

OLD WORLD

Geophysicist to be Editor of *Nature*

DR DAVID DAVIES, leader of the Seismic Discrimination Group at the Lincoln Laboratory of the Massachusetts Institute of Technology, is to be the next editor of *Nature*.

Dr Davies will take up his new position at the end of August. Mr John Maddox, who has edited the journal since February 1966 is leaving *Nature* today but until Dr Davies takes up his appointment *Nature* will be edited by Dr Alun Jones the present Deputy Editor.

Dr David Davies is 33 years old and was educated at Nottingham High School and Peterhouse, University of Cambridge from where he graduated in physics in 1961. Since then he has been involved in research in geophysics; first as a graduate student at the Department of Geodesy and Geophysics at Cambridge, then as a senior assistant in research at the same department and, since January 1970, at MIT. Dr Davies was also a fellow of Peterhouse from 1946 to 1969.

Dr Davies's early research was concerned with the exploration of the ocean floor and its underlying geology by seismic methods. During this time he participated in cruises in the Atlantic Ocean, Indian Ocean, Gulf of Aden and the Red Sea. It was as a consequence of this work that Dr Davies developed an interest in providing a theoretical explanation for signals recorded as a result of explosions and his doctorate thesis was also devoted to these problems.

Since 1966 Dr Davies's interests in seismology have broadened and in 1968 he was the rapporteur to the Seismic Study Group convened by the Stockholm International Peace Research Institute.

At this meeting eleven seismologists from ten countries reconsidered the evidence bearing on the detection and identification of underground nuclear weapons tests. One of the results of this meeting is that there is now wide agreement on the scope and limitations of seismology in policing any test ban. The inadequacy of seismic monitoring had been one of the chief reasons why the Test Ban of 1963 had not included underground explosions.

During the past three years Dr Davies has been deeply involved in the remaining problems associated with the policing of a test ban treaty. In particular, he has used arrays of seismic detectors spread over areas of diameter two

hundred kilometres in Montana to determine whether nuclear explosions can be distinguished from earthquakes. As well as what Dr Davies calls this "mission oriented research" the arrays have been used to determine the nature of the Earth's core and to determine how seismology can be used in plate tectonics. Recently the existence of lateral heterogeneity deep in the Earth

has also been detected by such large arrays.

In 1966 Dr Davies edited a special volume of the *Geophysical Journal* of the Royal Astronomical Society and soon afterwards he became an editor of that journal. He is now one of its two North American editors. Dr Davies has also been *Nature's* geophysics correspondent since 1968.

PHARMACEUTICALS

Drug Research

LARGE pharmaceutical companies tend to produce more results from their research and development than small ones. This conclusion, in direct contradiction to that reached by the Monopolies Commission, was presented recently at a conference on innovative activity in the pharmaceutical industry organized by the National Economic Development Office. Mr George Teeling-Smith, Director of the Centre for the Study of Industrial Innovation, presented data from a report that is due to be published shortly by the CSII, which shows that there is a linear relationship between the output of new products and research and development expenditure. This contrasts with the non-linear relationship found by the Monopolies Commission.

The difference between the two conclusions is probably explained by the fact that CSII did not use the conventional measure of pharmaceutical companies' research success—the number of patents each company files. Conclusions based on patent filings could be dangerously misleading, Mr Teeling-Smith said, because, for example, companies file patents at different stages in the development of drugs.

Instead of counting patent filings, Mr Alan Angilley, who carried out the work for CSII, attempted to identify all the new pharmaceutical compounds introduced to world markets between 1958 and 1970. Inevitably coverage was incomplete for compounds originating in, for example, Japan, but it clearly showed that the laboratories producing the largest number of innovations also produced those that were the most successful.

Mr Angilley then studied in detail twenty companies who could provide an account of their new products and their research expenditure over a period of one year. The firms chosen represent

"a good spread across the spectrum of expenditures in the industry", according to Mr Teeling-Smith, and the study showed that the larger companies tended to be the more productive.

Clearly much larger studies need to be carried out, but CSII's work does suggest that the "conventional wisdom" which led the Monopolies Commission to oppose the Beecham, Boots, Glaxo merger should "be put into cold storage until further soundly-based studies can throw further light on the whole subject", according to Mr Teeling-Smith.

The Monopolies Commission was also criticized by Mr R. D. Douglas, Director and Legal Adviser to Pfizer Ltd, who suggested that because "winners" in the pharmaceutical industry are so elusive and unpredictable, companies rarely enjoy really high profits. Those made by Hoffman-La Roche, which the government is currently criticizing, were calculated by the commission in a "surprisingly crude way", Mr Douglas said. Of greater danger, he said, were the new breed of pharmaceutical companies which marketed at cut prices drugs that others had developed and patented. These companies succeed because actions over patent infringements take so long to complete. One such action, started in 1963, was not concluded until last year.

The time scales involved in drug development are lengthening, and this also worried delegates to the conference. The delay between the initial screening of a compound and its launch is growing, as is the time it takes to reach peak sales.

Equally the time the Medicines Licensing Authority takes to grant permission for clinical trials was criticized by Dr D. G. Davey, Director of Research at ICI, although Dr F. Hartley and Professor O. L. Wade, two members of the commission, suggested that the remedy lies at least partly with the industry. Good submissions can be processed more quickly, they said.