VOLUME III

1983 to 1987

PROCEEDINGS

of the

COMMONWEALTH OF PENNSYLVANIA

UNIVERSITY BIOLOGISTS

Edited and Organized

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CPUB PROCEEDINGS DEDICATIONS

VOLUME III

(1983 TO 1987)

DR. ALEX HENDERSON AND DR. KENNETH MICHEL

Volume III of the Proceedings of the Commonwealth of Pennsylvania University Biologists is dedicated to Dr. Alex Henderson of Millersville University of PA and Dr. Kenneth Michel of Slippery Rock University of PA. This honor is bestowed upon them in recognition of the many contributions they have made to CPUB from its inception to the present time. Both of them have served CPUB in variety of capacities in the past 18 years. Without their dedication and zeal to promulgate CPUB as an educational vehicle for furthering the goals and objectives of CPUB, many activities and projects would not have been so successful. Their extraordinary efforts on the behalf of CPUB will hopefully be a catalyst to all of us to better serve our students, our universities and all citizens of the Commonwealth of Pennsylvania.

DR. ALEX HENDERSON

Dr. Henderson is a Past President of CPUB and the only Director in CPUB history from Millersville University. He has chaired and served on numerous CPUB committees and is most noted for his leadership in the annual spring wildflower forays throughout all parts of Pennsylvania. He has also been important
In reviewing the abstracts which have been published in the Proceedings of CPUB. During the 1987 CPUB Annual Meeting at Clarion University, he was the featured speaker at the evening's meeting. Alex has always championed and supported CPUB and has never wavered in his quest to make CPUB one of the outstanding biological organizations in Pennsylvania and elsewhere.

DR. KENNETH MICHEL

Dr. Michel is one of the "founding fathers" of CPUB (originally known as APSCUB) and was the first President of it. He is also the only member to serve two terms (1969-1971) as our President. During our beginning years, he spent numerous hours at other CPUB universities, and assisted in the writing of our Constitution. He later served as Vice President and for the past five years has served as the CPUB Secretary and on countless other committees. His service to CPUB has never waned during the past 18 years and without his dedication and pursuit of excellence, CPUB could not have become a leader in Pennsylvania higher education.
PREFACE TO VOLUME III

Volume III of the Proceedings of the Commonwealth of University Biologists (CPUB) provides information on the professional, educational and scholarly activities of its members from 1983 through 1987. Prior to July 1, 1983, the biologists of the state-owned institutions of higher education belonged to the Association of Pennsylvania State Colleges and University Biologists (APSCUB). This was before all of the Pennsylvania Higher Education Institutions became universities. The name change of our organization and the new STATE SYSTEM OF HIGHER EDUCATION (SSHE) did not greatly affect CPUB, it just provided an impetus for its members to continue the standard of excellence which was the legacy of APSCUB. Volumes I and II of the Proceedings, demonstrates what the state biologists have accomplished in the areas of research, teaching, institutes and many other academic endeavors. During the past five years, CPUB biologists have continued to prosper and to develop new vistas of education and scientific expressions. This can be evidenced by the information provided in this volume of the Proceedings. Yet, only a fraction of the transactions of CPUB can be included; nevertheless, the information is representative of what CPUB biologists have undertaken and accomplished.

The final editing of Volume III of the Proceedings is the responsibility of the Editor; other sections were reviewed or written by those credited and all others by the Editor. Special appreciations is extended to Blair Carbaugh, Alex Henderson,
Foster Billheimer, and Ken Michel for their assistance and guidance in preparing this volume of the Proceedings. There were also several other CPUB Biologists who contributed extensively to make possible this important publication of CPUB. Hopefully, the information compiled herein, will be a testament to what the CPUB Biologists have contributed to the educational and academic activities of the Pennsylvania SSHE.