

Tony CLEAVER
27/4



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10 DOWNING STREET
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From the Private Secretary

MRS. M. J. HARE

CABINET OFFICE

You said that you wanted to see the draft reply to Tony Cleaver of IBM before it issued. If at all possible, I would like to get it off on Friday morning. Could you see if I could have comments by close of play on Thursday?

P. A. BEARPARK

25 April 1989

RJ



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My ref:

Your ref:

P A Bearpark Esq
Private Secretary to
The Prime Minister
10 Downing Street
LONDON
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25 April 1989

per h/h

Dear Andy

Thank you for your letter of 17 March to Deborah Lamb enclosing ^{one} ~~are~~ from Mr A B Cleaver of IBM suggesting the establishment of a partnership of Cambridge University to conduct computer modelling of the ozone layer.

As requested, I enclose a draft reply that you may wish to use as a basis for the Prime Minister's reply. You will see that the reply offers a meeting between our officials and Mr Cleaver to discuss his ideas. I would be grateful if you would let me have a copy of the signed letter once it is sent.

Yours sincerely

KATE BUSH

KATE BUSH
Private Secretary

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DRAFT REPLY FROM THE PRIME MINISTER TO A B CLEAVER (IBM)

Thank you for your letter of 16th March floating the interesting idea of a "World Centre of Competence on Ozone" at Cambridge. It was further heartening evidence that the message of the London Conference on 'Saving the Ozone Layer' is being well received by industry as well as governments.

There is certainly much more research to be done particularly through wider international cooperation. Indeed, at the Government's suggestion, a Coordination Unit for Stratospheric Ozone Research has been set up in Cambridge from the beginning of April this year to help develop and coordinate a programme of stratospheric ozone research within the EC and EFTA countries. Already, considerable progress has been made in understanding stratospheric chemistry and this will continue to underpin the further steps to be taken internationally through the Montreal Protocol to the Vienna Convention on Substances that Deplete the Ozone Layer.

The message of the London Conference is especially addressed to the first meeting of Protocol Parties in Helsinki next month. I hope further progress can be agreed at the second meeting next April when the Parties meet in London.

Powerful computing facilities are, however, already available to some of those carrying out research work on stratospheric ozone and it is not clear that we need a computing initiative of the magnitude you suggest to further ozone research alone. In particular, we must at the same time consider the question of climate change, which is related to the ozone layer issue, but presents us with an even more difficult and wide ranging problem. The increasing levels of carbon dioxide and other trace gases,

including chlorofluorocarbons, are currently estimated to lead to a global warming of between 1.5°C and 4.5°C over the next 50 to 100 years. Our first priority must be to reduce the uncertainty in these estimates. For that we need improvements to be made to climate models to enable them to include in more detail the many complex physical processes that occur in the atmosphere and oceans.

The Government is therefore currently reviewing its efforts on climate change research including the need for enhanced computing capacity. If any such enhancement is required IBM would of course have the opportunity of tendering.

In the meantime I have passed your ^{imaginative} proposal to the Secretary of State for Environment for further consideration and Officials from his Department will be in touch to arrange to discuss your ideas further.

Background

1. Modelling of stratospheric chemistry until recently has involved the use of one and two dimensional models. The more complex three dimensional chemistry models are in their infancy and are required if progress in understanding such processes is to take place. To carry out such three dimensional modelling requires the use of 'super-computers', as are already used in climate modelling.

2. The Universities Global Atmospheric Modelling Project (UGAMP) uses the global weather forecasting model of the European Centre for Medium-Range Weather Forecasting (ECMWF) which is run on a Cray super-computer (CRAY X-MP/48). Part of the plan of UGAMP is to study atmospheric chemistry, including that of the stratosphere, using this model.

The Meteorological Office currently uses two CDC super-computers, the CYBER 205 and the recently acquired ETA 10, for its weather forecasting and climate modelling.

IBM has only more recently come into the super-computer market but there is no reason in principle, subject to a full technical study of its suitability, why it could not be used in climate modelling. However initial indications suggest that the IBM 3090/600S has significantly less computing capacity than the equivalent CRAY.

3. Whilst the ozone issue remains very important, considerable understanding has been achieved and has had a marked impact on policy formulation. The climate change issue is a much larger and more intractable problem which requires intensification of model development. If such rapid progress were required, as seems likely it would be more appropriate to give strong financial backing to a climate modelling centre than to an 'ozone centre'.

Ozone layer research could be carried out in any case at such a climate centre or as part of the UGAMP. It is possible that IBM have not distinguished between the ozone layer and climate change problems as the two are often confused.

4. It is not clear that there is any financial advantage to the government in this proposal. The list price of the IBM 3090/600S is £15 million and academic establishments often receive up to 50% discount in any case, so that the Government, if it provided the £7 million requested would still bear the largest proportion of the effective cost. Any requirement for a new computer for climate modelling must be dealt with by open tendering in the usual manner. This would ensure that the most appropriate machine for the job was procured.

5. IBM, Cambridge University and NERC appear to have reached a stage in discussion where it would be difficult to propose an alternative location. The time scale envisaged is too short for a proper study of the issues.