

appear in numerous papers by others. Her knowledge of German was also made freely available; in particular she collaborated in the translation of *Equidensitometry*, by Lau and Krug. She took a full part in the social activities of the Cavendish, whether of the assistant or the academic staff, and she had a warm-hearted sympathy for the personal (often the family) problems of successive generations of research students. Perhaps she will be most remembered for the annual party, to which all ranks were invited, in the garden in Long Road which was her chief leisure interest.

## Correspondence

### Science and Government

SIR,—A group of the Nobel Prize winners published in *Nature* (October 4, 1969) an appeal to the scientific community concerning measures which ought to be taken by scientists against those countries the governments of which interfere with international scientific communications by preventing their scientists from travelling freely and from enjoying other civil rights which are essential to scientific communication.

Certainly, manifestations of solidarity with the scientists afflicted by persecution are touching, and those who are emotionally induced may even see in this a certain kind of consolation. However, a good scientist is guided by reason rather than by emotions, and efficient help means more for him than touching sympathy. There are doubts about the effectiveness of the measures suggested by the Nobel Prize winners who signed the appeal. A government which would encroach by brutal restrictions on civil rights, and whose scientists would be prevented from participating in conferences in their fields of interest held abroad, or who would be persecuted in some other manner, would only be too glad if scientists from other countries were to boycott conferences held at home. The ones to suffer from these measures would be the persecuted scientists themselves. In short the retaliatory measures suggested would only have one positive though questionable effect—they would appease the consciences of the scientists who are incapable of inventing a more ingenious way of helping their persecuted colleagues.

An example of the absurd consequences of such well intended actions can be seen in the communication published in "Miscellaneous Intelligence" (*Nature*, January 10, 1970). It appeals to the colleagues who have been invited by the Institute of Macromolecular Chemistry to attend symposia to be held in Prague and Marienbad to think twice about doing so, on the grounds that I am politically persecuted in my country and that I would not be allowed to reciprocate their visit because of the ban imposed on my travelling abroad.

What has really happened represents a rather mild persecution compared with what happens in other authoritarian systems. Because of differences of opinion, I have only been dismissed from the post of the Director of the Institute and from some other functions, which is a measure stipulated by offended bosses all over the world. As far as my travelling is concerned, I daresay that so far I have much less been afflicted by the restrictions than other colleagues in this country. And even if both my friends and myself were to become victims of whatever evil terror there may arise, non-participation in the conferences organized in this country would not help us but only those who wish to put restrictions on our work and communications with the other countries.

Yours faithfully,

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### Attitudes to Conservation

SIR,—I am sure that I am not alone among your readers in being dismayed by your optimism in envisaging the problems of conservation, and especially in the way in which you have taken sides, your derisive attitude to opponents, your disregard of interests unable to exercise political pressure and your acceptance of short-term expediency.

In your one-sidedness, you are unfair to opponents, as shown in the use of emotive words such as "hawks" and "doves", "doomsdaymen" and "jeremiahs"; and in misrepresenting your opponents as counselling "despair". You suggest (*Nature*, December 27, 1969) that the conservation lobby is threatening us with science fiction horrors ("unisexual morons", etc). Surely it is for theologians and not for scientists to accuse their opponents of heresies? And surely it is an impropriety to stigmatize the statements of responsible persons with whom you disagree as "misguided" and "reprehensible"?

In this series of leading articles, one is inclined to see a consistent campaign, honourably intended, to protect the advance of technology. But your view appears to be directed along a narrow perspective, without awareness of such important areas as ecology and ethology. Surely no biologist could have written (*Nature*, November 15, 1969) "human beings . . . may be more like ants and bees than laboratory rats". Your concern for man, mainly that he should continue to be fed, is for man, and not at all for the world which is his home. Let us assume that your optimism is justified, and that food production can keep pace with population growth for an indefinite period. Is not the future that would be upon us in another hundred years even more horrible than that of those unisexual morons? Your faith that no acceleration of the rate of change will be beyond the power of self-correction or the power of our governors to adjust to will not be well taken by the cyberneticist or the social scientist. In making your forecasts do you think you should make room for contingency planning? Suppose that the green-house effect of increasing carbon dioxide in the atmosphere does show up, and that the Antarctic ice-cap does begin to melt. Have you a plan ready for what we should do then?

These are problems in which our own emotional responses are necessarily involved, and perhaps we should disclose our "interests", our convictions. I believe that mankind has a responsibility to more than himself; if the Earth is our space-ship, then we are only the officers and we must have a care for the crew. Of all the dangers, perhaps the worst are those of genocide. Once a species is extinct, its loss can never be made good. What is the present rate of genocide, in terms of species per century? The destruction of non-human societies and local ecosystems must be proceeding at an accelerating pace. It is probably impossible, I would say, for any ordinary man to make an equivalent positive contribution over the course of his lifetime for all the damage he does just by living. Right now, every new child born is an entry on the debit page, acceptable only if required for replacement. I conceive it our first duty to try to contain this destructive process; and to turn ourselves from exploiters to guardians, curators, trustees. It is not too soon, now, to be thinking of what the Earth will be a million years from now.

Yours faithfully,

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### The Third London Airport

SIR,—One had become accustomed to the way in which the popular Press has long been campaigning for a decision to locate the Third London Airport at Foulness without

waiting for the evidence presented to the Commission enquiring into the matter, leave alone its decision; but it is a surprise to see you join them (*Nature*, 225, 486; 1970). This is one of the most interesting, difficult and portentous decisions that our generation is ever likely to have to make in Britain, and your decision that "there is little to choose between one site and another", so that "in short, the airport will be best placed where it will be least nuisance. Foulness, it would seem, is the best place" seems so superficial that a protest is surely called for, if only in the hope that more attention will be paid to some of the implications of the evidence now becoming available in time to permit a better-informed discussion at Stage V of the enquiry in two months' time.

First, permit me to point out that the "extra" cost of an airport at Foulness compared with the cheapest site, Cublington (discounted to 1975) is £120 million, which is surely no small matter when the greatest difference in cost of the inland sites is only £9.3 million. While this may be only 5 per cent of the total cost, personally I doubt whether it can be glossed over so easily, because it is my impression that the Commission has in many cases taken conservative estimates of the likely cost of factors difficult to estimate, such as difficulties with transport, preparation of the site, meteorology, and air safety; and with the exception of meteorology, on present showing most of these unknowns are likely to be most important at Foulness, so that the most serious risk of underestimated costs occurs there. There is already ample experience of construction and operational problems inland, but it is quite possible that our hopeful entrepreneurs will encounter a whole new dimension of unforeseen expense as they start to construct transport facilities out through the East End of London to build runways among the shifting sands and sea fogs of the North Sea. And it will not be they, but the taxpayer, who receives the bill.

Second, while you abuse the devoted and (I would have thought) generally rather efficient civil servants, who have made our existing international airports the busiest and most successful ones outside North America, with none of the major transport problems that beset the larger ones there, for ignoring wider aspects of the decision where to site the Third London Airport in favour of the choice which they know to be safe, may I point out some other wider implications which you in your turn do not mention? The question of the nuisance value of the airport to which you attach prime importance is of only local, not even regional, interest, but the establishment of a major, well appointed, conveniently sited airport in the near future to take overflow traffic from our existing airports is a matter of national importance if we are to compete for the transatlantic tourist trade with foreign centres such as Paris, and facilitate the smooth growth of air freight services in the interests of the need to increase exports. If there is any question of undue delay or difficulty of access to the new airport as a result of a decision to minimize its local nuisance value in the way you suggest, the cost to the country could be very serious in terms not just of a little local noise but as an influence on our total balance of trade.

Third, while national considerations surely ought to take precedence over local ones, there are also local considerations that have received curiously little comment. It would appear from the commission's calculations that they anticipate that if the Third London Airport is built inland it will be ready fairly soon and will result in the closure of a whole series of other nuisances such as Luton Airport and various military airfields, and will attract business away from more distant sites such as Birmingham and Manchester airports, so that while a major new nuisance will be created in a tract of countryside apparently specially chosen because its remoteness will minimize the effect, other nuisances are liable to be reduced over a wide area round about. Judging by recent protests in the Press, the closure of Luton airport alone

will cause more alleviation of local discontent than will ever be provoked by the utmost development of any of the other inland airport sites currently under consideration for development. On the other hand, the Commission appears to anticipate that if the new airport is sited at Foulness, both Luton and Gatwick airports may have to be developed to take overflow traffic while it is being constructed, while much traffic from the Midlands, which might have gone to an inland Third London Airport, will be diverted to Birmingham and Manchester instead. If so, Foulness will miss much of the business that might have been expected inland, which will be diverted to not just one but four or more other proliferating sources of local nuisance instead, leaving an expensive white elephant stranded in idleness on the Thames mudflats.

There are several other matters which one could raise, such as what will happen to Southend and north Kent if it turns out that Noise and Number Indices are among the variables that have been underestimated; but I have added too much to the verbiage being lavished on this issue already. Basically, I would like to suggest that whereas it is possibly arguable that the original decision to select Stansted was perhaps based on too narrow grounds of operational convenience, even now the level at which you argue the decision should be taken, local nuisance value on a regional basis, is still too narrow. The moment that it is enlarged further to a national scale, in terms of the facilitation of trade, and the alternatives of the dispersal of traffic to many sites, each of which becomes a growing local nuisance itself, or concentration at a single central site, deliberately placed where it will cause least nuisance, with the minimum difficulties of construction, and close to existing transport facilities, then an inland site must win.

Yours faithfully,

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### Goldfinger no Longer

SIR,—I wish to associate myself with the views of R. S. Glover (*Nature*, 225, 570; February 7, 1970) and in particular his comments on the relationship between field data, the analysis of natural fluctuations and the study of marine pollution. To the number of points which, as he says, are self-evident, I would like to add another that cannot be over-emphasized but does not yet appear to have been appreciated: the quantitative data relating to complex ecosystems will be obtained only by the simultaneous deployment of experienced personnel on a scale and for a duration that would be new to environmental research in this country. The one man/one species approach, forced on so many biologists by circumstances beyond their control and which has nonetheless contributed so much to our knowledge of marine biology, must now be supplemented by the multi-disciplinary, large-team approach if the dynamics of natural populations are to be recorded, analysed and understood. As one who has tried with limited means to move into this more complex sphere, I am obliged to concede that the majority of marine biologists, working as we do in coastal universities as small units with or without a few research students, can achieve neither the continuity nor the breadth essential for this type of study. Collaboration between people with complementary or similar interests who also happen to be close neighbours affords a partial remedy, but the nature of the subject makes it pre-eminently one for research institutes or other major units.

Your doubts about routine data collection ranking as research must surely stem not from failure to see the relevance to population dynamics, but perhaps from a belief that natural fluctuations are so well documented