

## Sombre Greeting from Abroad

DR PHILIP HANDLER, president of the US National Academy of Sciences, chilled the bones of some of those who listened to him speak at the dinner held by the Biochemical Society in London on December 17 to celebrate the 500th meeting of the society. Dr Handler warned his British colleagues against some of the dangers which were now apparent in the United States.

First of all, he pointed out that "at the very height of scientific success, when the stage has been set for ever more revealing explorations of the nature of life, when the technology bred of science has catalysed stupendous economic growth and gone far to mitigate the brute condition of man, now we are experiencing a violent world reaction.

"Science has taken into account the less wise aspects of its use for the existence of nuclear, chemical and biochemical weapons for contamination of air, earth, water and food, while its enormous contributions to human welfare seem all too easily to go forgotten. Thoughtful students and their elders, as well as legislators, suddenly allege that science is not relevant and they thrash about for other means to achieve the good life, albeit without notable success.

"Around the world, one senses a mounting hysteria exaggerating the magnitude of the nevertheless quite genuine threat of varying forms of pollution, for example, accompanied by impatience to right all historic wrongs, impatience with decaying cities and the spoiled countryside, impatience with the necessarily slow methodical ways of science.

"In the United States, seemingly, one might find explanation for this mood in the mystery of an unpopular and expensive war, but that is too facile, the mood is universal. Witness the behaviour of youth in London, Paris, Tokyo and Moscow. Witness the very reason for moving next year's international biochemical congress from Rome to Switzerland. Nor is this a quickly passing phase—it appears to be a profound movement, expressive of man's innermost yearnings, albeit yet without a sense of direction. No society is untouched and none will ever again be the same.

"In some small part, the success of biochemistry has contributed to this movement by stripping life of the element of magic; by revealing that man really is at one with all of the forms of life, so that the likelihood of his being that special creature fashioned in the image of his maker seems increasingly implausible; by suggesting that the wonder of learning is really a trial and error process by which successful behavioural patterns are recorded and fortified simply by the solidification of synaptic connexions; by indication that evolution is essentially an undirected trial and error process. Many of our young people are dismayed and sink instead into contemplation of the purposelessness of life, a belief which appears to underlie the rapidly changing moralities of our day. The disenchantment with science expressed by our youth is finding fertile soil elsewhere.

"In the United States we are, I regret, decelerating the pace of science. Federal appropriations for fundamental research, measured in effective purchasing power, have declined by almost a third since 1966. The trend continues. We fancy ourselves a pluralistic

society, so that after the Second World War we convinced ourselves that it is rational to ask that each government agency with a science-based mission—be it defence, nuclear power, agriculture or the public health—should support some fraction of the fundamental research endeavour. In contrast, our so called mission oriented agencies are now expected increasingly to utilize their resources for applied research and we fail to compensate by strengthening our National Science Foundation, the agency whose mission it is to strengthen science itself across the land.

"We begin to succumb to student pressures to convert great universities into mere teaching factories, a trend whose consequences are all too easily predicted. To be sure, we in the States continue to spend a greater sum on research than any other nation, but whereas yesterday's science expenditures expressed as a fraction of the GNP also exceeded those of other nations, that is no longer the case. Indeed, we are now in some danger of dismantling a significant fraction of our scientific establishment and sadly I must report that the turning point is not in sight.

"It is my sincere hope that you will not follow our short-sighted example in this as you did, for example, in the foolish decision to ban the use of cyclamates. For two decades, our government agencies have enjoyed the freedom to take a broad and enlightened view of the scope of science relevant to their missions. Now, in the face of declining appropriations, an angry cry for what is termed relevance and the distress that \$15 billion and taxes spent on biomedical research since the Second World War has failed to yield a dramatic improvement in the physician's capability to cope with the major dread diseases, our Congress and the agencies increasingly develop programmes of what are called directed or targeted research at the expense of free roaming fundamental research. An amendment recently passed to the appropriation to our defence department states that no funds from this appropriation may be used to support any project which does not bear a clear and apparent relation to a specific military function. But our defence department had been utilizing \$400 million annually to support a wide ranging programme of undirected research in all areas of science and it is uncertain how much is relevant by this definition. If the same condition is attached to other appropriations—for example, that of our National Institutes of Health—the heyday of American science could well be behind us for a generation. Once again there is a danger that the urgent will drive out the important, and my own principal occupation as president of the academy is to avert that disaster.

"Concomitantly, student pressures are overcoming the inertia of that most conservative of all human institutions, the university faculties. Curricula are dramatically revised and disciplinary faculties which prided themselves on the purity of their research join forces as they seek teaching and research modalities appropriate to the examination and improvement of the real external world. Most such attempts prove to be faltering missteps, but a few have succeeded and the world of learning and enquiry is both enriched and fortified in its claims for continued existence."