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EDITORIAL
SIR RUDOLPH PETERS—NINETY YEARS

The editorial board of *Biochemical Pharmacology* congratulates Sir Rudolph on his ninetieth birthday.

The young generation, of which Sir Rudolph is the great-grandfather, may not realise the enormous debt pharmacology, biochemistry and chemical pathology owe to his many pioneering investigations. The major landmark came in 1936 when he proposed that biochemical lesions could be the cause of anatomically identified disease. This concept arose from his research in thiamine deficiency and revolutionised pathology. In his classical book *Biochemical lesion and lethal synthesis* [1] Sir Rudolph wrote in 1963: "By the term 'Biochemical lesion' is meant the initial biochemical change in tissue cells which precedes any damage visible with the light microscope. The term was introduced some 30 years ago to crystalize the idea that pathological disturbances in tissues were initiated by changes in their biochemistry. It is one of the more subtle ways in which the metabolism of the cell may meet interference; biochemical analysis of a tissue may provide evidence of changes, in tissue enzymes for instance, at a time when a histological abnormality is not detectable.

Put crudely, it means substituting biochemical analysis for morbid anatomy and taking disease at a point when it may still be reversible."

In 1939–1942, Sir Rudolph and his team explained in terms of enzyme inhibition the difference between the actions *in vivo* of the mono- and di-substituted arsenicals. This work led to the discovery of an antidote, 2,3-dimercaptopropanol, known as British Anti Lewisite or BAL. For the first time in the history of pharmacology a simple drug, the structure of which was logically conceived on purely biochemical grounds, was found highly effective *in vivo*. The concept of the biochemical lesion has been of extreme value in many fields of bio-medical research. Thus a complete renovation of radiobiology became possible and the discovery of chemical radioprotectors just after the end of the second world war introduced biochemistry in a field that had been dominated previously by conventional microscopy and anatomical pathology.

Genetical disease could now be correctly seen as inborn biochemical lesions. Indeed, the postwar developments in pharmacological sciences have been mainly concerned with the search for either the inhibition or activation of enzymes induced by drugs, natural or synthetic. At the present time it is so obvious, so natural to think in terms of biochemical pharmacology, that it is difficult to persuade young scientists that there was a time when this concept was truly revolutionary and that bitter battles had to be fought against 'classical' pharmacologists who were content to express their observations in purely descriptive physiological and anatomical terms.

The idea of 'lethal synthesis' was another pregnant concept put forward in 1952 by Sir Rudolph. Fluororoacetate becomes toxic when transformed in the body to fluorocitrate which inhibits aconitase. The enzymatic activation of potential carcinogens now studied so widely is a recent example of lethal synthesis and one of exceptional importance as it provides a rational approach for detecting environmental hazards.

The idea of a periodical dedicated to this new aspect of the pharmacological sciences arose from discussions in 1957 which involved amongst others, Sir Rudolph Peters, the late Sir Alexander Haddow, Z.M. Bacq, Arnold Welch and Peter Alexander. There was no journal of high standard which was confined to publishing papers dealing with the mode of action of biological agents at the sub-cellular level and which reflected the spirit and methods first applied to pharmacology by Sir Rudolph and by 1957 by a rapidly growing group of biochemists, pharmacologists and cell physiologists. Bob Maxwell

Sir Rudolph Peters

[1] International series of monographs of pure and applied biology. *Modern Trends in Physiological Sciences*, Vol. 18, p.321. Pergamon Press, Oxford (1963).

recognized this was a rapidly expanding field and offered his help.

Sir Alexander Haddow was at once chosen as the Chairman of the Editorial Board and a fruitful, friendly and enjoyable collaboration was initiated between the European editors and Arnold Welch who took charge of the Editorial Office for the United States.

Thanks to the wise chairmanship of Sir Alexander Haddow (until 1962) followed by Sir Rudolph, *Biochemical Pharmacology*, which started in 1958–59 with 355 pages has reached three thousand pages in 1978 and has contributed very significantly to the magnificent progress of the pharmacological sciences.

Sir Rudolph has been a true pioneer and a leader in our fascinating field and we would like to extend our hearty thanks to Lady Peters for her daily collaboration with her husband over these many years which has contributed so much to this success story. Apparently—and this is true in the arts as well as in science: see Picasso, Matisse, Renoir and Braque—success following sustained effort is a decisive factor for a long and happy life.

Z. M. BACQ and P. ALEXANDER