

# INTRODUCTION

WHEN the plans for the international symposium on atomic and molecular quantum mechanics at the University of Florida were outlined, the organizers felt that it would be highly appropriate to dedicate this symposium to Professor Egil A. Hylleraas of the University of Oslo as a tribute to his pioneering work in this field. An inquiry among our colleagues showed unanimous support of the idea all over the world, and the arrangements were facilitated by the fact that Professor Hylleraas spent the academic year 1962–63 as a Visiting Professor in the United States. Some people may have had the idea that the symposium was arranged to celebrate his 65th birthday, 15th May 1963, but Professor Hylleraas' appearance at the symposium showed all of us that he is by no means approaching scientific retirement. Even if his introductory lecture at the conference dealt mainly with the "golden age" of quantum mechanics, i.e. the years 1925–30, his series of published papers indicates an unbroken scientific activity of outstanding quality and importance.

The impact of Professor Hylleraas' work on the modern development of atomic and molecular quantum theory was stressed by Professor Harrison Shull in an after-dinner talk, and he pointed to the fact that, in Professor Hylleraas' papers, there are many valuable discoveries which are still not fully appreciated and utilized by the younger generation of theoretical physicists and chemists. For those interested in this fascinating world and in the retrieval of scientific information, the bibliography of Professor Hylleraas' work in this field is certainly a gold-mine.

A few words should be said about the editing of these proceedings. It contains essentially all the invited papers given at the symposium, except for a few which had already been published elsewhere, namely the contributions by Professor Julian Mack, Professor Bernard Pullman, and Professor John Murrell. Since more than half of the time at the symposium was set aside for free and informal discussions, there was quite an exchange of scientific ideas, and many of the smaller meetings went well beyond midnight. No attempt was made to record the discussions in full detail, and, in the proceedings, we have actually only included the written contributions handed to the secretariat by the various speakers. This means that

there may be some logical discontinuities here and there in the discussions; furthermore, shorter comments have been taken in the order they appeared, whereas longer contributions have been included as "contributed papers" at the end of each session. Several scientists, who for personal reasons could not attend the meeting, were further invited to submit their contributions as full-length papers; these are included in the sessions where they logically belong. It is hoped that, in this way, the proceedings will reflect the current status of atomic and molecular quantum mechanics including also the new field of "quantum biology."

Even with these restrictions, the editing of the discussions has been a rather elaborate undertaking and our gratitude goes to the secretaries of the conference, Maurice Cohen and Yngve Öhrn, for their fine work in this connection. We are further greatly indebted to Darwin Smith, Chairman of local arrangements, for taking care of the many practical details of the symposium in an excellent way. Special thanks go finally to Ronald Fenton, Manager of Casa Ybel Hotel, and his staff for endeavoring to keep everyone on the island happy.

The International Symposium on Atomic and Molecular Quantum Mechanics was arranged as the conclusion of the Third Winter Institute on Quantum Chemistry and Solid-State Physics at the University of Florida, organized by its Quantum Theory Project in close collaboration with the Uppsala Quantum Chemistry Group. We would like to take this opportunity to express our deep gratitude to the Special Projects in Science Education division of the National Science Foundation for its wholehearted and generous support of the Institute and Symposium. Our warmest thanks go also to the International Science Division of the National Science Foundation, the Atomic Energy Commission, and the International Business Machines Corporation for valuable grants used in bringing distinguished foreign scientists to the conference. Finally, we would like to thank Professor E. U. Condon for his kind interest and support which enables us to publish these proceedings in *Reviews of Modern Physics*.

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