

developing countries that pure scientific research has, in fact, essentially economic aims. If all results were submitted to an International Sea Bed Authority the developing countries would be sure that they were not losing out.

Many oceanographers are horrified at the restrictions proposed. The restrictions placed on continental shelves are already irksome to some, and the delay in mounting expeditions and publishing findings that would result from the proposed UN agency's activities if they are extended to cover scientific affairs, are seen by many as deleterious to the progress of scientific knowledge about the oceans. In the words of the ICSU resolution "fundamental research by any nation carried on with the intent of open publication is in the interests of all".

The real fear is that when the conference finally meets — possibly in Santiago next year, although its deliberations will take many months—scientific research may be the loser in the inevitable trade off that will take place where the economic, political and defence interests of developing and developed nations collide. The extent to which political considerations may rule is indicated by the absence of any professional oceanographers from the delegations of most of the countries involved.

There is hope, however, in a middle road proposed by some of the more moderate developing nations, notably Srilanker (formerly Ceylon), which may result in complete freedom for scientific research with the exception of deep sea drilling which would be controlled by the International Sea Bed Authority in whatever form it finally takes.

NOBEL PRIZE

Antibodies Appreciated

THE 1972 Nobel Prize in medicine has been awarded jointly to Professor Rodney Porter, Whitley Professor of Biochemistry at the University of Oxford, and Professor Gerald Edelman of the Rockefeller University, New York.

The recognition of the work of these biologists on the determination of the structure of the antibody molecule comes twelve years after their epic studies were first published. At the time Professor Porter was on the staff of the National Institutes of Health Laboratories at Mill Hill, London and Dr Edelman was then, as now, at the Rockefeller University.

Professor Porter came to Oxford in 1967 to succeed Professor Sir Hans Krebs as head of the department of biochemistry. From 1949 to 1960 he



Professor R. R. Porter

was at Mill Hill and from 1960–67 he was Pfinger Professor of Immunology at St Mary's Hospital Medical School, University of London. Since 1970 Professor Porter has also been a member of the Medical Research Council.

When interviewed last week, Professor Porter said that he was delighted with the award which was completely unexpected but he would like to stress that he would not have been able to make such progress in understanding the structure of the antibody molecules but for Professor Edelman's complementary work. He knows Edelman well but has never worked with him.

Professor Porter is a product of the University of Liverpool and the University of Cambridge where he studied for his PhD under Dr F. Sanger, who himself received the Nobel Prize for Chemistry in 1958 for investigations which led to the establishment of the chemical structure of insulin. Porter's thesis work was concerned with the structure of antibodies and he has worked at intervals on this topic since.

Professor Porter is director of the Medical Research Council Immunochemistry Unit at Oxford which is concerned with the structural basis of both the specific affinity and the general properties of antibodies and also with the nature of cells involved in the immune response.

Erratum

In our report on the composition of the Australian Advisory Committee on Science and Technology (*Nature*, 239, 126; 1972), the following errors occurred: the chairman is Sir Colin Syme, not Mr Colin Lyme; Mr Alan W. Hamper should have read Mr Alan W. Hamer; Mr Russel T. Madigan's affiliation is Hamersley Holdings Limited.

The complementary work of Porter and Edelman culminated in a complete description of the structure of the human gamma globulin molecule. Porter, using rabbit anti-ovalbumin, was first able to divide the molecule into three functional parts: two identical fragments which bind antigen and must thus contain the sites involved in their recognition, and one fragment which is invariant.

Edelman then found a different way of splitting the antibody molecule by reducing it with mercaptoethanol in strong urea, showing that it was composed of polypeptide chains bound together by disulphide bonds. This led Porter to refine Edelman's technique and resulted in the confirmation of the four-chain model for gamma globulin: two heavy chains and two light chains, each with variable binding sites at one end and joined by disulphide bonds at the invariant regions at the other end.

Porter's technique made possible work in both laboratories on determining the amino-acid sequence of the variable portions of the heavy chains and showing that the variations were similar to those which had already been found in the light chains, suggesting that the two were complementary. The further development in Porter's laboratory of a method of splitting the heavy chain further, into more manageable fragments, finally enabled Edelman to sequence an entire immunoglobulin molecule for the first time.

Professors Porter and Edelman will share the award, which this year is worth in excess of £40,000.

RESEARCH AND DEVELOPMENT

Requirements Boards

THE Department of Trade and Industry has finally established the first of its long promised requirements boards. Mr Michael Heseltine, Minister for Aerospace, announced this week the names of the chairmen who will head five of the six requirements boards that are to be established, and the areas the boards will cover. They are ship and marine technology, chaired by Mr Nigel Broackes, Chairman of Trafalgar House Investments whose subsidiaries include Cunard and Offshore Marine; mechanical engineering and machine tools, chaired by Mr John Atwell, director of the Scottish based Weir Group of engineering companies, and vice-president of the Institution of Mechanical Engineers; engineering materials, chaired by Mr John Crane who is a director of Imperial Metal Industries Ltd; computer, systems and electronics chaired by Mr John Nichols, an under secretary at the DTI; and chemical and mineral processes and