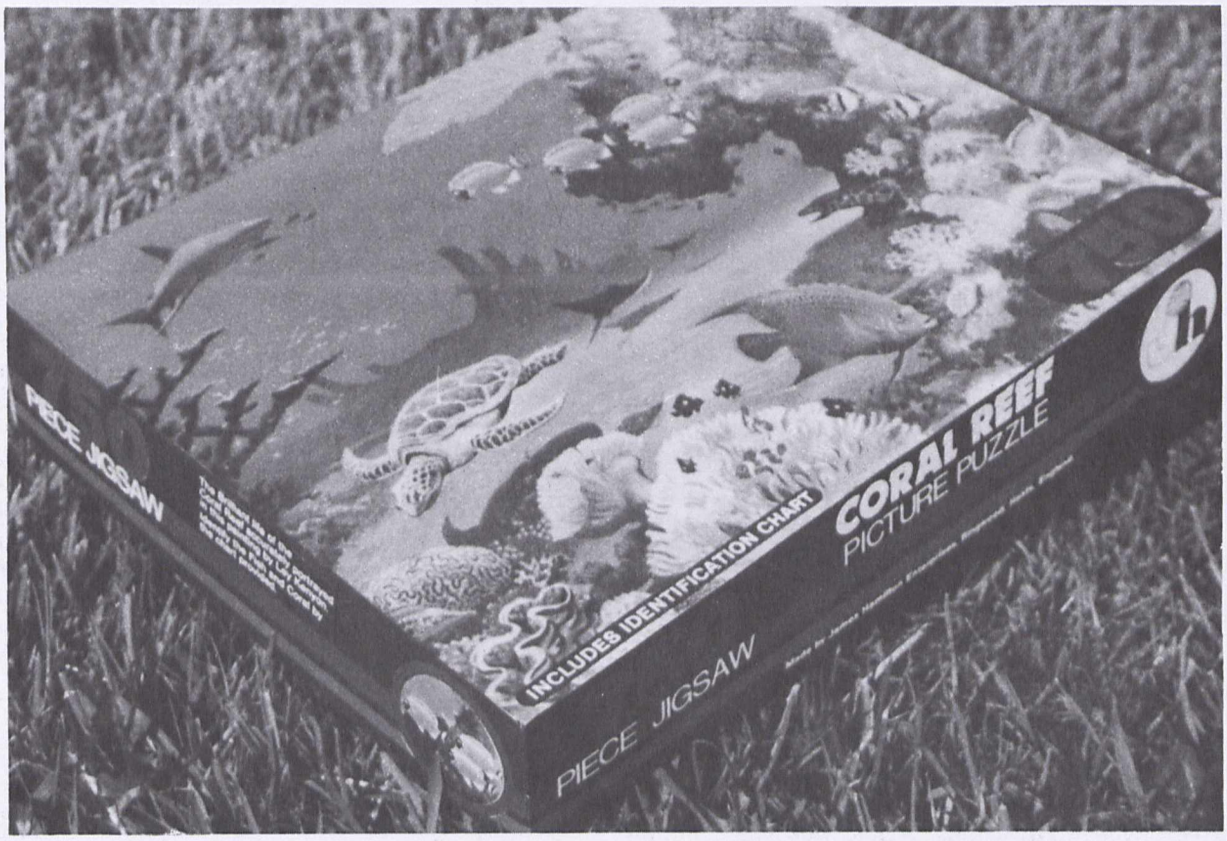
Jigsaws £30,000

Gordon McGee and Tony Beamish have designed a new range of wildlife jigsaws, which 'combine artistic merit with scientific accuracy'. The first of the range has been test marketed with success, and £30,000 is now required to finance production and introduce the other jigsaws of the range.

The Product

This range of jigsaws is different from all others on the market, because it portrays a wide variety of animals in their natural surroundings, with scientific accuracy and drawn to scale. The artists who draw the pictures are extremely skilled in producing life-like creations, and the colours are vivid. The product is attractively packaged with a picture of the puzzle on the front, and the animals depicted are identified and described on the back of the box.

The puzzles are protected from competition, as James Hamilton Enterprises, the name of the partnership operated by Messrs McGee and Beamish, own the copyright, whilst entry to the market for this type of puzzle is restricted due to the long lead-in time necessary to produce the artwork.



The first jigsaw

The Market

The first of the series, which was introduced in April 1979, has as its subject 'the coral reef', and has been marketed in the Seychelles, the West Indies, and other tropical countries, and has also been test marketed with wholesalers in the Bournemouth area. It has always sold successfully, the partnership having sold 4,000 jigsaws in a few small markets in the first year with no promotional effort.

The partnership estimates that with full promotion and wider distribution, it will sell the following number of jigsaws:

Year to	31.8.81	31.8.82	31.8.83
Designs available	5	10	20
No. sold	120,000	300,000	800,000
Average per design	24,000	30,000	40,000

Mr McGee states that in the industry, the expected sales are 60,000 from each design of a normal jigsaw, and he is confident that his designs should be able to outsell the normal jigsaws on the market.

They have two further puzzles almost ready for launching, and have so far received orders for

8,000. The major high street stores have been contacted, and have expressed both interest, and the intention to buy when they have seen production samples.

They have another 20-30 subjects in various states of development, and aim to double the number on the market every year for the next three years.

These jigsaws are termed 'deluxe puzzles' by the trade, as they are made from high quality card, which will last longer than the normal puzzle, and are therefore able to command a premium price. The retail price will be £2.20 for these 750 piece puzzles, which bears favourable comparison with other similar products already on the market.

The marketing plan is for the following:

1. Home Market

It is anticipated by the partnership that 70% of the retail outlets (toy shops, newsagents, multiples) will be covered by the end of the first year. They plan to obtain this coverage:

Shop type	Coverage by:
Major multiples	James Hamilton employees selling to the Head offices who organise distribution to their stores.
Newsagents, toyshops etc	1. Major distributors who buy from James Hamilton in turn selling to the retail trade 2. Firms of toy trade agents who sell to wholesalers on a commission basis. James Hamilton Enterprises paying up to 7% on sales turnover.

2. EEC

The organisation already has an agent serving this market, but with the expanded range of puzzles it will be necessary either to appoint sub-agents, or to replace the existing agent with a number of sole distributors, one for each country.

3. Export markets outside the EEC will be served by export houses in the UK, James Hamilton selling the goods to the exporter, who then incurs all the marketing and distribution costs.

The following markets are being covered by agents:

Market	Agents	Type of coverage
Hong Kong	Wilson Toys	500 stores
Seychelles	Photo Eden Ltd	Sole agency
Bermuda	Triminghams	Sole agency
US	Maceys Stores	One of their stores

A merchandising firm is carrying out a test market on behalf of Pride's who will act as agents in the U.S.

The profitability of these markets will be of a similar order to the UK market. The agent will buy the goods in the UK, and will then own them.

The break-even point is approximately 40,000 sales (277 cases of each puzzle).

The People

Gordon James McGee is 59 and married with three grown up daughters. After finishing his education at the Sir John Cass Foundation in London, he went into the printing business, training as a designer and commercial artist. He joined the Signals Corps during the war, where he discovered an interest in amateur radio that he has kept up ever since, and also trained West Africans in the use of signals equipment.

Gordon McGee

He spent the period after the war from 1947 both selling and marketing a variety of products, eventually becoming Product Manager for a large American pharmaceutical concern. However, he found the pressure of work very great, and so left in 1967 to work for two years in a smaller company before setting up his own concern as a florist in 1970. He sold out of the business in 1976, and started a company producing and selling tourist packages, consisting of sound recordings and illustrations for the Seychelle Islands' tourists. He also worked in Britain as a solar heating agent for southern England. He now intends to work full time for James Hamilton Enterprises. He enjoys photography, sound recording, and sailing, and is a licensed radio amateur.

Anthony Henry Hamilton Beamish OBE is 63 and single. He joined the investment department of Baring Bros after leaving the Imperial Service

Anthony Beamish

College. He left in 1939 to join the BBC as an announcer and news reader, before moving into programme planning. In 1939 he enlisted in the Hampshire Regiment, and was commissioned in the Royal Ulster Rifles as a second lieutenant in 1940. He was successively ADC to General Sir James Steele, and Field Marshal Sir Gerald Templer. He saw active service in Burma, Malaysia and Indonesia, and was mentioned in dispatches. He was demobilised as a Major on the staff of the 5th India Division in 1946. After the war he rejoined the BBC as a Home Service announcer, and was in 1948 seconded to Singapore and Malaysia to take charge of their radio programmes. He finally rose to Director of Radio Malaysia, in charge of the entire operation. In 1960 after the Malay nationals had taken over management of the broadcasting system he was sent to Laos by the Foreign Office, and later to Nepal as adviser to the government on broadcasting and information. The King of Laos appointed him a Knight of the Million Elephants and White Parasol. Since 1966 his time has been spent making films for the BBC and various conservation societies; he was given an award by the Royal Geographical Society for nature film making. He also runs a property company in the Seychelles. As well as these activities he finds time to write various books and articles mainly on wildlife, and works on behalf of various wildlife preservation societies around the world. He was honoured with an OBE by the Queen in 1968, and speaks six languages including fluent French and German.

Financial Data

The partnership states that the typical set-up cost structure for one of their new products is:

	£
Artwork	350
Proofs, plates and cutting frames	1,000
Box designs and graphics	300
	1,650

The profitability per '000 puzzles sold will be

1. UK market	£	£	£
Income			875
Less trade discounts	22.00		
quantity discounts ¼ sales @ 4%	8.75		
Agents' commission @ 7%	61.25		
	92.00		92
Net sales income			783
Less cost of manufacture	510.00		
cost of delivery	55.00		
		565.00	
Selling	17.00		
Warehousing	18.00		
		35.00	
			600
Gross contribution per '000			183
2. EEC			
Sales income 85p×1000			850
Less agents' commission 5%	42.50		
Discount on large orders 3% on 25% of orders	6.38		
	48.88		49
Net income			801
Less cost (as UK, but less delivery)			510
Contribution per '000			291

The forecast profit and loss accounts for the first three years are:

	31 July 81 £	31 July 82 £	31 July 83 £
Sales	105,000	277,500	800,000
Less mfg costs	61,000	187,500	563,200
Variable costs	14,775	36,800	96,800
Total costs	75,775	224,300	660,000
Profit	29,225	53,200	140,000

The profit figures have been struck before allowing any payments to Messrs Beamish and McGee, tax, or any provision for distribution of profits.

The accounts being drawn up to date are expected to show:

Profit and Loss account for the year ended 31 May 1980	£
Sales	4,103
Expenditure	4,463
Loss for year	(360)

All puzzles produced in the year have been written off in the year. There was a stock figure of £6,300 at cost.

Balance Sheet			
		£	£
Fixed assets – copyrights			1,790
Current assets – stock		6,300	
– bank		2,185	
		8,485	
Less current liabilities			
	£	£	£
Directors' loan	1,156		
Creditors	76		
		1,232	
			7,253
			9,043
Financed by:			
Partners' capital			9,043

Financial Structure

The partnership had an offer to sell the copyright of the first puzzle to Arrow Games, but they rejected it because the offer was considered to be too low compared with the potential profitability.

They have already invested £12,000 and two and a half years work in the concern, developing a successful product with which they would be able to trade, but they wish to expand at a faster rate than is initially possible out of retained profits. It is proposed that the existing partnership will be turned into a limited liability company, and the assets transferred to that company. They will also invest an additional £13,000 in the company, and suggest the following structure:

Name	Contribution	%	Debenture
McGee & Beamish	Developed Products £13,000	75	
Investor	£5,000	25	25,000

The investor would be a director of the company and receive a fee. The debenture will be interest free and will be repaid over a three year period, after which Messrs McGee and Beamish would like to buy back the outstanding shares at a suitable premium.

Messrs McGee and Beamish will have service contracts defining their terms of employment, and the company will undertake to distribute a certain percentage of profits each year as dividends.

Contact Address:

G. J. McGee
13 Fir Tree Close
St Leonards
Ringwood
Hants BH24 2QW Tel: Bournemouth (0202) 871574

Luxury Weekend Holidays £20,000

[redacted], *a cook of great experience, has for many years catered for her husband's foreign business visitors. She now wishes to take paying weekend guests, and has converted her house accordingly. She needs £20,000 to complete conversion works, and offers a share of the profits.*

Note: Since this project concerned the promoter's own house, she has asked that details of her project be removed from this complimentary copy. The article occupied the next three pages.

See Note page 26

See Note page 26

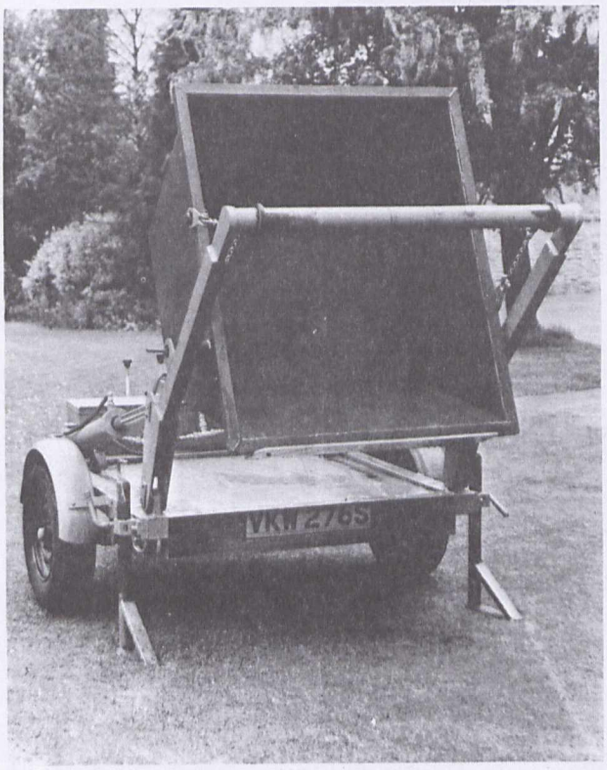
A Tipping Skip

£18,000

Alec Marzano has designed and produced a small skip which can be carried by a trailer towed by a van or ordinary car. He needs £18,000 to launch the product, and offers up to 50% of the equity.

The Product

The product is a trailer and skip with a self-contained electrically operated power-pack to enable it to load and unload itself by an integral hydraulically powered frame. The skips come in two types, the conventional open-top skip, which has an operating capacity of 1 cubic metre or 1 tonne; and a bulk liquids container with a capacity of 170 gallons. A winch capable of hauling one tonne, or hoisting loads up 50 feet from well shafts etc will be offered as an optional extra.



Trailer in tipping position

The unit, called the Skip Tip Trailer, can be used as a conventional trailer, since its platform is designed to contain goods as well as contain a hopper or tank. Locking pins between the lifting arms and the container enable the skip or hopper to be fully discharged. There is a single lever control for the movement, stabilising props to minimise the load imposed on the towing vehicle, and a screw down jockey wheel. The first version of the trailer is fitted on two wheels. It has a 50mm standard tow hitch, over-run brakes, and is supplied painted to the customer's specification.

The Market

The Skip Tip Trailer is designed to be sold to councils, for use in cemeteries and on highways; to plant hire firms; builders; jobbing gardeners, and for export to underdeveloped countries.

The principal advantages that it has over other competing products in the market, which consist mainly of tipping trailers, are:

1. *It is self-contained for use by one man, as it has its own power. The only necessary additional equipment needed is a van or car capable of towing a trailer. This means that manpower may be reduced on a large number of small construction type jobs, and it will be very attractive for the Do-it-yourself market to hire, especially with regard to its (estimated) relatively cheap cost: each skip approximately £2 per week.*
2. *It will be more attractive to plant hire companies, builders and jobbing gardeners, because of its robust construction and low maintenance levels.*
3. *It has more features than a trailer.*

a. *It is able to tip the contents into a container which would be inaccessible to a trailer, because of the high point of tipping.*
b. *It can self-load and unload.*
c. *A number of empty skips can be left at a variety of locations until filled.*
d. *There is the option of a winch capable of hauling one tonne, or hoisting loads 50' from well shafts etc.*
e. *It can carry liquids with a suitable hopper.*
f. *It will be possible to use the production model as a conventional trailer when the skip is not in place.*

4. *The capital cost and scale is more suitable for developing countries than anything that already exists.*

The price is estimated to be approximately £1,400 for the production model, compared with £1,000 for a trailer with similar capacity, but the advantages of the Skip Tip Trailer should outweigh the additional cost.

Mr Marzano has applied for a patent for the design.

An article which was written in 'Plant International' on the Skip Tip Trailer has caused a considerable amount of interest to be shown by various concerns, including hire companies who have been to see the product. A Maltese importer has written asking for an agency to supply Malta and Libya.

Mr Marzano has also had an offer from a prospective purchaser of the prototype.

The marketing plan formulated by Mr Marzano is to show the product at the municipal and mechanical handling exhibitions, and circularise the major plant hire firms and all councils with information regarding the product, followed by personal

visits. If however the investor were marketing orientated, Mr Marzano would be happy to allow him control of the marketing side of the business.

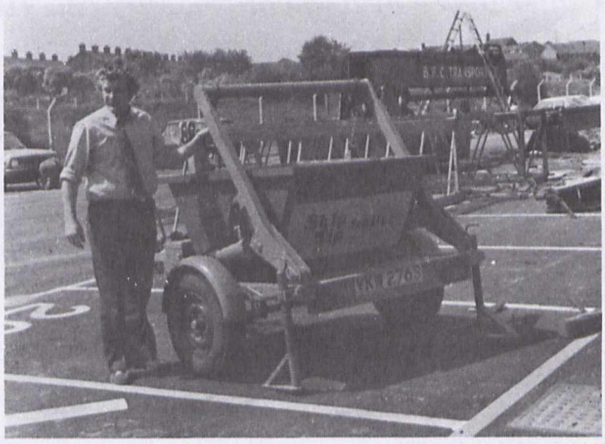
He aims to sell 100 units in the first year, which he considers to be attainable judging by the interest expressed, and offers already received.

It is intended to be the first in a range of three similar Skip Tip Trailers, which will be larger; the next having a capacity of approximately 1.5 tonnes and 1.5 cubic metres, and the largest 2 tonnes and 2 cubic metres.

The Man and his history

Alec Kenric Marzano, who is 50, was educated at Cliftonville school, leaving with matriculation before joining British Rail Engineering Division in 1947 as an apprentice, and qualified as a Chartered Mechanical Engineer. He worked for the Colonial Office from 1954 until 1961 on secondment to East African Railways, after which he joined B.S.C. at Llanwern, initially as a project engineer during the construction of the plant, and subsequently as Plant Engineer.

In 1966 he joined Thermalite Ltd, where he worked as Senior Engineer. The job mainly consisted of project supervision. He left to join Mobile Lifting Services, a subsidiary of the Tarmac Group, where he was assistant to the Managing Director responsible for the projects including Sales Purchasing and Planned Maintenance areas. In 1972 he and his wife started Aldon Engineering with one employee, and the company has now grown to employ 23 personnel including 6 office staff.



Mr Marzano and his trailer.

The company has moved premises to an industrial estate, and has a brand new 7,500 sq. ft. factory with facilities for fabrication up to 10 tonnes; all types of welding and machining facilities. It has 1.3 acres of land, and planning permission for expansion of the premises to 25,000 sq.ft. This expansion has mainly been out of retained profits.

Aldon Engineering. Results for the past three years have been as follows:

Profit and Loss summary.

	31.3.80		31.3.79	31.3.78
	£		£	£
Sales	315,834		212,560	205,747
Direct costs	225,728		144,295	142,702
Gross Profit	90,106		68,265	63,045
Overheads*	83,732		61,887	43,805
	6,374	(1)	6,378	19,940

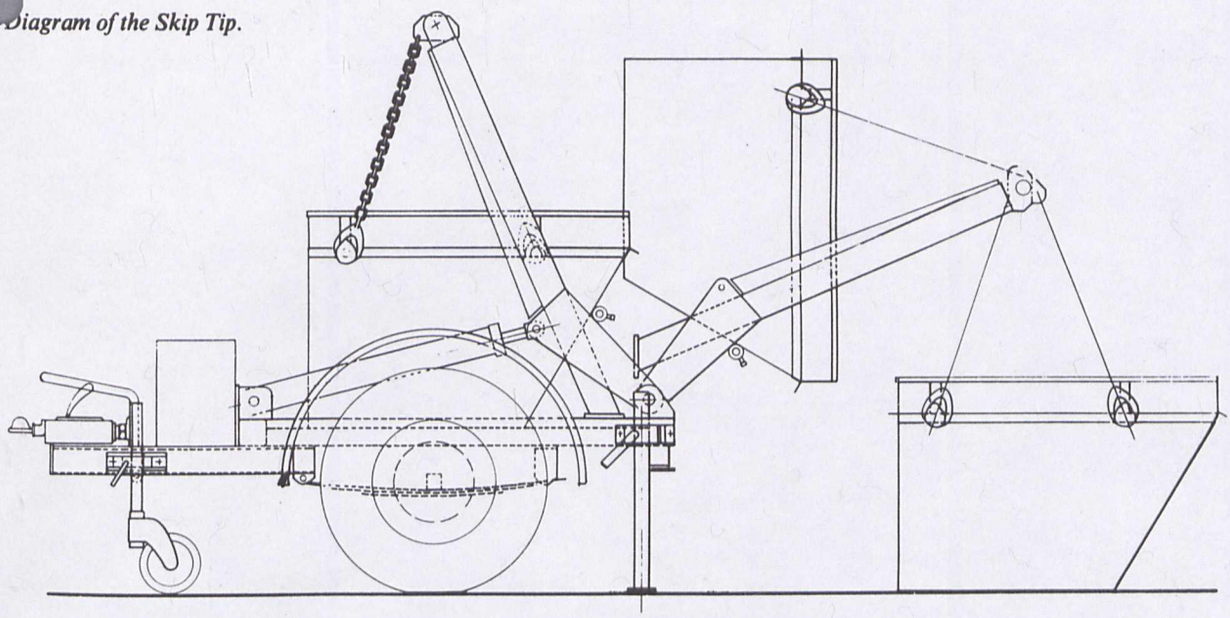
**including generous directors' fees and depreciation.*

Balance Sheet Summary

Fixed assets		73,751		33,012		24,756
Current assets	160,957		77,898		69,728	
Current liabilities	163,231		70,380		57,505	
		(2,274)		7,518		12,223
Net Assets		71,477		40,530		36,979
Financed by:						
		1980		1979		1978
		£		£		£
Share capital		987		987		987
Retained profit		30,647		22,113		18,562
Bank loan		26,000	(2)	—		—
Deferred tax		13,843		17,430		17,430

(1) The 1980 figures were affected by the steel strike which caused the company to stop production for 2 months.
(2) The bank loan is secured by an unlimited debenture.

Diagram of the Skip Tip.



Financial Data relating to Skip Tip Trailer

Mr Marzano would like to set up a joint venture with an investor, preferably one who could market the product, although he is prepared to market it if necessary. He has already invested more than £2,000 in producing plans for manufacturing a prototype, and has committed £1,500 for the final plans of the production model, which will be ready by the end of August.

He does not have sufficient funds immediately available for investing in this project without affecting his other business, so he is seeking an investment f £18,000, which will be used:

£1,500 to pay for the prototype design drawings.
£5,000 to pay for stands at the Municipal and Mechanical Handling Exhibitions together with the associated costs.
£11,500 to pay for the first 10 production Skip Tip Trailers.
The cost of each production model based on the prototype will be:

	£
Bought-in components	800
Construction 50 hours @ £7	350
Manufacturing costs	1,150

The cost per trailer will reduce with larger runs of production, as the benefits of larger scale purchasing and faster construction/assembly methods are felt.

At a retail price of £1,400 + V.A.T. it is estimated that the break-even point will be reached at between 20–30 unit sales.

Mr Marzano would like the production of the Skip Tip Trailer to take place at the Aldon works, but is prepared for a potential investor to find alternative quotes from any other firm with the capability to construct the product.

Financial Structure

A new company would be formed, and although the cash requirement is flexible, as any amount over £11,500 would be enough for a batch of 5 trailers, £18,000 for 10 trailers is considered to be the most desirable.

It is suggested that the financial structure should be:

a. For an investor only willing to make a capital injection:

Name	Contribution	%	Split Equity/Deb.
A. K. Marzano	Project so far	60	
Investor	£18,000	40	6,000/12,000

b. For an investor who is also willing to market the product:

Name	Contribution	%	Split Equity/Deb.
A. K. Marzano	Project so far	50	
Investor	£18,000	50	6,000/12,000

The investor would be investing in a project where there is already a working prototype and interest in the product, as well as the potential for a very high level of sales combined with a low break-even point.

The debenture would be interest free and repayable at the end of the second year, if the investor so required. The investor would also be a director of the company, receiving a fee, and the company would undertake to distribute 20% of the profits.

Contact Address:

A. K. Marzano
Aldon Engineering Ltd.
Canklow Meadows Industrial Estate
West Bawtry Road
Rotherham
S. Yorks S60 2XL **Tel. Rotherham (0709) 60457/8/9**
Telex 547676/ALDON


CVR

Finance For Industry Limited
91 Waterloo Road, London SE1 8XP Telephone: 01-928 7822

Chairman

(1) £ million fund new jobs each month.

(2) Trade figures - far better than forecast

(3)

29th December 1980

Prime Minister

Some good material for your broadcasts on ICFC. Note in particular side-lined passages on pp 2-4 and 7.

T.P. Lankester, Esq.,
Private Secretary to the Prime Minister,
Prime Minister's Office,
10 Downing Street,
London, SW1.

Dear Mr Lankester

Industrial and Commercial Finance Corporation

Herewith, as promised, some notes on ICFC, a subsidiary company of Finance for Industry Limited (FFI), of which I enclose the latest Annual Report, together with an ICFC booklet - "How we help Private Enterprise".

We are greatly encouraged in the current recession by the continuing flow of proposals for investment put to ICFC which is greater than last year, although it is taking rather longer to complete the agreements, partly owing to expectations of a further fall in interest rates.

In the attached notes I would draw particular attention to the increasing investment in "startups", including brand new companies, to our growing investment in the high technology area, with its high financial risks, and to the increasing number of "management buyouts" which ICFC has pioneered.

As I am sure you are aware, FFI is a private-sector financial institution - a "licensed deposit taker" under the Banking Act. We do not receive any subsidy, although we administer one or two Government schemes. We carry all our own financial risks and in this connection we are very pleased to see the relatively low rate of bankruptcies amongst the companies in which we are invested in spite of the current recession: this is also referred to in the attached notes.

(continued)

I hope this gives you the information you want, but if you need any further information, please telephone my secretary at the above address.

yours sincerely

Caldecote

Viscount Caldecote

NOTES FOR PRIME MINISTER'S OFFICE ON ICFC

BACKGROUND

1. ICFC is a private enterprise source of long term risk finance and advice for small and medium sized businesses in the UK. It is part of the Finance For Industry group which is 85% owned by the English and Scottish clearing banks and 15% by the Bank of England. In 1979/80 ICFC contributed a substantial proportion of the profits of £28M made by its parent company Finance for Industry Ltd.

2. ICFC provides amounts of £5,000 to £2 million. The average size of investment is £100,000. Half of all investments are for amounts of less than £50,000.

3. ICFC has £350 million invested in 3,250 private businesses over the whole range of British industry. These firms employ around 300,000 people.

Industrial sectors financed by ICFC in the year ended 31st March 1980 were:-

	£M
Agriculture, Mining and Construction	11.6
Engineering and Metal Goods	25.6
Other Manufacturing	28.0
Distribution and Services	39.3
	104.5

4. There are 18 area offices situated in the major towns. Local managers make over 60% of all investment decisions. The staff are highly qualified and especially trained in an understanding of industry. They come from a wide range of disciplines including science and engineering as well as law and accountancy.

5. There is also a strong team of Management Advisers, including those experienced in engineering, accounting, marketing, production and property, who play an important role in assessing potential investments. Many competitors are now established in the venture capital market but none has the support of such an experienced team of advisers.

6. The finance is provided for:

a) People who want to start up in business.

b) Businesses which need money for new buildings, plant or working capital or to fund an acquisition.

c) Shareholders who wish to sell a minority equity stake.

d) Managers who have the opportunity to buy control of their division or company but have little cash of their own.

7. 55% of all investment in the current year carried an element of risk. Where there is substantial risk ICFC looks for a minority stake in the customer's equity. Personal guarantees are never sought. Where loan capital is provided it is at fixed interest rates for periods of between 10 and 20 years.

8. The vast majority of the money which ICFC invests is obtained from the private financial sector at market rates. It also obtains funds from ECSC at special rates which is lent, with ICFC taking the financial risk, to companies in areas where steel and coal production has declined.

9. ICFC does not usually interfere in the management of the companies in which it invests but stands ready to help and advise them when needed. To assist in this ICFC has a management consultancy service, which operates on a commercial profit making basis.

B. THE RECENT GROWTH

1. Numbers and amounts of investments

The last three years have seen remarkable growth in terms of numbers of customers and amounts of investment. Numbers of staff have grown more slowly; productivity has trebled.

	Nos of Business Financed	Amounts Advanced
Year to 31st March 1978	518	£ 50.0M
1978/79	733	£ 67.5M
1979/80	920	£104.5M
1980/81 - 8 months	634	£ 61.0M

In the current year approximately the same amount of money will be provided as last year but the number of businesses helped will be higher. There will be a slight fall in capital investment by more substantial companies and a sharp rise in the numbers of new businesses starting up, young businesses expanding and management teams splitting off from larger groups to trade independently under own management.

There are three main areas of growth - startups, technology and management buy outs:

2. Startups

ICFC defines startups as either brand new ventures or businesses trading for less than three years.

The number of startups and amounts involved in recent years are:

	No.	Amount
1977/78	88	N/K
1978/79	112	£ 4.8M
1979/80	309	£21.0M
	(of which 146 were brand new ventures)	(£8.2M)
1980/81 (6 months)	200	£14.0M
		(of which 115 were brand new)
1980/81 (estimated full year)	400	£28.0M

Startups are often one man businesses spinning off from larger companies with ideas or products which are not being fully exploited. The startup manager often is design, market or product/production orientated. He has to learn financial management the hard way and leans heavily on people like ICFC for advice.

3. Technology

The exploitation of new ideas and products is often undertaken by very small businesses.

This is an area of very high financial risk particularly where there is innovation. ICFC invests in high technology companies; where there is clear innovation the investment is made through a wholly owned subsidiary Technical Development Capital Ltd (TDC).

TDC's business is growing substantially:

	No.	Amount
1978/79	37	£2.7M
1979/80	48	£5.5M
1980 - 7 months	44	£5.8M

Earlier this year it was decided to strengthen TDC's ability to finance larger innovations where TDC staff involvement would be essential. A technologist/venture capitalist was recruited from California and now heads a specialist team which in a few months has made four investments with a total value of £3 million. He was a British citizen who went to work in California during the period of very high personal taxation in the UK.

Areas of innovation include:

Micro-Winchester disc drives.
Bio-technology.
Photo typesetting.
Computer based security systems.

TDC made a major contribution to the Spinks paper on "Exploiting Innovation" produced for the Cabinet Office.

4. Management Buy Outs

(a) Background

This is one of the fastest growing areas of ICFC's current operations. Financial institutions have for many years been able to help managers to buy control of the companies for which they work but such schemes have been relatively rare in practice. Until 1978 ICFC completed four or five such investments each year. Since then ICFC has pioneered the development of new ways of financing these propositions and has marketed these aggressively and popularised the idea to such an extent that other institutions have now been set up which specialise in the area .

ICFC's growth in this area has been remarkable.

	No.	Amount
1977/78	10	N/K
1978/79	20	£ 3.2M
1979/80	49	£11.6M
1980/81 (6 months)	29	£ 6.3M
1980/81 (estimated)	70	£16.0M

(b) How do buy outs arise?

There are two basic ways in which they happen:

(i) An overseas or UK parent decides to sell or close down a UK division because:

a) the particular activity no longer fits in with strategic plans,
b) the division is losing money or is not profitable enough,
c) an acquisition is found to contain unwanted elements,
d) the parent needs to raise cash.

(ii) Private company shareholders, having built a business over many years wish to sell out completely.

In these cases the management may not wish to become part of a new group and may get the opportunity to buy.

However managers rarely have much money. Typically they will provide 10% or 20% of the funds required. ICFC provides 80% or 90% by subscribing for a minority stake in the equity and the provision of loan or preference share capital.

(c) What are the advantages?

A buy out is attractive:

(i) to the vendor because:

(i) One man's cash is as good as another's.

(ii) There will be less odium and bad PR.

(iii) Having a friendly ex-member of the group who may be a supplier or customer can be beneficial.

(iv) The management know what they are buying and there need not be a prolonged period of "hawking" the company around.

(ii) to management because:

(i) The team (rarely an individual) can run their own business with real incentives to succeed.

(ii) They will not be working for new masters.

(iii) to employees, customers and suppliers because:

(i) It takes a long time to build up reliable supplies, outlets, and an experienced work force. Closure or sale causes these complicated relationships to be destroyed which is inefficient and wasteful. Continuity is important.

(ii) Management are more committed to the running of the business.

(iii) Jobs may be saved.

(iv) to a potential investor such as ICFC, because:

(i) The management has a track record.

(ii) Skeletons in the cupboard are known about and will be declared by the management who are also investing.

(iii) New manager owners are committed and motivated. The business will be low on overheads and high on productivity.

(v) to the economy because:

(i) businesses are saved, management is motivated and evidence suggests that productivity improves.

(d) Examples of Buy Outs

Customer confidentiality is an essential part of ICFC's operations. However there has been press coverage on some of the 100 deals completed in the last two years and brief details of four examples are set out below.

(i) Truflo

The business was bought in December 1980 for £6.8 million out of Wilmot Breeden which had been taken over last year by Rockwell International of the US. ICFC led a syndicate which provided £3.5 million.

This is an example of a very large buy out and of a parent selling off unwanted parts of an acquisition. The company is based in the West Midlands, makes turbine components and ball valves and employs 650 people.

Another buy out of a Wilmot Breeden subsidiary involving £1 million of ICFC finance was completed last week.

(ii) Panache Upholstery

Sixty employees faced the loss of their jobs when A. & H. Upholstery went into liquidation earlier this year. The workers put up £60,000 of redundancy payments in October 1980 and ICFC provided £190,000. Redundancy amounts invested ranged from £500 to £2,500. Two former managers (now directors) each put in £10,000. The company makes three piece suites and expects to turnover £1.3 million in its first year.

(iii) Flexiform

In July 1980 senior management put up £90,000 as part of a package to buy their company from the receiver of the Fairbairn Lawson Group. ICFC provided £180,000, and a supplier and the company's bankers provided working capital. This example of a small buy-out had sixty employees and sales of £2 million.

(iv) Decorettes

This company was a tiny diversification by Newman Tonks, a £34 million turnover Birmingham group. The company which makes a range of transfers no longer fitted into their plans. The managers put up £100,000 and ICFC £500,000. The directors control 75% of the equity and ICFC has 25%.

C. THE RECESSION

1. It is too early to know to what extent small businesses will survive the recession. Often it is cash problems associated with the upturn that causes overtrading small firms to fail.

However our experience is that because small firms are flexible and innovative and decision making is fast they tend to react quickly to economic changes and are adept at surviving.

2. ICFC's portfolio is composed of small/medium private businesses covering every field of industry from mechanical engineering in the West Midlands to computer software firms in the South East. For the first six months of the financial year starting 1st April 1980 62 customers went into receivership or liquidation compared with 47 for the whole of the previous financial year. However in the past two months the number of receiverships and liquidations has abated to 11. Seen against a background of a fast growing portfolio and a huge increase in the financing of new ventures where "infant mortality" is high the results are encouraging.

3. Failures have generally stemmed from weaknesses indentified some time ago. There are few instances where good management has failed in the current climate.

C 29/12

RHS/WVE
29.12.80

RESTRICTED

File JS

BF 23.12.80

Carl Reader

10 DOWNING STREET

From the Private Secretary

22 December 1980

Dear Catherine

I enclose a copy of a report to the Prime Minister from the Advisory Council for Applied Research and Development on problems of inventors.

The Prime Minister commissioned this report as a result of one or two case histories which had come to her intention in the course of the year. She regards the report as a useful survey of the present system, and she would like to reply personally to Dr. Sprinks reacting to the specific recommendations contained in the report.

BF Invitation to events 2/X

I should be grateful if, in consultation with other Departments concerned, you could let me have a draft reply by the end of February.

The Prime Minister has asked me to draw your attention in particular to paragraph 15. This further criticism of NRDC adds weight to the NEB suggestion (previously reported to Ian Ellison by Tim Lankester) that the whole future of NRDC should be reconsidered. The Prime Minister hopes that this is already in hand, and she would be grateful for a brief report on this specific point by 20 January.

1) BF a) X

Mrs. Thatcher has also asked that the Treasury should draw the Chancellor's attention in particular to the issues raised in paragraph 25 of the report. It would be helpful if I could also have an early note on this particular point.

BF 4) X

I am sending copies of this letter, and enclosure, to John Wiggins (HM Treasury), Stuart Hampson (Department of Trade), Peter Shaw (Department of Education and Science), Julian West (Department of Energy), Godfrey Robson (Scottish Office) and John Craig (Welsh Office) and David Wright (Cabinet Office).

Yours ever

Mike Pattison

Mrs. Catherine Bell,
Department of Industry.

1

PRIME MINISTER

After you had a talk to John Ashworth, we commissioned ACARD to produce a quick paper on the problems faced by inventors. Here is the response - you may prefer to set this aside for Christmas reading.

I think it is a good paper. ACARD were asked to look at obstacles and opportunities in the present system. They have brought together much useful information in a readable paper.

If you are content with the paper as a working document, we should now ask Departments to respond to you on the specific recommendations made. We should perhaps allow them to have until the end of February for this. In the meantime, you might wish to consider publication of the report. I should certainly like to arrange for it to be circulated to your guests ~~at~~ for the "Entrepreneurs/Innovators" party in January.

(1) Agree that Departments should be asked to reply to the recommendations?

(2) Agree that ACARD should publish the paper?

Please draw attention of Treasury to page 25 and Chancellor in particular and of Industry to page 15 (yet another criticism of NRDC. Please reconsider its whole future as NEB advised. Can we have brief report by middle of January)

MAP

19 December 1980

ADVISORY COUNCIL FOR APPLIED RESEARCH AND DEVELOPMENT
70 Whitehall, London SW1A 2AS Telephone: 01-233

17th December, 1980.

Dear Mr Pattison

PROBLEMS OF INVENTORS

In your letter to me of 1st September, you said that the Prime Minister would welcome a note from the Advisory Council on the problems faced by individual inventors in securing the commercial exploitation of their ideas and possible measures to overcome these. I now have pleasure in submitting a short report from the Council prepared in response to the Prime Minister's request.

The Council's study was not confined entirely to the exploitation of ideas originated by individual inventors, since many of the matters into which we enquired were relevant to any inventor with slender resources. The report therefore deals more broadly with the exploitation of inventions, whether by individuals or small firms.

I hope that the report will be seen as a useful contribution to this most important aspect of government policy towards industry and technological development. ACARD would, of course, be pleased to respond to further requests for such studies from the Prime Minister or other members of the Cabinet.

Yours sincerely,

Alfred Spinks

Dr. A. Spinks.

M.A. Pattison, Esq.,
Private Secretary,
10 Downing Street,
London, S.W.1.

'D'

EXPLOITING INVENTION

Notes on a paper dated 16th December 1980 endorsed by The Advisory Council For Applied Research and Development in preparation for a meeting to be held at No. 10 Downing Street on Monday 26th January, 1981.

Maurice Hiles.

MAURICE HILES

Maurice was born in London on **14th October 1934.** Educated at K.C.S. he was awarded a scholarship to Oriel College, Oxford, and graduated in Economics and Statistics. During his army service in the Parachute Brigade he obtained a degree in Chemistry at Queen Elizabeth College, London University. Prior to his demobilisation he achieved a masters degree in Polymer Science at Queen Mary College sponsored by the Military Technical Staff College.

On leaving the army he joined Proctor and Gamble as an executive trainee. The commercial aspect of this training gave him invaluable insight as a marketing brand manager. After experience in the Proctor and Gamble development laboratories, during which time he took a part-time diploma in Management Studies (Manchester College of Technology), he joined Thorn Electrical Industries and was eventually promoted to Technical Training Manager.

Conscious that his management teachings often lacked personal experience he set up his present polymer consultancy in 1972.

He has played cricket for Middlesex Colts and County Durham and rugby football as full-back for Blackheath, the Army and Combined Services.

Current interests include the development of an abrasive compound based on the control of thermal conductivity, polymer alloys to produce tough high temperature resins (both backed by N.R.D.C.), a polymer engineered system for sophisticated packaging, a method of encapsulating hazardous chemicals, a progressively collapsable foam and a micro-accurate polymer pulse mixer.

He is retained by a number of major companies including BTR Industries, Smiths Industries, Unilever, Colt International and The Ministry of Defence.

He is married with a daughter, Sarajane.

I N D E X.

S U M M A R Y.

1. This document concentrates on the activities of NRDC and outlines the author's relationship and experience with the Corporation.

2. The problems of the private inventor are discussed in the areas of:
   a. presentation of facts
   b. technical assessment
   c. patent advice
   d. sources of venture capital
   e. procurement and suitability of premises
   f. business administration
   g. marketing

3. An examination is made of the role of the University and suggestions are made to improve this relationship.

4. The discarding of the Small Business Unit (NRDC) is discussed briefly.

5. Suggestions are made to a modest restructuring of NRDC to assist the private inventor.

6. It is concluded that decision points should be reduced to a minimum and that sources of assistance and advice should be concentrated rather than scattered.

1. INTRODUCTION

That the time has come for the machinery of technical research and development in the United Kingdom to be completely reviewed is certain.

I have had many years involvement with the National Research Development Corporation and I, therefore, intend to restrict my remarks to that organisation. I am recording this cooperation in the next paragraph so that it can be seen to combine both positive and negative aspects.

2. NRDC Developments

a. Energy absorbing polymer

Licensed internationally and projecting towards a multi-million pound market in 1981.

b. Abrasive compound

Satisfactory licence negotiations are now in progress after two companies had prematurely concluded agreements for purely domestic reasons.

c. Micro mixer

Technically assessed and support agreed on the understanding, quite rightly, that the need is justified and a company is found that is desirous and capable of producing it. At present in abeyance.

d. Anti corrosive encapsulant for automotive braking systems

Rejected on the advice of a consultant as irrelevant.

e. Polymer alloys

Financially supported and now at the preliminary research stage.

f. Stabilising Foam

Presentation made for support which is being considered in the normal way.

3. Criticism of NRDC

I believe there are three main sources:-

a. Critical scientific journalism (professional + amateur). Very rarely constructive and invariably not worth reading. However, sometimes difficult to ignore.

b. Rejected applicants

Most private or quasi private inventors operate outside their own sphere of knowledge. Few understand what they have really tried to invent and comprehend the reason for rejection even less.

c. Constructive

From staff and inventorial bodies who all believe that progress and experience sometimes deserves change.

4. Problems involving the private inventor

a. Advice on how to present his case

We must never forget that 'good ideas' often come from the less articulate of our bretheren. 'Cats eyes' perhaps. A lot of them need to be told what their 'good idea' actually is!

b. Technical appraisal of the project

This the corporation does superbly and tactfully. It is always comforting to the lone developer that there is a competant scientist available with whom technicalities can be discussed at any level. This is outstandingly so in the Industrial Chemistry Division of the NRDC. The course of invention changes and a continuing dialogue is invaluable.

c. Patent advice

It is often said that NRDC is patent orientated. If this is true, it is not surprising as the concept of the Corporation by Sir Stafford Cripps was based on the unpalatable task of paying royalties to the United States in regard to improvement patents on Flemming's Penicillin -

a British invention if there ever was one.
But what about patents and the private inventor:-

i) Value

Precisely zero unless the author has the finance to prosecute.

ii) Costs

EEC Filings are expensive but the cost of effecting useful cover outside the Community starts at about £20,000 and works its way upwards.

iii) Patent agents

1. Very expensive
2. Will patent anything
3. In consequence could well lull the author into a false sense of security that there is legal protection afforded by a document that is not worth the paper it is written on.

iv) Desirability

a) From the inventors point of view it is a good bargaining base.

b) Lots of very profitable developments do not enjoy patent protection.

c) However, the least patent examination can do is to go some way to ensure that the development is not going to infringe existing patents.

v) NRDC patent division

a) It is objective
b) Unbiased in any way
c) Exceptionally professional
d) probably the best patent department in the world.

d. Finance

The current NRDC policy is to slot a development into a successful trading company. This is absolutely right, it saves a host of administrative and peripheral technical costs. Sometimes it doesn't work and the inventor is cast into the totally foreign world of the money programme - vast, strange, confusing and, for the inovator, very rarely successful. Even if he gets into the maze, he probably won't get out in time.

e. Premises

Once the financial hurdle is overcome the next question is where should the project be implemented, researched or developed? Government incentives, as are local inducements, numerous and, when viewed as a whole, devastatingly confusing.

i) do I have to move
ii) do I want to move
ii) is it worth moving
iv) what am I moving to

f. Administration

If the advocated policy of NRDC power sharing fails then a new business situation may necessarily emerge.

The world of company registration and returns, accountants and audits, V.A.T., corporation tax and the day to day running of bought ledger, sales ledger and profit and loss account is bewildering to the unskilled.

g. Marketing

This is the area where many projects collapse, partially or totally. It all appears too easy - but it isn't. Independant sound advice is hard to come by and it is often even harder to convince the private inventor that he needs it.
The example quoted in the paper's introductory paragraph illustrates the importance. The Black and Decker Workmate is hardly innovative but it is a superb example of marketing expertise.

h. Interim Conclusion

Sources of help and advice are scattered and numerous. In general, they are unrelated. There are too many decision points.

5. The role of the University

One aspect of the role of the Corporation is to exploit research work. Much of this is purely academic and of no immediate commercial consequence. Some regard this as an insurance information bank for the future and others, perhaps, as a luxury we can no longer afford.

I suggest the Corporation is weak in the understanding of the University research function and is often reluctant to accept that this type of academic rarely has any business acumen or experience or, indeed, the desire to be so endowed. I am sure this must lead to misunderstandings and loss of mutual respect.

It is perhaps surprising, in view of the special position of Universities in the Corporation's charter that an academic was ommited from the working party.

I think I should mention that, in my understanding, NRDC does not have a monopoly right to University inventions as suggested by the report. (It has nothing to do with private inventions anyway). The Corporation does have first refusal however. This is, I suggest, a privilege that NRDC would willingly forfeit and, I further suggest that a number of University projects are erroneously furthered out of this sense of obligation. Such decisions may sometimes be costly and unproductive.

Some blame must rest upon the shoulders of the academic. We happily award Doctorates to graduates who have proved themselves in some field of research. It is, however, significant that very little of this work is ever commercialised. It is also unfortunately true, that each year, at least one PhD student rediscovers the water wheel and some water and the wheel as well. How much more productive if we could encourage them to spend three years of project involvement that would not only be

industrially viable but would give them a head start when the inevitable invitation arrived for them to shepherd the development into industry. Perhaps the framework of suitable research should eminate from outside the education system.

6. Small Business Unit

As most private inventions are about sharing with existing companies or start-up situations this unit is irrelevant as it will not invest in a new venture. I'm not sure I understand why investment is limited to areas of low technology. The ceiling of £60,000 sounds more like a 'lame duck' hand-out.

7. Recommendations

That a path be created along which an inventor may travel, if he so chooses, that will assess his idea and offer help and advice through all the phases of development to the point where the project becomes not only marketable but also profitable.

This really means having control under one roof and I suggest minor restructuring of the Corporation and its charter is the obvious and most economic solution.

A modest increase in staff would probably be necessary, some could come from the Small Business Unit which, I believe, would then be superfluous. Brief job specifications are:-

a. Financial Procurement Executive
Liaison with all sources of Venture Finance such as the clearing and secondary banks, MRC and SRC, TDC (ICFC) etc. and to act as an advisor to private individuals who wish to invest in new enterprises.

b. Premises Executive
Liaison with local authorities and other associated private concerns as to the availability and suitability of premises.
This advice should include the labour situation, skills available and domestic accommodation.
Assistance to local authorities in setting up 'Science Parks.'

c. Company Administration Executive

Advice on setting up and running a company and supervision to the point where the company is trading satisfactorily.

d. Corporate Planning Executive

Liaison with Advertising and Marketing Agencies. Advice on marketing, advertising, packaging and promotional activities in general.

e. University Liaison Executive

To promote the role of NRDC to the academic and to assist in the presentation of ideas but not to be involved in their assessment.

To form a 'clearing bank' of ideas from NRDC and perhaps enlisted industrial sources that could form realistic and useful research for PhD students and other academical technical situations.

f. Government Liaison Executive

To promote NRDC projects within such organisations as NEB, Nationalised Industries, MOD, AMTE, RAE etc. He may well discover requirements within these organisations of products and processes needed for their development and efficiency.

8- Conclusion

There are ample sources of advice and help available to the determined private inventor.
Much time and effort is wasted in learning about them and finding them and perhaps not succeeding due to inadequate knowledge of the facts and mode of presentation required.

Further decision points will inject additional confusion.

The effort must be concentrated and not scattered.

A restructured NRDC offers a very quick, practical and economic solution.

ADVISORY COUNCIL FOR APPLIED RESEARCH
AND DEVELOPMENT

EXPLOITING INVENTION

Note by the Advisory Council for Applied
Research and Development

FOREWORD

Mr Pattison's letter of 1 September to Dr Spinks invited ACARD to consider the problems faced by private inventors seeking the commercial exploitation of their ideas. A small working party has examined this subject. Their report follows; it has been endorsed by the full Council.

The members of the working party were -

Dr A Spinks	Chairman, ACARD
Mr G Taylor	Managing Director, TDC Development Ltd
Dr J C Duckworth	Chairman, IDJ Investment Services Ltd (Managing Director of NRDC 1959-1970)

They were assisted by Dr J M Ashworth, Chief Scientist, CPRS, and the ACARD Secretariat in the Cabinet Office.

16 December 1980

EXPLOITING INVENTION

INTRODUCTION

1. A healthy economy requires new products, new processes and new companies to provide competition, promote efficiency in manufacture and marketing and replace declining industries. It is therefore essential that all inventions which can be commercially exploited should find support. Some individuals' ideas (eg the jet engine or the basic concept of the Black and Decker "Workmate") have proved of great commercial worth; these must not be missed. This requires that the initial appraisal of the invention and its subsequent financing and management should give the new idea the maximum opportunity of success.

2. Most ideas, however, originate within existing firms. (This was acknowledged in Mr Pattison's letter.) Many relate to small improvements in manufacturing processes or product design but some are more fundamental, leading to new lines of business. Employees sometimes wish to exploit such ideas on their own account, particularly if the idea is in a different business area from that of their employing firm or if its potential sales are not large enough to interest a major company. We did not, therefore, restrict our enquiry solely to the problems of individual inventors. We looked also at the very similar difficulties that new and small firms face in exploiting ideas. Many of our conclusions relate to such firms.

THE COMMERCIAL ENVIRONMENT

3. We have considered the needs of individuals or small firms wishing to turn ideas into marketable products. Before discussing these in detail, however, we wish to comment on some general factors that influence the exploitation of new ideas in the United Kingdom.

4. We recognise that a principal aim of the Government's economic policies is to encourage profitable investment and the taking of risks. We welcome the measures introduced in recent Budgets to stimulate the formation and growth of small firms. Some of these have reflected recommendations made by ACARD in "Industrial Innovation". However, the creation of an environment that favours

entrepreneurial activity requires, we think, more radical changes, particularly in the attitude to business found in parts of United Kingdom society (notably in higher education) and in the worth of intellectual property compared with physical property.

5. The impression of venture capitalists with experience both in the United Kingdom and the USA is that, while there are many people with worthwhile ideas for businesses in the United Kingdom, a much lower proportion, compared with the USA, wish to exploit their idea themselves. Most wish to license the invention and take a royalty. This is perhaps the consequence of inadequate contact between the technical and financial/management sides of United Kingdom institutions, whether universities or firms, and between universities and firms. Staff members in American universities are often involved in commercial ventures; advice and contacts are readily available to anyone wishing to establish a new business. In many British companies, management practices tend not to expose young technical staff to financial and management decisions, in contrast to American practice. Thus by comparison with the United States there is in the United Kingdom a lack of scientists and engineers with genuine entrepreneurial skills, able to understand new technology, to see the possibilities for new products and to arrange for their development, manufacture and marketing. The key need is therefore not for inventors, but for exploitators. In the USA such people provide the driving force not only in small firms, but also in much of the venture capital business (having made their initial money in their own firms).

6. The biggest factor in encouraging a similar attitude here is, of course, the success of those that have founded new firms and prospered. The Government's general policies towards small firms are therefore highly relevant. But Government has some direct influence with universities. We warmly welcome the establishment by some universities of Science Parks (perhaps they should more appropriately be termed 'Business Parks') and the creation of university companies to exploit new ideas. We note the development of a number of small, new technology based firms around Cambridge and Heriot Watt universities. It is important that these initiatives should be encouraged. But the practices, if not the statutes, of some universities are unnecessarily restrictive in specifying the duties of university staff.

We recommend that the UGC should examine the conditions that affect the exploitation of ideas, and the establishment of businesses, by university staff and seek appropriate changes.

We further recommend that, in the current review of engineering education following the Finniston report, attention be given to the introduction of appropriate elements of business administration in engineering courses.

7. University business schools also have a part to play. They should be actively seeking to apply their expertise in the promotion of ideas generated in other Departments. This would again assist the creation of the entrepreneurial outlook that has proved so beneficial in the USA. We recommend that the Department of Education and Science should examine the links between business schools and university science and engineering departments.

8. We turn to the second general change that we referred to above, in the relative value of intellectual property. We are moving - if we have not already moved - to an age in which intellectual property (designs, software, information generally) is at least as important to the business life of this country as physical property (buildings and machinery); yet the concept of "law and order" does not reflect this change. For example, the cost of defending intellectual property normally falls entirely on its owner. Infringing a patent, unlike arson, is not a criminal offence which brings down a police prosecution. Moreover, legal aid is not available to small firms in the United Kingdom (unlike West Germany) to fight such cases. It can be argued that the "theft" of intellectual property is a normal commercial risk - but the current situation inhibits the potential entrepreneur by introducing an extra element of uncertainty into a venture - and this element could, with advantage, be reduced. We recommend that Government should consider the contrast between the State's role in protecting physical property and its role in protecting intellectual property.

THE EXPLOITATION PROCESS

9. The inventor or small firm seeking to exploit an idea has in general to seek financial support from another person or organisation. The project has therefore to go through an appraisal process. If successful, it will receive finance which may enable protection to be obtained and premises and equipment to be acquired. We discuss each of these factors in turn.

Appraisal

10. A key feature of the appraisal system is that there should be as many independent decision points as possible. Each idea should be able to be considered by several sources of finance, each of which will bring a different perspective to the appraisal process. A basic problem for any inventor seeking support is that the costs of appraisal are not related to the size of investment required; it can cost as much to examine the viability of a small project as a large one. We therefore welcome the recent move by the Department of Industry to make the information from some of their examinations available to others. We also commend the recent NRDC decision to fund an advisory panel of the Institute of Patentees and Inventors to whom NRDC can pass some ideas for a second opinion.

11. A new journal "Venture Capital Report" (VCR) has enabled the number of decision points to be increased, although its impact nationally is so far small. Since late 1978, VCR has each month presented 8-10 commercial propositions to its subscribers, which now number 450 or so. Some 20 per cent of the proposals have received offers of finance from VCR readers and, while only a small minority have involved technical inventions, these have not been less successful than other projects in finding funds. This success rate has to be set against the fact that VCR only publish about 10 per cent of the projects submitted to them, but on the other hand VCR has in general been the last resort for those seeking finance, ie they have been rejected elsewhere, perhaps several times. It suggests that the VCR formula of a well presented article about each project coupled with a clear business proposition at the end of each article is a significant factor in stimulating finance. We are aware of comparable features in other publications; they form a most desirable development.

12. In this connection, we question whether NRDC does sufficient to educate inventors either in the realistic appraisal of the commercial worth of their own projects or in their presentation in a convincing fashion. NRDC are placing increased emphasis on the overall commercial worth of a project rather than the patentability of its basic concept as a criterion for support. This is welcome, since the commercial value of a patent in the exploitation of some inventions, particularly those involving microelectronics, is small. However, the form (Annex A) currently sent by NRDC to those who write in with proposals, while commendably brief, in its questions emphasises the protection that has or might be given to the invention and not its marketability. A provisional patent gives the inventor a base from which to enter into full discussion of the invention and so any potential inventor has to enquire about it. Further, we accept that NRDC do not wish to discourage inventors at an early stage and that all aspects of a proposition are explored in subsequent discussions. However, we consider that NRDC should do more to encourage inventors to think through the commercial implications of their ideas. This would improve the cases presented to NRDC (and no doubt to others also). We recommend that NRDC should do more to educate inventors in the realistic appraisal of their projects and should in particular consider amending their initial document for inventors.

13. The apparent success of VCR suggests that more ways of bringing ideas to the notice of financiers and industrialists are required; local and national exhibitions may have a role; perhaps the Department of Industry in its headquarters and regional offices should have permanent exhibitions where ideas seeking finance might be shown, with suitable explanatory literature available. We find it significant that nearly half of VCR's subscribers are unquoted companies, presumably seeking opportunities to expand their business activities. The key people in such companies may well not be approached by inventors or NRDC because their interest will not be known, but they could very well be visiting Department of Industry offices. We recommend that the Department of Industry should examine these ideas.

14. We must record, though, that the experience of members of the working party, and of ACARD members generally, is that the vast majority of inventions originating from private individuals are of no commercial value. Private inventors typically have little appreciation of previous inventions in a particular field, of the need for novelty in concept or "know-how" (necessary

in order to increase competitiveness), of development, manufacturing and marketing costs or of potential market size. A manufactured product capable of supporting only one man, providing a 10 per cent profit margin for his personal income, must have annual sales in excess of £50,000. Inventors also over-value the contribution of a technical idea to a successful business, often valuing it at 80 per cent of the total worth of the business in contrast to its real 10-20 per cent. The experience of large companies, of the NRDC and of equivalent organisations overseas - even in Scandinavia and the USA where conditions particularly favour the exploitation of new ideas - is that only between 1 and 2 per cent of ideas submitted by private inventors are worth supporting. Clearly there is ample scope for dissatisfaction to be felt by inventors in respect of remaining 98-99 per cent and a climate of opinion forms in which it appears that many ideas have been unreasonably rejected. By contrast, the proportion of inventions from universities worth supporting is substantially higher. Ready access to information, as well as technical expertise, contributes to this.

15. NRDC has a monopoly right to inventions originating in certain Government research establishments or financed from the Science Vote. This conflicts with our view that there should be many decision points where a new idea can be appraised. We recognise that NRDC has an important public role in supporting innovation. The Corporation might perhaps argue that preferential access to good quality ideas is necessary if it is to provide support for other less profitable ventures. However, we believe that the monopoly is wrong in principle and would prefer the public role of NRDC to be recognised in their funding arrangements. NRDC has paid back all the loans that it received from Government in its early years. In the next few years, it is likely once again to require loan finance because of the expiry of some major patents and its more entrepreneurial approach to business finance (eg the recent creation of the Small Companies Investment Fund). The Corporation has in theory access to up to £50 million from the Exchequer but is uncertain whether it will be allowed to use this. We believe that it should have these funds in order for it to plan ahead with confidence. But in return it should give up its monopoly right to certain classes of invention. We recommend (i) that the NRDC should be assured access to Exchequer funds up to its present £50 million borrowing limit (ii) that its monopoly right to inventions originating in certain Government research establishments or financed from the Science Vote should cease.

16. NRDC is reasonably well known as a source of finance and advice for inventors and small firms in new technology areas. But it only covers part of the possible market for such advice and finance, being restricted by its statutes to ventures in which there is some element of novelty. Many other institutions offer related services to firms, if not to inventors: the Research Requirements Boards of the Department of Industry, that Department's Product and Process Development Scheme (PPDS), the National Enterprise Board, clearing banks, TDC and other venture capital houses, regional development agencies and in some cases local authorities. This is desirable but the picture can be very confusing to those outside Government. The ACARD working group on innovation have been considering whether a new focus for this activity is required. They see a need for a service promoted by the Department of Industry through its regional offices and small firms centres which would have a specific remit to guide inventors and small firms through the various agencies of public and private finance and advice. The various publicly financed activities (Requirements Boards, PPDS, NRDC etc) would continue to function independently in order that the number of decision points should not be reduced. However, instead of NRDC, PPDS etc all advertising separately, the new service would be promoted, with the aim of providing small businesses and inventors with one clear entry point into the machinery for supporting new developments. We recommend that the Department of Industry should study this concept.

17. Local initiatives to assist small firms often involving local authorities, are increasing in number and are to be commended. But they complicate the problem of referral. NRDC, for example, have incomplete knowledge of local initiatives and may not be well placed in cases where they cannot themselves help to refer firms and individuals to bodies within their local areas. Speed of referral can be crucial, for example an inventor has only a year in which to do the work needed to confirm a provisional patent. A comprehensive directory of such initiatives would be of value; this would be a key document for the new DoI service. Whether or not this service is created, we recommend that Government should sponsor the publication of a comprehensive guide to sources of advice and finance for inventors and small firms.

Protection

18. The value of patents to the inventor is highly variable. Some inventions can only be exploited through licensing agreements, for which patent protection is essential; others cannot be patented. Market size is also an important

factor. The United Kingdom is a relatively small market and patent protection may therefore be more critical here than in the USA where quick returns may be obtained by exploiting a larger market and where indeed the issuing of patents may be so slow that earlier exploitation is inevitable. We are not convinced that either the British or international patent system is as useful as it might be to promoting modern technology, but without further detailed investigation would not wish to comment further. ACARD will consider whether it should make this study.

19. In the past, NRDC has sometimes rejected ideas on grounds of their having no commercial worth, yet has informed the inventor that rejection was because of the non-patentability of the idea, the latter reason being easier to demonstrate than the former. This practice has, we understand, now ceased (fortunately, for it created a poor image for NRDC) but it reveals one aspect of NRDC activity that might with advantage be changed. Some inventions could be exploited but are not worth the time of NRDC executives since the potential return to NRDC is insufficient for the staff effort involved. We recommend that NRDC consider giving financial support to the inventor to meet, at least in part, patenting and licensing costs, but without providing any staff support for these activities. The inventor's time carries no cost, through such modest assistance it could be channelled towards the exploitation of his idea. NRDC might reasonably expect a share of any eventual income.

Finance

20. In recent years, both demand for entrepreneurial risk capital and its supply diminished so that the active venture capital market in the USA has no counterpart here. A growth in both demand and supply sides is needed before an active and experienced market can develop. We are pleased to note, however, that despite the problems caused by high interest rates, there is now a marked change in the attitude of financial institutions to the provision of risk finance. There is increasing interest and genuine competition between institutions in this field, although some still avoid "start-up" situations, thus inhibiting the creation of new enterprises. We hope that newcomers will realise that, in the experience of American venture capitalists, often 6-7 years will pass before a return can be obtained from such investment and total payback may take many more. This is much longer than normal investment practice in the United Kingdom (see "Industrial Innovation" page 33, paragraph 18).

21. We welcome also creation of the Unlisted Securities Market by the Stock Exchange and trust that it will rapidly become a signicicant part of the country's financial structure. It will, when fully established, enable investors more easily to realise capital gains in small companies and so encourage the provision of funds for expansion. We are, however, concerned that the Stock Exchange might still be requiring too much information from firms wishing to make use of this new facility (the estimated cost of obtaining a listing is £100,000); if risk-taking is to be encouraged, one cannot at the same time devote too much attention to cushioning investors from losses.

22. NRDC has a number of schemes for giving financial support to inventors and small firms. We particularly commend its new Small Companies Investment Fund. However, we consider it unfortunate that none of its schemes are geared specifically to the private inventor. Further, the NRDC official responsible for dealing with proposals from inventors has no financial authority; he has to make a case for funding from another part of the Corporation. We consider that this can inhibit the responsiveness of NRDC to private inventors. We recommend that NRDC reserve funds specifically for the support of inventors and place these under the control of the official responsible for dealing with private inventors.

23. The new role of the NEB, which gives emphasis to its support for high technology makes it potentially very useful as a further source of financial backing for inventions. It has the ability to bring together different interests to exploit new ideas (as exemplified in the formation of Celltech, the biotechnology company recommended by ACARD in 'Biotechnology').

24. We stressed earlier the need to stimulate the entrepreneurial outlook amongst those with ideas capable of commercial exploitation. The present rules governing Capital Gains Tax and Capital Transfer Tax work against this. We note that special taxation arrangements apply to agriculture. We see no reason why this industry, although valuable, should receive favoured treatment and recommend that the capital taxation rules applying to founders of companies should be as generous as those applying to agriculture.

25. Government has for many years provided personal tax incentives for investment in private homes and life insurance policies, much of the latter money being invested in property. The relative prosperity of the property

market, and the high average standard of British housing are consequences of this policy. No similar fiscal encouragement for individual investment in firms has been available. In the annex to "Industrial Innovation" (page 37), ACARD reproduced Mr William Kingston's submission to the Wilson committee on the differences between individual and corporate investment decision-making processes. We believe his analysis to be valid and therefore draw attention to the distinctive role of individuals in providing the relatively small amounts of money that are needed in the initial exploitation of an invention. Many American ventures have been founded on the savings of members of highly paid professions - lawyers, physicians etc. We do not have the same relative level of professional incomes but some incentive to investment would be useful. It would help to offset the present high (by comparison with the USA) taxation of investment income. We recommend that Government should consider the introduction of a personal tax relief in respect of investment in small firms.

26. We make three further proposals to stimulate investment in new and small companies. Noting that about a half of the subscribers to VCR are unquoted companies, we recommend that small companies should, like individuals, be able to offset capital losses against income. And we would restate two recommendations made in "Industrial Innovation" (page 8):

i. that tax arrangements which made it attractive to large companies to assist or spawn small businesses might be developed; (and in this connection note that a recent report by the Business Graduates Association concludes that United Kingdom tax laws actively discourage this).

ii. that the idea of a multiple public sector loan facility, based on the amount of private sector investment in small businesses, should be considered.

27. Some points in the above discussion are illustrated by the experience of one member of the Working Party with a small, high-technology company, Lintott Engineering. This company makes, amongst other products, the ion implantation machines increasingly used to create microelectronic circuits in silicon wafers. It has a world wide reputation for such machines. However, following financial problems in the wake of the engineering strike in 1979, its owners were recently forced to sell the company to American interests owing to the absence of timely financial support in the United Kingdom. They made a substantial profit on their investment, because the property value of the

company had risen 3.3 times in three years - but the net result was the loss to the United Kingdom of control of a high technology company in a rapidly expanding market.

Premises and equipment

28. Organisations involved in creating new employment in areas of high unemployment lay great stress on the principle of "easy in, easy out". In other words, many individuals do not want to risk all on a venture that might fail, but are prepared to try if their loss can be limited. Furthermore, if the experience of BSC (Industry) Ltd and Job Creation Ltd is general, there is a surprisingly high probability of success. For the possible loss to be minimised, the entrepreneur needs accommodation on a monthly or weekly rent and equipment leased for similar periods (but not necessarily at concessionary rates). The high deposits often required for property developers (and also by gas and electricity boards and the Post Office) are an inhibition to new businesses. There seems to us a case for devoting some of the funds available for regional development aids or for promoting development in Enterprise Zones to providing buildings and equipment on these terms. We understand the developers or local authorities can already receive development assistance for investing in buildings; we recommend that finance companies might also receive it for providing equipment for lease.

29. Before considering commercial exploitation, however, the inventor may well need to turn an idea into a prototype. He may require workshop facilities. We consider that more effort could be made to involve local colleges and further education establishments in this. Their technical expertise and facilities may be the best local source of assistance open to the inventor. Indeed, they could help small firms and individuals more comprehensively, for example, by their business studies departments providing practical assistance in the preparation and presentation of financial proposals. We welcome current developments along these lines in which Chambers of Commerce are seeking closer links with local authorities and educational establishments. We recommend that Government should actively encourage such links.

Publicity

30. We stress again the need to stimulate the entrepreneurial approach. We think that more could be done by the media to promote the opportunities for small business and offer relevant advice. Inventions get much publicity, the

hard graft of creating a business does not. "Tomorrow's World", "Horizon" and similar programmes are successful in stimulating interest in developments in technology but deal very little with practical problems of turning these into profit. We would like to see the BBC and ITV emphasise this aspect more in such programmes and consider preparing a dramatised series on small business in which advice could be given in an unobtrusive way (rather as farming advice used to be given in every episode of "The Archers"). The NRDC files would no doubt provide much basic material for such a series. Another possibility would be a radio programme for small businesses, analagous to the current series for farmers.

Concluding Remarks

31. Many before us have considered the arrangements that exist to take up ideas and turn them into profitable products. There is consequently little original that can be said. The role of Government in promoting a social environment in which entrepreneurship may flourish, is critical. But changing social attitudes is a long term process. Specific measures, for example on taxation, that encourage wealth creation are useful steps, but only first steps, in the right direction. Institutional changes, such as those suggested in universities and the NRDC, can help. The current ACARD study of innovation will expand upon some of the lines of thought in this brief note, and ACARD will consider whether any new study of a particular area of technology could usefully examine the role of the non-industrial inventor.

16 December 1980

Annex A

NRDC Application form for private inventors

Name and address

Title of the invention

Who is the beneficial owner of the rights in the invention? It should be noted that under certain circumstances employers are entitled to rights in inventions made by their employees.

Number and date of the UK parent or parent application covering the invention. If patent protection has been sought, a copy of the parent specification must be attached to this form.

Names of overseas countries where corresponding parent applications have been filed.

Give the names of any companies, organisations or public bodies which have been approached in connection with the invention and give an indication of the response in each case.

What models or prototypes have been constructed?

What further steps do you propose should be taken for the development and exploitation of the invention?

Please state what type of help or support you are seeking from NRDC.

I wish NRDC to consider the invention referred to above and I accept the conditions printed overleaf. If the invention is one in respect of which no parent application has been filed, I hereby release NRDC from liability for any loss or damage resulting from my unprotected disclosure.

Signature

Date

Science & Technology

ADVISORY COUNCIL FOR APPLIED RESEARCH AND DEVELOPMENT

70 Whitehall, London SW1A 2AS Telephone 01-233 6139

28 November 1980

Dear Mr Pattison

STUDY OF INVENTORS

Dr Spinks, Chairman of ACARD, has asked me to let you know that the Council will be responding in mid-December to the request in your letter of 1 September for a study of the problems of individual inventors. A draft note will be considered by ACARD at its meeting on 12 December.

Yours sincerely

R G COURTNEY

M A Pattison Esq
Private Secretary
10 Downing Street
London SW1

Original filed on GOV MACH PT 2 ACARD

Prime Minister Oct 1980
Three notes from John Ashworth, following his talk with you. (You saw one of them for the small business meeting)

THE PRIME MINISTER'S INITIATIVES

1. I undertook to ensure that the note on the problems of private investors and availability of venture capital commissioned from ACARD would constitute a background brief for the Prime Minister when she met British bankers. This work is now underway and should be completed by early December.

2. I have been giving some thought to the idea of the Prime Minister hosting a function designed to bring entrepreneurs and financiers together. I think it a good idea and, subject to any thoughts you might have, would suggest some time in January. The Prime Minister's programme (as far as I am concerned) might therefore look:

early December	-	receipt of ACARD note
early January	-	meeting with entrepreneurs/bankers
25 February	-	Speech to Parliamentary Select Committee.

I think it important to have at the January function a number of those, like Mr Naylor of Job Creation Limited and Mr L Cary of Venture Capital Reports, who have themselves successfully created small businesses designed to make a profitable commercial venture out of bringing entrepreneurs and financiers together in novel ways. Indeed I think the more of these the better - especially as I imagine the Prime Minister would not normally expect to see such people in other fora.

3. I hope to let you have a complete list of possible Wolfson Foundation supported units next week. The latest, slightly bizarre, success has been the development by a group at Strathclyde University of a novel fermentation method for the production of soy sauce. The product is currently undergoing trial market testing and will go into volume production if this is satisfactory. The new process is so much cheaper than that currently employed that those concerned are confident that they will not only be able to satisfy growing UK demand but have high hopes of exporting to Japan!

4. I have made discrete enquiries about the chances of Dr Cesar Milstein (inventor of the mono-clonal antibody technique) being awarded a Nobel

Prize. He has been nominated, is felt to have a good chance and we will know tomorrow when I believe the announcements will be made in Stockholm. However, any action by the UK government to press Dr Milstein's case is likely to be counter-productive. As you know, Milstein did not get it NP

5. I have made further enquiries into the use made by foreign companies of UK university laboratories. The Prime Minister said she wanted to take this up with both Sir Keith Joseph and Sir Raymond Pennock. On reflection my advice would be to let the issue drop for the following reasons:

(a) Many UK companies are currently suffering from severe cash flow problems and are having to retrench wherever they can - this retrenchment frequently includes the more long term and speculative work they might commission from the Universities.

(b) The reputation of UK Universities as centres of excellent research is deservedly very high and present Government policy is encouraging them to capitalise on this reputation wherever and however possible.

(c) A combination of (a) and (b) above has meant that a number of Universities have found it easier to interest foreign, rather than UK, companies in their contract research and development facilities.

On balance this will mean that foreign money will maintain, in UK Universities, facilities which would otherwise be likely to disappear or which would have to be supported by public funds. These facilities will be available to UK firms when they are again in a position to make use of them. The situation may be irritating but it is understandable and I do not see how the Government could affect things without prejudicing other, more important, policy objectives.

EXISTING AVAILABILITY OF VENTURE CAPITAL

The investment climate for new small companies has changed quite markedly since I first started canvassing opinion on this topic in 1978 (in connection with the work published as the ACARD report on Industrial Innovation). In part this seems to have been due to the establishment of "small firms" or "new venture" divisions of banks (clearing as well as merchant) and no doubt in part also due to the tax changes announced in the last budget and the other initiatives taken by the Government. As an indication of this change Mr P Naylor of Job Creation Limited (itself an innovative new company) tells me that he has no trouble finding capital for his (often rather risky) projects in depressed areas and Mr L Cary of Venture Capital Reports Limited (another innovative new company) has been able to maintain a creditable 30% success rate in finding financial backing for entrepreneurs - and it seems likely that entrepreneurs only go to the likes of Venture Capital Reports Limited as a last resort!

2. However, although the investment climate might be changing it is still too early to tell whether actual performance, in terms of the successful establishment of sound businesses, has really changed. In the crucial area of new technology based firms (NTBFs), for example, it is too early to tell whether the new-found enterprise of the NRDC will be commercially profitable.

3. It seems, therefore, that the Prime Minister will be more likely to be able to point to some promising signs and hopeful beginnings in this area by February 1981 rather than solid achievements. It is likely that the Advisory Council for Applied Research and Development (ACARD) in its reply to the Prime Minister's request for advice on the problems of the private inventor will reiterate the opinion they expressed in their 1978 report on Industrial Innovation, viz that the most effective help that can be given would be to establish some form of loan guarantee scheme in conjunction with tax relief for equity investment in NTBFs by private individuals and modest alterations in the way losses can be written off for tax purposes.

4. There are signs, however, that real problems are developing at what is coming to be called the "post-development gap". This is a term for the shift in emphasis (managerial as well as financial) when an innovative product or process ceases to be an exciting piece of high-technology and becomes a mundane, but potentially very profitable, article of general commerce. The finance needed to bridge the "post-development gap" is often far greater than that needed to bridge the "pre-development gap" between research and development. It is usually far beyond the resources of the likes of the NRDC or small companies and, as the attached article from the Financial Times of 25 September points out, has presented UK companies with awkward problems in the past.

5. I hope that in briefing the Prime Minister the clear distinction is made between venture capital needed to start new firms, or new businesses within existing firms (the "pre-development gap") and that venture capital needed to maintain an adequate market share in a growing market which is consequently attracting foreign competition ("post-development gap").

F.T. 25/1x80

LOMBARD

Exploiting our skills

BY DAVID FISHLOCK

EVERYONE knows that Britain once led the world in radio-astronomy because of its pioneering radio-telescope at Jodrell Bank. But that was back in the Fifties. Fewer know that as a direct result British industry led the world in the Sixties with its earth stations modelled on Jodrell Bank which picked up the whisperings of the first satellites.

Like so many other markets for novel products of high-technology the one for large earth stations has long been lost to the Americans and the Japanese. It wasn't a case of Britain failing to develop a scientific invention, but of Britain failing to mount a coherent industrial policy capable of sustaining from profits the unending input of cash and skills advanced technology demands.

Indispensable

On a grander scale Rolls-Royce made precisely the same mistake in the Sixties. It gravely under-estimated the financial and other resources needed to translate a brilliant new three-shaft concept of aero-engine design into the RB-211. A decade later it can point to 700 engines in service—including some in the North Sea—and orders for another 500, with new developments in the pipeline which suggest a production of at least 250 RB-211 engines a year in the early 1980s. Top of its attractions for airlines, Rolls-Royce engineers say, is that they expect to maintain a 4.5 per cent advantage in fuel consumption over all rivals throughout the decade. This fuel economy is a direct result of harnessing high technology; of more advanced materials operated at higher temperatures.

But had Rolls-Royce been a more typical British industrial situation, it would have vanished in 1971. Only the fact that it was an indispensable source of engines for military aircraft, warships and submarines obliged the government to keep it alive as a state-owned organisation.

With publication today of the eighth report from ACARD, the Advisory Council for Applied Research and Development—the body which has replaced the office of the [illegible] chief scientific

ingly clear that the development gap from which Britain is so often said to be suffering is in a significantly different place from the one normally perceived.

The truly serious gap is not that due to the reluctance of British scientists, engineers, inventors to launch into manufacture with their ideas. The real gap is far more wasteful of resources. It is the hiatus left when companies launch themselves enthusiastically upon the neck of some new technology, only to come a cropper because they failed to realise how much it would cost. It is a post-development gap.

EMI is a classic example of a company which, armed not only with a brilliant invention but with an unusually realistic estimate of what it might cost to launch the new product, still under-estimated the eventual scale of effort required to compete with U.S. industry.

The latest ACARD study surveys "information technology," a vast tract of fast-advancing technology embracing telephones and telecommunications, video systems and word processors—and of course the ubiquitous computer which now lurks behind each one. It finds a marvellously innovative picture in Britain, with such projects as Prestel and System X, and a strong presence in "software," the craft of computer programming which determines whether and how the new technology works.

But ACARD also finds ample evidence of post-development gaps yawning wide in the 80s. It finds too many British companies competing in every promising sector; too many "sponsoring" ministries and departments, each with its own idiosyncratic requirements, each encouraging someone to tailor the innovation precisely to its want.

ACARD's urgent message is that if the Thatcher Government expects industry to win and hold a significant slice of the looming £10bn-a-year world market for information technology, a single department of government must orchestrate the national effort. This proposal means that the BBC, police, armed forces, Post Office, hospitals, schools—even the taxmen—must all defer to the technological choices of the Department

Actually £50bn was the figure quoted at the Rees conference.

The ACARD report does NOT say this — what it does say is that public purchasing should intelligently (a vital point!)

MNP has seen 8/9.

Woodcote
Torkington Road
Wilmslow
Cheshire SK9 2AE

5th September 1980

R8/9

MF

Science + Technology

The Private Secretary
10 Downing Street
London

(Advisory Council for Applied Research and Development)

Dear Mr Patterson.

Thank you for your letter of 1st September.. I am delighted, as all my ACARD colleagues will be, that the Prime Minister should refer the difficulties of private inventors to us: they lie within our remit, and we are keen to be helpful to Government.

Our current study of innovation by a working party under the chairmanship of Dr Rotherham is mainly institutional in emphasis, and an earlier study by a working party under my chairmanship was particularly concerned with innovation as a costly, slow, high-risk investment, and with product and process design. All these factors, and the multi-disciplinary character of most successful innovation, obviously affect the individual inventor, but there are others and I will organize a special study of them. I agree that a quick study would be best: apart from other considerations we should not wish to publish a detailed innovation mark III soon after marks I and II.

I have an informal meeting next week with CPRS to discuss the work of ACARD, and an ACARD steering committee on 24th September. It should be possible to define a study at those meetings.

Yours sincerely,

Alfred Spinks

A Spinks

week-end box.

CONFIDENTIAL

Prime Minister
A note from John Ashworth on the problems you found in Cambridge. We will get him in for a talk as soon as there is an opportunity.

W 02050

MR N SANDERS
10 Downing Street

Yes - Jan 1992
NRDC

INNOVATION IN THE UK

1. You told me that during her trip to Cambridge the Prime Minister had encountered two cases of British inventions not receiving the appropriate commercial backing - one involving image intensifying technology at the Mullard radio-astronomy laboratory the other mono-clonal antibody technology applied to interferon production at the Hills Road laboratory of the MRC. You asked if I could let you have a note on the issues raised.

2. Let me start with the one I know most about - mono-clonal antibody technology. First there is no doubt that either Dr Cesar Milstein, the MRC or the NRDC (or some combination thereof) failed lamentably when they omitted to file a patent to protect Milstein's discovery of a method of producing mono-clonal antibodies. The attached photocopy of a news item from the journal Science tells its own sorry story. The NRDC were actually informed, albeit rather late in the day, of this work but they judged that there was little chance of them making a commercially interesting "package" of the discovery and thus they wrote to the MRC saying that they had no objection to Milstein publishing his paper.

Take up with NRDC

3. The NRDC was initially set up in part as a response to the realisation that American companies were deriving the commercial benefits from the discovery, in the UK, of penicillin. It is thus doubly galling to see the same mistake apparently being made by the MRC forty years on. What lessons should be drawn?

4. I think that the three parties to this debacle - the NRDC, the MRC and the individual research worker - must be treated separately.

The NRDC

5. Relations between the biomedical research community (including the MRC) and the NRDC are currently very bad. The Joint Royal Society/ABRC/ACARD working party on Biotechnology, of which I was a member, received considerable

evidence of this as the relevant paragraphs in the attached report (3.8, 3.9, 3.10) indicate. I was struck by the extreme defensiveness of the NRDC. The recommendations that the working party eventually arrived at (R11 p.11) will no doubt help but they do not strike at what I sensed to be the fundamental problems:-

(a) the NRDC has monopoly rights over the results of the Research Councils

and (b) the NRDC has largely restricted itself to acting as honest broker between inventor and commercial company and specialised in providing patent and legal advice. It has not provided a 'technology transfer' service along the lines, say, of Battelle or Stanford Research International (SRI) in the USA.

6. In strictly financial terms the NRDC is very successful but the NRDC's critics say that this is a consequence of their cautious and risk averse policies - policies which they can only get away with as a result of being a monopoly.

7. As a result of this analysis I strongly supported the suggestion that there be established, in the UK, an entrepreneurial company along the lines of those established in Europe and the United States (see paragraphs 3.18, 4.14 in "Biotechnology") which make a commercial business out of technology transfer. This company could only succeed, in my judgement, if it established a privileged relationship with the MRC - a relationship which would de facto break the NRDC's monopoly. Negotiations between the Department of Industry (sponsors for the NRDC), the NEB and the MRC are still going on but the formation of such a company - CellTech, in which the NEB has a 60% interest - has been announced.

The MRC

8. Six years ago the contracts of MRC employees prevented them accepting consultancy fees from commercial companies. Since then there has been a growing realisation amongst the members of the Council that commercial, as well as medical, objectives must become acceptable aims of MRC policies. This change in attitude was greatly helped by the acceptance of the so called 'Rothschild' principle of a customer-contractor relationship by the Government

in 1972/3 and has been exemplified recently by the role the MRC has played in the establishment of CellTech. There has been considerable debate, of course, about how far this process can legitimately go. Some of the debate is reflected in paras. 3.1, 3.2 and 3.3. of 'Biotechnology' and, in view of the sensitive nature of the issues involved, I do not think the Government can usefully do more than ensure that the debate does not, as it did when Sir Harold Himsworth was secretary of the MRC, die away.

The Individual Research Worker

9. Research workers, both in Universities and in the Research Council establishments, are now much more conscious than they were a decade ago of the need for them to take a personal interest in the commercial fate of their discoveries. It is now generally accepted that technology transfer has to be an active process. One particularly interesting private initiative was taken by the Wolfson Foundation in the early 1970's and has led to the establishment of Wolfson Industrial Units in many Universities. The financial benefit of such units to the Universities can be considerable (I know that the units at the University of Southampton earned an income of over £1 million last year, for example) but even more impressive has been the effect on the attitudes of the staff of the University of seeing some of their colleagues engage in this kind of activity - and earn significant consultancy fees in consequence.

10. The Wolfson scheme will probably be extended by the Foundation this year so that something like a National Network of units might evolve. I think that this is a really imaginative example of how private initiative and money can be deployed in a catalytic, pump-priming way and I hope that the Prime Minister would consider visiting one such unit when she has the opportunity. Most provincial Universities now have such units although I believe the University of Southampton (with seven) still has the largest single concentration.

11. One motive behind the recommendation in 'Biotechnology' for an NRDC-led study of the incentives offered academic inventors (R11 p.11) was, of course, to publicise the benefits that can accrue to both Universities and their employees from entrepreneurial activities. Such publicity helps, as would greater financial rewards to academic entrepreneurs or, as recommended by

the CPRS in their report 'Education, Training and Industrial Performance' paras. 78 and 79, as would discrimination against those who do not become entrepreneurial. However, there appears to be a marked reluctance to implement such suggestions or even those, less radical, which the Finniston Committee proposed and which were designed to make engineering education less academic and more commercially orientated.

12. This really brings me on to the other case you quoted - the image intensifying technology which is not being developed as a result of the Thorn/EMI situation. Without knowing anything about this in detail it seems to me that here is a case where, if it were Cambridge, Mass. instead of Cambridge, UK, the graduate student(s) and technician(s) who had done the work would have recognised that they were unlikely to have a life-time career in radio-astronomy and would have gone off to a garage somewhere and set up their own little firm designed to sell image intensifiers to radio-astronomy laboratories throughout the world as well as the Hitachi's, GE's and Philips's who make scanners which compete with those of Thorn/EMI. The question to ask thus is why the environment in Cambridge, Mass., encourages such behaviour and that in Cambridge UK inhibits it?

13. The answers that can be given to questions of this kind are controversial and tentative. In its report 'Industrial Innovation' ACARD pointed to some possible answers. The Council is currently taking another look at this topic and I think a letter from the Prime Minister along the lines of the one I put up to Mr Pattison on 27th August in connection with Mr Douglas Fox would stimulate the best response.

14. My own views coincide very much with those expressed in the ACARD report on 'Industrial Innovation' and to which the Government has yet to respond formally. We need to make it easier to found new businesses in the UK and that means we need more decision points for investment in such businesses (paras. 4.9 and 4.10 'Industrial Innovation' suggest a method involving a Government backed loan guarantee scheme whereby this might be done). The Wilson Committee endorsed the specific proposals in 'Industrial Innovation' but these have not yet been implemented - in part due to public expenditure constraints. Of course, if it were easier to trade in tax

loss companies or if we had an 'over-the-counter' market in high technology companies as in the USA then more private (and thus less public) finance would be required to achieve the same end results. However, I imagine that these points will emerge in any response by ACARD to the Prime Minister's letter - and in a more authoritative and more considered way than I can give you now.

15. I attach copies of the ACARD reports quoted.

DR J M ASHWORTH

Cabinet Office
70 Whitehall, SW1

2 September 1980

...university-based investigators are almost to a person either directly or indirectly involved in commercial hybridoma ventures." At the same time Weinert has noticed a growing resentment among researchers toward the commercialization of monoclonal antibodies intended for research use.

As with the gene splicing industry, patent protection remains a major uncertainty. The U.S. Supreme Court ruling, expected before mid-June, as to whether forms of life can be patented, is likely to affect certain patent applications. But two significant patents on the hybridoma technique have already been granted.

Monoclonal antibodies at present are sold for research only, with a warning that diagnostic and therapeutic use is not intended. Approval by the Food and Drug Administration for any therapeutic use is likely to be highly problematic because of the agency's wariness of any product of a cancerous cell.

The hybridoma technique at present produces mouse antibodies. These are not the first choice for therapy because of the body's reaction against foreign proteins. Efforts to develop the human equivalent of the mouse plasmacytoma cell should succeed within the next couple of years. An existing method of making human monoclonal antibodies is the lymphoblastoid technique developed at the Karolinska Institute in Stockholm. A human lymphocyte cell producing the desired antibody is transformed into a continuous cell line by being infected with Epstein-Barr virus. Unlike in the hybridoma technique, where antibodies are raised against the antigen of choice, the lymphoblastoid technique requires screening human donors for the antibody needed.

Could monoclonal antibodies prove to be the much derided magic bullet against cancer? Their high specificity makes it reasonable to suppose they might be targeted against cancer cells, if the right antibodies could be obtained. If unable to kill their target cell, antibodies could perhaps be tagged with a standard cytotoxic chemical which would be ingested along with the antibody by the target cell.

It is far too early to say just how monoclonal antibodies may prove useful in therapy, but reports have already appeared of their being used in such applications as curing mice of leukemia and affording protection against malaria (*Science*, 4 January 1980, pp. 68 and 71). Monoclonal antibody production is less fundamentral a technology than gene splicing but its practical ramifications may prove in many ways just as profound.—NICHOLAS WADE

Inventor of Hybridoma Technology Failed to File for Patent

Two patents that between them seem to cover a major fraction of possible hybridoma applications have recently been awarded to the Wistar Institute of Philadelphia in the name of Hilary Koprowski and other Wistar Institute scientists.

The inventor of the technique was not Koprowski but Cesar Milstein, who with Georges Köhler first described how to make hybridomas in 1975.

Milstein did not apply for a patent on his technique. He gave away his plasmacytoma cells in the usual scientific tradition of free exchange, asking only that recipients should not patent any hybridomas made from the cells and that they should not pass them on to third parties.

"We were too green and inexperienced on the matter of patents," Milstein now says. In the past the British Medical Research Council, for which Milstein works, encouraged its scientists to make methods freely available. "We were influenced by that psychology. We were mainly concerned with the scientific aspects and not giving particular thought to the commercial applications," Milstein reflects. His opportunity for patenting his general method, and the mouse cells he developed for it, now seems to have lapsed.

The Wistar Institute seems in a sense to have jumped into the gap which Milstein and Köhler left. A broad patent for monoclonal antibodies raised against tumor cells was granted on 23 October 1979 to Hilary Koprowski and Carlo Croce. A similarly broad patent covering antibodies to viral antigens was issued on 1 April this year to Koprowski, Croce, and Walter Gerhard.

Milstein feels that a patent might be justified for particular clones, even though he asked for all recipients of his mouse plasmacytoma cells not to patent the hybridomas produced from them, but says that he "would feel extremely bad if the rest of the patent is granted, because essentially they are patenting our procedure."

Recipients of Milstein's plasmacytoma cells were asked to sign a letter agreeing to the nonpatenting condition. Milstein has searched through his files but cannot find such a letter from Koprowski. "I would not like to say he had broken an agreement because I have no proof," notes Milstein. Koprowski was unavailable but a Wistar colleague says that Milstein placed no restrictions on the cells he sent Koprowski: "If we had had such a letter we obviously would have honored it," observes Deputy Director Warren Cheston.

Milstein's purpose in not applying for a patent himself and in asking others not to do so is widely attributed to a desire on his part to keep the technique as available as possible. The truth is more complicated. Milstein doesn't remember exactly why he asked people not to patent hybridomas made from his cells: as the flood of requests came in after his first description of the technique was published, he considered this would be a reasonable condition to make and one that would reserve his position.

The fact that neither he nor the Medical Research Council thought to patent a central invention of biotechnology is perhaps not so surprising: the recombinant DNA technique came within a week of being unpatentable. Its inventors, Cohen and Boyer, neglected to mention its commercial significance, which the Stanford University patent officer learned of at the last moment from an article in the *New York Times*. In the long run Milstein and Köhler may not have lost much; they are the acknowledged inventors of the hybridoma technique—the Wistar scientists claim only to have developed a refinement of the basic method—and the Wistar patents are likely to be severely challenged in court.—N.W.

0036-8075/80/0516-0693$00.50/0

Pite

cc CPRS

10 DOWNING STREET

From the Private Secretary

1 September 1980

The Prime Minister has recently had brought to her attention the problems faced by private inventors in the United Kingdom in securing commercial exploitation of their inventions. She has been told - not for the first time - that the environment in this country provides less encouragement to invention than is the case elsewhere. I enclose a note from one particular inventor who has approached the Prime Minister over his problems, in which he sets out the position as he sees it.

The Prime Minister recognises that most inventions are naturally made by the employees of companies rather than by individual inventors, but she wishes to ensure that we remove any barriers that inhibit the commercial application of new ideas generated by the natural inventiveness of the British people.

The Government is seeking through its economic policies to improve the general climate for innovation and risk-taking activities. The Prime Minister would, therefore, welcome a note from the Council on the particular problems faced by individual inventors together with suggestions as to how these might be overcome. She understands that ACARD has a study on innovation already in progress, and she looks forward to seeing that report in due course. But she would find it helpful to have a quick study of this specific problem, intended to produce a short note not necessarily designed for publication at this stage.

M. A. PATTISON

Dr. A. Spinks, C.B.E.

Original correspondence in G/R

PRIME MINISTER

Mr. Douglas Fox was one of the Churchill Fellows to whom you presented a medallion. At the time, he wrote to you about the problems he faced in launching a project on water desalination. You replied to him, suggesting that the NRDC could offer some help.

Mr. Fox is persistent and articulate. He has been in touch with us frequently since your exchange with him. Nick and I have both talked to him at length and we put him in touch with John Ashworth of the CPRS who is the Chief Scientist in the Cabinet Office set-up.

Mr. Fox's case history illustrates the difficulties faced by innovators in finding financial backing to develop processes for large-scale marketing.

In the case of Mr. Fox's particular project, there is at first sight an aid angle. Desalination is obviously important in many developing countries. But he had already been to ODA Ministers in the past, and they had not felt able to pursue his proposal. One problem was that he had never offered any financial information to enable them to judge the economic viability of his process. He did give us some further details, and ODA have looked at this. Their analysis shows that there are much cheaper means of desalination, although they recognise that there could be a role for Mr. Fox's relatively expensive process in some very limited situations. They have advised successive Ministers that the very limited funds allocated to develop intermediate technology should not be drawn upon for a process which would have very limited application. I think this is a fair judgement.

John Ashworth suggested one or two personal contacts which might provide support to enable Mr. Fox to develop his process.

/The best

The best seems to be a fund under the Aga Khan's auspices. Mr. Fox does not seem to have made a good impression with this group and he is now coming back to us again complaining that no-one is helping him and threatening to make a public fuss about this.

We have made much more effort to help Mr. Fox than is normally possible for members of the public who come direct to this office. We recognise that he is a difficult character but that he might have some worthwhile ideas, and in addition I thought his case worth pursuing as an example of the difficulties faced by innovators. But we have given him no false hope, and I think we have nothing to fear if he chooses to publicly complain about Government attitudes to his work. I am not troubling you with all the documentation on this case, but I attach your original exchange of letters with him, the recent summary economic analysis of his project produced by ODA, and two notes by John Ashworth following conversations with him.

I had it in mind that you might see Mr. Fox. On reflection, I think this would achieve nothing because he might simply add a meeting to his store of stories of Government inability to help him. As John Ashworth says in his later note, the wider problem illustrated by Mr. Fox's experience would best be tackled through ACARD, and I would like to raise it with them on your behalf. This is an important point in terms of encouraging innovators. As for Mr. Fox himself, he is a stubborn character: he has a process which may be technically viable but for which economically viable applications have not been located. NRDC have made it clear that they could find some financial support, but he has not been able to raise additional support and has chosen to become very antagonistic to NRDC. We offered him the personal contact with the Aga Khan and Dr. Ashworth put him in touch with other groups in this country who might have found a role for him. His personality has obviously prevented him from capitalising on any of these, and I think I should now make it clear that there is nothing that we can do for him individually.

/I apologise

I apologise for the length of this note. But I think the case history is interesting. I would like your authority now to conclude our correspondence with Mr. Fox, but to raise in your name the wider issue of how we can encourage and support innovators who develop ideas outside the structure of large groups with significant R & D capital resources.

MAD

22 August 1980