

correspondence

SO₂ emission in the UK

SIR.—The final report resulting from the study of transboundary air pollution in Western Europe by the Organisation for European Co-operation and Development was summarised in *Nature* (268, 92; 1977). The study was instituted because of the reported ecological damage in Scandinavia which was linked with the doubling of emissions of sulphur dioxide in Europe (figure 1) arising from the combustion of fossil fuels. The UK has often been criticised as the major contributor to transboundary air pollution because it discharges more sulphur dioxide into the atmosphere than any

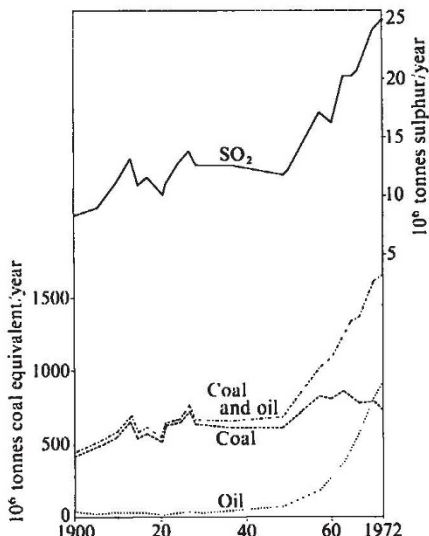


Fig. 1 Fossil fuel consumption and estimated anthropogenic SO₂ emissions in Europe 1900–1972 (Source: After Fjeld Nilu Teknisk Notetnu 1/76 (1976)).

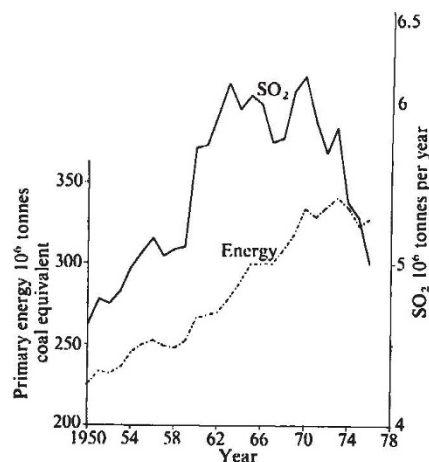


Fig. 2 Primary energy consumption and SO₂ emissions (Source: Warren Spring Laboratory and UK Energy Statistics) (By permission of the Controller of HMSO).

other country in Western Europe. It is, however, interesting that the trends of emissions in the UK differ from those in most other countries and, as figure 2 shows, over the period 1950–75 when emissions in Europe roughly double those from the UK reached a maximum during the 1960s and declined thereafter; they are now approaching the 1950 level.

The rise and fall of sulphur dioxide emissions since 1950 is not a consequence of a reduction in demand for energy. As figure 2 shows primary energy consumption has been rising steadily over the period except for a drop in the mid-1970s at a time of economic recession. Thus by the use of cleaner fuels such as natural gas, low sulphur oil and nuclear energy, the UK has substantially reduced the emissions of SO₂ to air. How far this is of benefit to other countries remains to be seen: it is certainly one of the factors which has contributed to a reduction of more than 50% in ground level concentrations of sulphur dioxide in urban areas in the UK over the last 25 years although the concentration in urban areas cannot be directly related to total emissions.

To predict future trends is always hazardous. But even at an optimistic rate of growth for energy within the UK the total emissions of sulphur dioxide are likely to fall still further within the next few years.

Yours faithfully,
L. E. REED

Department of the Environment,
London, UK

Indirect research costs

SIR.—Many research scientists in the United States will applaud the recent Office of Management and Budget rules on indirect research costs. Since the total funding for each research area is fixed by Congress, each dollar that a university is able to claim in "indirect costs" is a dollar less that is available for the direct cost of research. The present system of figuring such costs is chaotic. The amount of money that a university can claim in indirect costs is limited only by the ingenuity of its accountants and, as might be expected, accountants at the elite private universities seem to be the most ingenious. Consequently indirect cost rates can vary by a factor of two or three between institutions, rewarding those that have allowed their costs to grow uncontrollably and penalising those that are most efficient. As a result of a system that allows universities to claim that "indirect costs are whatever we say they are", there is virtually no money available to support the direct costs of research by younger investigators and investigators at less prestigious institutions.

The OMB regulations are long overdue, but they do not go far enough. What is needed is an absolute limit on indirect costs, and some individuals have claimed

that 25% to 30% of direct costs would be a reasonable figure. Here in Canada, the National Research Council and the Medical Research Council will not reimburse universities for any indirect costs and yet research still gets done.

Yours faithfully,

ROBERT JOEL YAES
Memorial University of Newfoundland,
Canada

Perutz not retired

SIR.—Contrary to widespread belief, I have not yet retired. I shall remain chairman of this laboratory until Dr Sydney Brenner takes over on 1 October 1979. The laboratory's governing board has kindly invited me to continue working here after that date. I intend to do so and shall be pleased to receive graduate students and postdoctoral workers who want to come to work with me.

Yours faithfully,

M. F. PERUTZ
MRC Laboratory of Molecular Biology,
Hills Road, Cambridge, UK

Allez les verts

SIR.—Following an earlier article entitled 'Ecologists lose in French elections' (30 March, page 393), M Porchez explains in his letter (4 May, page 8) that there has never been a particular ecological group known as 'les verts' (the green) but that it is a name popularly applied in France to all ecologists. Others would doubtless claim prior use of this appellation, but the exhortation "Allez les verts" displayed ubiquitously in France on car windscreen stickers probably reflects quite simply an unusually high proportion of ecologists in St. Etienne's football team.

Yours faithfully,

G. H. COOPER
Salisbury, Wiltshire, UK

Portugese Africa forgotten

SIR.—I was delighted to read (20 April, page vi–vii) of 'The discoveries of Africa 1493 B.C.—1978 A.D.' that Swissair obligingly made public.

The advertisement quickly shattered to dust all the efforts made by the Portuguese in the XVth and XVIth centuries to add "new worlds to the world," as Camoes, whom Ezra Pound calls "the Rubens of verse", nicely puts it.

It is neither imperial nostalgia nor the preservation of a national *epos* that prompts me to write this, but the feeling that even an advertisement should be free of bias.

Yours faithfully,

ANTÓNIO CASTRO FEIJÓ
Lisbon, Portugal