

PREFACE

Bioelectrochemistry conferences, journals and texts are beginning to proliferate and to attract researchers and scholars with a bent for multiple disciplines, electrochemistry, electrical engineering, physics, biology and medicine. With the development of highly sophisticated apparatus, new techniques and embracing skills, bioelectrochemistry represents the area where searching questions can now be asked about processes of Life itself, not only how substances interact in vivo but what distinguishes animate from inanimate matter.

During this Joint Seminar, for example, it was pointed out that a human liver alive appeared mauve while in the isolated state it is brown, even though it is capable of a comprehensive range of biochemical activities ordinarily encountered in laboratory "in vivo" situations. Bioelectrochemical studies are beginning to elucidate the growth of bone, the genesis and division of living cells, the transfer of energy and matter from one compartment to other compartments in a living system, with great promise for curative and preventative medicine.

The organizers of this Seminar have been truly fortunate to be able to bring together workers who have been intimately associated with the origins and development of some of the more powerful concepts which have stimulated progress in the field of bioelectrochemistry. These include the solid state, semiconduction and structured water. By a happy circumstance a number of Australian researchers in this field were present in the United States, or en route thereto, at about the proposed dates of the Seminar.

This presented a unique opportunity for the organizers to approach the National Science Foundation of the United States and the Department of Energy and the Environment of Australia under the U.S.-Australia Cooperative Science Program, for funding of the Seminar in Pasadena, California. The charge of the U.S.-Australia Joint Seminar on Bioelectrochemistry was to bring together by invitation a restricted number of established scientists and younger workers in an atmosphere conducive to the untrammelled exchange of fact and

speculation. We were gratified to be able to carry out this agreement to the letter.

We are grateful to the funding agencies mentioned above for the grant 2AS-22 which alleviated much of the expense of the Joint Seminar. We are beholden to Dr. F. Anson of the California Institute of Technology whose experience with similar seminars provided the format of our proposal. We acknowledge our special debt to Mr. Alan Milsap of the National Science Foundation for his unflagging attention and guidance. We pay tribute to Dr. Harry Bloom of the University of Tasmania for his determination and care in helping to secure seminar funds. We regret that an injury prevented him from attending the Seminar. We thank Dr. N. K. Boardman for presenting Dr. Bloom's opening address at the conference.

We were privileged to be permitted to invite several Third Country participants whose contributions would enhance the Seminar. In this context we are indebted to Dr. J.-P. Farges of France and Dr. R. Pethig of Britain who financed their participation from personal resources.

The Joint Seminar Proceedings have been divided into 3 sections generally reflecting the order in which the contributions were presented. The contributions of the Third Country participants have been included in Section 2. The manuscripts have been left in the spelling and idiom of the authors as much as possible. We are grateful to Lawrence E. Vertal for helping us proof-read the final versions of the manuscripts. We hasten to add, however, that any errors which remain are our responsibility, and for which we tender apologies.

We are in debt to Evelyn Doviatt, Mary Keyzer, Stacey Ross-Keyzer, Hilda Tunstad and Delia Zambrano for the preparation of the manuscripts. We thank the following persons for assisting us with the technical aspects of the Seminar: David Beltran, Nelson Castro, Hyun Kwon Kim, Luis Rodriguez, Hung Q. Tran, Linda Tunstad and Lawrence E. Vertal. We include in our special thanks the persons mentioned in the biosketches at the end of these Proceedings who chaired various sessions of the Seminar. Finally we wish to thank our families for allowing us to proceed with the Seminar business without fuss and bother.

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