VOLUME II

PROCEEDINGS

of the

ASSOCIATION OF PENNSYLVANIA STATE COLLEGES

AND

UNIVERSITY BIOLOGISTS

Edited, Compiled and Organized

by

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DEDICATION

The second volume of the proceedings of the Association of Pennsylvania State College and University Biologists (APSCUB) is dedicated to Dr. Blair Carbaugh (Lock Haven State College) to commemorate his many and varied contributions to APSCUB. As a past president he provided leadership and direction to solve many of our problems and concerns pertaining to biological education in the Commonwealth.

During the past several years he has served as the APSCUB Director of Faculty In-service Institutes. He was mainly responsible for organizing the procedures and guidelines through which proposals were written to garner the necessary funds to begin the institute program. When the funds ceased, he still believed that in-service institutes were an integral component of APSCUB and should continue as long as they were needed. Without his dedication and indefatigable nature, the six successful institutes in biology would not have been possible, thus many of our faculty would not have had the opportunity to learn new information and skills in contemporary biology.

These in-service education opportunities have not only benefitted APSCUB faculty, but also the students who they teach in the classroom and laboratory. Many have benefitted from this APSCUB program and many more will do so in future years. Blair has been mainly responsible and the biologists of APSCUB are most appreciative of the institute work he has done for all of us.

Dr. Carbaugh is also to be commended for organizing the fall meetings of the APSCUB Board of Directors at the Sieg Conference Center. For the past several years he has hosted these meetings and provided the impetus for initiating each year’s programs of APSCUB.
Blair's contributions to APSCUB are numerous and have been vital to the continued success of our organization; all APSCUB biologists thank you, not only for being an outstanding biologist and educator, but also as a friend of all.
MEMORIAL

The second volume of the Proceedings of the Association of Pennsylvania State College and University Biologists is in memorium to Dr. Kim Rutherford. Dr. Rutherford, an Assistant Professor of Biology at Clarion State College, was killed in a tragic auto accident while on a biology club field trip during the autumn of 1980. During her brief two-year tenure at Clarion, she was an active member of APSCUB and made significant contributions to the biology department.

Kim had an unquenchable thirst for knowing. She was a perpetual learner, constantly curious, always inquiring. She valued the intellect and the power of science and the information it gave her about the beauty of nature. As a teacher, Kim knew, intuitively, how to encourage and inspire and how to make young people think more highly of themselves. She had time for students and gave freely of it. Kim's life serves as an inspiration to all who were taught by her and all in APSCUB who share her calling. We shall miss her.
PREFACE TO VOLUME II

Volume two of the Proceedings of the Association of Pennsylvania State Colleges and University Biologists (APSCUB) is a synopsis of the professional, educational and scholarly activities of its members from 1978 through 1982. It is also the concluding treatise of APSCUB, because of the inception (beginning July 1, 1983) of the Pennsylvania State System of Higher Education. On Friday, November 12, 1982 Governor Richard Thornburg signed into law Senate Bill 506 which makes possible a new era of higher education in Pennsylvania. Volume three of our Proceedings will represent a name change (yet to be determined) in our biological organization and perhaps new vistas of academic and scholarly expression. The members of APSCUB have accomplished much in the first twelve years of their existence as can be evidenced by the information recorded in Volume I of the Proceedings and in this volume. The transactions included in this volume (compilation of activities and events) are minute in comparison to what has transpired in the last five years, but they are representative of what the biologists of APSCUB undertake in the educational system of Pennsylvania and in the academic world.

The final editing of the APSCUB Proceedings is the responsibility of the Editor; other sections were written by those credited, and the remaining ones by the Editor. Special appreciation is extended to Foster Billheimer, Blair Carbaugh and George Harmon for their assistance and guidance in preparing the manuscript and to all who contributed to this important endeavor of APSCUB.
ASSOCIATION OF PENNSYLVANIA STATE COLLEGE AND UNIVERSITY BIOLOGISTS - HISTORY - 1977-1982

The latter part of the decade of the seventies was a relatively quiet period for APSCUB. There were no great problems that we faced as teaching biologists in the Commonwealth of Pennsylvania. Our faculty union, APSCUF, had become comfortable working with the state politicians and we had won our fight for contact hour credit for laboratory instruction.

The year 1977 was to witness some strange interactions between the legislative and executive branches of the Commonwealth. The executive branch had negotiated a salary increase with APSCUF for the State College and University Faculties, but the legislature would not appropriate the funds necessary to implement the agreement. This matter was appealed by APSCUF and suit was brought in the Commonwealth Supreme Court, all appellate actions resulted in decisions favorable to the faculties. This year, 1982, at last; the faculties of the State College and University system of Pennsylvania are to receive that long delayed negotiated salary increment.

In April of 1978, the Ninth Annual Meeting of the Association of Pennsylvania State College and University Biologists was held at the Sheraton Berkshire Inn in Reading, Pennsylvania. Kutztown State College was the host institution. The meeting was presided over by President Morrison. Blair Carbaugh had been appointed chairman of the Ad Hoc Professional Development Committee. This committee had surveyed the biology faculties and determined their areas of interest in professional development institutes. An institute in electron microscopy had been successfully held at California State College in January. Blair was encouraged to proceed with the development and initiation of other institutes.
Outstanding students from each of the fourteen sister institutions were recognized for their individual achievements. President Morrison turned the chair of the Association over to Robert Reed for the ensuing year.

The Tenth Annual Meeting of APSCUB was an exciting one at Millersville at the end of March 1979. The morning of the first day of the meeting, the now famous Three Mile Island Nuclear Reactor Accident occurred. The membership were much concerned over the potential biological consequences of the accident and the Association petitioned President Carter, Governor Thornburg, and the Nuclear Regulatory Commission expressing our "grave concern and dismay" over the nuclear accident.

During the preceding year three more institutes had been conducted by the Professional Development Committee. These were: Electron Microscopy II 1979, Natural History-Ecology 1978, and Marine Science 1978. Four additional institutes were planned for 1979-80 including Marine Science II, Tissue Culture, Physiology and Photography. The faculty that had participated in the various institutes were most enthusiastic about their experiences.

In response to efforts by the Pennsylvania Department of Education to liberalize the certification of Biology Teachers, the Association again adopted its 1973 resolution concerning Biology Teacher Certification and forwarded it to the Department of Education.

The presidency was transferred from Robert Reed to Henry Vallowe.

Due to the possibility of inclement weather late in the spring, the Eleventh Annual Meeting of the Association was held at Edinboro on April 25 and 26, 1980.
A new period of contract negotiations between APSCUF and the Commonwealth were underway. There was concern that credit for laboratory teaching would be reduced and a new Ad Hoc Committee was appointed to draft a 1980 position paper to justify contact hour credit for laboratory instruction. The position paper was prepared, adopted and forwarded to the APSCUF negotiating team.

A second Marine Science Institute and a Physiology Institute were held during the 1979-80 year. A Photography Institute was approved and planned for the ensuing year.

The president's gavel was given to Alex Henderson by Henry Vallowe.

The academic year 1980-81 was a relatively quiet one. The 1981 Annual Meeting, our twelfth one, was hosted by Cheyney State College and held at King of Prussia, Pennsylvania, on April 10 - 11, 1981. The Association conducted a self-study concerning the organizational structure. Proposals were made to change the constitution concerning the length of terms of office and the duties of the Vice President and Secretary-Treasurer. Plans were initiated to publish the second volume of "The Proceedings of the Association of Pennsylvania State College and University Biologists" in 1983 since that date would complete the organization's second five year cycle.

The eighties seem to be a period marked by a resurgence of creationism activity. The Association appointed an Ad Hoc Committee to develop a position paper expressing the Association's views supporting the teaching of evolution as a scientific theory and opposition to the teaching of creation as a valid scientific theory.

The office of the president was transferred from Alex Henderson to Ronald Rhein.

The 1982 Annual Meeting was the thirteenth and was held at Slippery
Rock State College on April 30 and May 1. This year had been a busy one for the Association. The self-study that had been initiated in the previous year led to some constitutional changes which resulted in structural changes in the organization and in the separation of the office of Secretary-Treasurer into two offices.

A Spring Director's Meeting was established to get committee reports on their assignments and to prepare for the Annual Meeting. The Spring Director's Meeting also facilitated the dissemination of information to each of the campuses.

A Photography Institute was held in May 1981, at California State College and was well attended. This institute initiated a new trend in the Association's institutes in that it was supported by the participants as outside financial support had disappeared.

Kutztown hosted a joint northeastern - southeastern regional meeting. Since Kutztown is geographically located between these two regions, the joint meeting encourages camaraderie among the faculty of these regions. As a result of the success of this meeting, a joint northeastern - southeastern regional meeting will be held each year that Kutztown is the regional host institution.

The Association's position paper on "The Teaching of 'Scientific Creationism' in the Commonwealth of Pennsylvania" was adopted by the membership. Copies of the statement were distributed to PSEA, AIBS and NABT.

Brochures outlining APSCUB purposes, activities, accomplishments, and structural organization had been prepared by the Membership Committee and were distributed.

The presidency of APSCUB was transferred from Ron Rhein to Clifford Kelsey. The next Annual Meeting will be held at Mansfield State College completing the fourteen institution cycle.
THE INCEPTION AND EVOLUTION
OF APSCUB INSTITUTES

Faculty members of the Pennsylvania State Colleges had limited interaction with each other until early in the 1960's. On January 20 of 1965, Alex Henderson of Millersville State College wrote to the Biology Department chairmen of the omnibus science departments of the fourteen state colleges stating that the Millersville biologists were interested in establishing a cooperative marine station. However, it wasn't until March 30 of 1968 that any significant progress was made. One year later, (May 9, 1969) the biology department members at Indiana University of Pennsylvania served as hosts to a meeting of state college biologists. This meeting was established as a means of discussing mutual problems and to consider the formation of a professional organization to foster communication and cooperation among biology faculties. The first official meeting of APSCUB occurred on April 16 and 17, 1970.

After the immediate organizational problems were solved and interested faculty became acquainted with each other, new vistas were envisioned. Workshops, seminars and faculty exchange programs were discussed and acted upon. This concept of formal interaction was further pursued at the Northeastern Regional meeting at Sieg Conference Center in 1973. The idea of cooperative activities was presented at the annual meeting at Bloomsburg State College in April 1974 where two potential programs emerged. One was the "Inland Terrestrial and Aquatic Ecology Study Areas" be developed: e.g., at Lock Haven's Sieg Conference Center and/or at the McKeever Learning Center in the Western Region. The second cooperative venture was the establishment of a program uniting not only the state college biologists, but the biologists from private liberal arts colleges. This program ended soon after its inception.
The idea of a mutual sharing of ideas and expertise among the state college and university biologists persisted and at the 1975 annual meeting at California, Robert Reed of Shippensburg proposed the development of a "Field Natural History" workshop. Concurrently the Pennsylvania Educational Services Trust broadened its guidelines so that groups like APSCUB could qualify for grants to fund academic workshops or institutes.

On May 9, 1975, James C. Parks of Millersville wrote a letter to then president of APSCUB, Blair Carbaugh, indicating an interest in writing a proposal to Educational Services Trust "for a summer teach-in program where various field oriented members from the State Colleges would come together and share their experiences". Dr. Parks asked President Carbaugh if Lock Haven's Sieg Center could be utilized for such a venture. President Carbaugh responded affirmatively and also suggested that APSCUB could apply for and administer grants for consortial programs. He expressed to Jim and to Bob a willingness to help write a grant for a summer teaching program.

The first formal action taken by APSCUB came about at the April 23 – 24, 1976 Annual Meeting. Dr. Alex Henderson moved "that the APSCUB President (Dr. Barry Hunter) contact APSCUF Trust Fund Committee to indicate APSCUB's support for weekend or week-long academic inservice workshops for faculty". The motion carried unanimously and the institute idea had substance in the scheme of things for APSCUB. President Barry Hunter asked Blair Carbaugh to chair an ad hoc committee of volunteers to assess interest and develop plans for inservice programs. The committee took the name of Professional Development of Biologists. Volunteer members were: Blair Carbaugh, James C. Parks, Robert Reed, Barry Hunter, Stan Fertig, William Morrison, George Harmon, Ron Rhein, and Margaret Martinez.
Ron Rhein at the Fall 1976 Northeastern Regional Meeting moved that a program be presented to the APSCUF Educational Trust Fund. Discussions ensued at the next Annual Meeting of APSCUB for "inservice training of state biologists". The motion added impetus to the action of the ad hoc Professional Development Committee. Additional encouragement by President Hunter prompted Dr. Carbaugh and Dr. Parks to circulate, with the consent of the Professional Development Committee, a pre-planning, information and interest survey to all the members of APSCUB. The response to that survey was not overwhelming, however, it indicated a significant interest in three general academic areas — Field Studies of Plants and Animals, Marine Biology, and Electron Microscopy.

A breakfast meeting of the Professional Development Committee was held at the Annual Meeting in Indiana, April 15 and 16, 1977. A preliminary report was formulated for the business meeting that day. The report noted that a formal proposal was being written requesting funding from the APSCUF Educational Trust for three institutes, Field Natural History, Marine Biology, and Electron Microscopy, to be held sometime in the summer of 1977 or January interim 1978. Also the committee agreed to a writing session which was to be convened by Dr. Carbaugh in the near future. The membership also authorized one hundred dollars expense monies for that purpose.

The Professional Development Committee convened at Bedford Holiday Inn on May 16 and 17, 1977. No record of detailed minutes were written but the following persons were present: Barry Hunter, Jim Parks, Robert Reed, Stan Fertig, William S. Morrison (then President of APSCUB), George Harmon (Secretary of APSCUB), Frank Muzzapoppa, Alex Henderson, and Blair Carbaugh. The result of that meeting was participant brainstorming and the writing of a preliminary outline of a grant proposal.
Another writing session took place at the Directors meeting on September 23 and 24, 1977 at Sieg; objectives and organizational details were established for faculty workshops. Discussion of institute projects and proposals were continued on October 7, 1977 at the Eastern Regional Meeting at East Stroudsburg.

The draft proposals of April, May, September and October were subsequently "polished" by George Harmon and Blair Carbaugh, were approved by the committee and submitted to the Educational Services Trust. Three institutes proposed: Field and Natural History at Sieg Conference Center in June 1978, with Robert Reed and James Parks as co-directors; Marine Biology at Wallops Island Marine Science Consortium in August 1978, directed by Alex Henderson; and Electron Microscopy at California State in January 1978, directed by Barry Hunter and Foster Billheimer. Final dates of the institutes were determined by the APSCUB directors and the Professional Development Committee utilizing information gathered through a faculty questionnaire.

The three one-week institutes were proposed with a total budget of $12,225.00. The Educational Trust funded $9,000.00 and required participants to provide their own transportation (no participant transportation funds were requested) and a $35.00 registration fee for each participant. Since the funding for the proposal was "bare bones", the possibility of having successful institutes on reduced funds was questionable. The directors believed the workshops could be undertaken with time and travel expenses paid by the participants. Detail planning continued and all three institutes were organized and carried out.

An authorization for a second one-hundred dollars to be used for Institute "seed money" was authorized by the directors at the Kutztown meeting in the Spring 1978.
The successful fiscal management carried out by the directors of the first three institutes and by APSCUB secretary-treasurer George Harmon resulted in a balance available from the Education Service Trust of $929.20. Dr. Hunter suggested we plan a second electron microscope institute using that $929.20 plus a registration fee sufficient to raise an additional $750.00 or so. The APSCUF Educational Trust agreed to our use of the grant balance for a fourth institute and Barry Hunter's idea of a second E.M. institute was fulfilled in January 1979.

During the winter of 1978-79 Blair Carbaugh and George Harmon, acting on the interest of members as shown on several questionnaires, coordinated the development of another proposal for submission to the Educational Services Trust. With the assistance of Drs. William S. Morrison and Robert Hart (Slippery Rock State College) an institute in physiology was planned.

Dr. Antone Fontes and Dr. Albert Hoffman agreed to direct an institute on animal tissue culture. Carmela Cinquina assisted them in planning this institute. Dr. Alex Henderson was again encouraged to organize a second marine biology institute and cooperated in preparing a second grant proposal. In February of 1979, the second proposal was submitted to the Educational Services Trust Fund (funding of $10,354). This proposal included participant registration fees of $2,100, industrial companies assistance of $50 and host institution in-kind service assistance of $3,520. The total funding was $16,024, a conservative budget for these three programs.

For those biological optimists it was easy to initiate planning for these three institutes. Dr. Carbaugh indicated to the directors to make final arrangements. The dates were set: Marine Biology - August 12-18, 1978, Organismal Physiology - May 20-25, 1979, and Tissue Culture -
January 6 - 11, 1980. Then the word came from the Trust Fund - only $4,500 would be available for our usage for all three institutes. To meet this financial problem, Dr. Carbaugh asked Dr. Henderson whether the Marine Science Institute could be run on a budget of $2,250 plus a registration fee and a possible stipend from the APSCUB treasury. Dr. Henderson believed it could be done and he continued to execute his plans for the Marine Biology Institute. Drs. Hart and Morrison also felt that they also could find ways to carry out the physiology institute on a similar cost basis. They finalized plans and the institute was successful, despite meager funding.

To make these two institutes possible, Dr. Carbaugh requested a total of $1,500 from the APSCUB treasury. Six hundred dollars was authorized by the Directors at the Millersville meeting (Spring 1980) and an additional nine hundred dollars was authorized at the Fall 1979 meeting by the Board of Directors.

Dr. Fontes and Dr. Hoffman were asked to keep plans in abeyance while other funds were sought. They agreed to do so, but their plans never reached fruition as continuing funding efforts proved unsuccessful. Drs. Fontes and Hoffman efforts were symbolic of the dedication of the many APSCUB members who worked to provide in service education to faculty of the Pennsylvania State Colleges and Indiana University. Those institutes which did materialize provided new knowledge and information to the participants, who in turn used it in their own classrooms.

Several letters of inquiry were sent to National Science Foundation (NSF) during the 1978-79 academic year. Following the Educational Trust Funds announcement of reduced funding for the institutes, Dr. Carbaugh, Dr. Harmon and Dr. Vallowe (President) prepared a preliminary proposal and submitted it to NSF in June 1979. In September 1979, a request came
from NSF to have a full proposal submitted. That final proposal was prepared and submitted by October 2, 1979.

On February 1, 1980, a letter of rejection was received from the NSF. The accompanying critiques showed that the proposal was excellent in its scope and planning but the rejection was based upon the opinion that we were trying to do too much in too little time in each institute.

One area that garnered strong interest by APSCUB members on several questionnaires was Scientific Photography. These were numerous and diverse objectives and goals the participants desired from such an institute. At the Annual Meeting at Edinboro in April 1980, Dr. Carbaugh asked Dr. Barry Hunter whether he had the equipment, time and energy to direct a photography institute for novices in scientific photography. The answer was "yes".

A detailed five-day program was developed by Dr. Hunter and sent to Dr. Carbaugh. Dr. Carbaugh completed a proposal for funds from the Educational Trust by May 1980. It proposed a scientific photography institute for January 4 - 9, 1981. The reply from the Trust was "... sorry, no funds, we're going out of business". Yet interest of the potential participants remained high. A response to a letter of inquiry to all APSCUB members indicated that 21 people would pay $100 each plus their own meals and transportation for a comprehensive five-day photography-learning experience. California State again provided lodging for their third on-campus institute. It was held on May 25 - 30, 1981.

The current fiscal conditions surrounding higher education makes finding of funds for our type of learning institutes extremely difficult. New approaches to agencies like the Fund for the Improvement of Post
Secondary Education (FIPSE) are being explored. However, the best option at this time is to try to use our own personal resources and reap the benefits of collective sharing as was the case with the Scientific Photography Institute.

The institutes which were undertaken generated participant comradery, the quest for new knowledge and the desire to learn as much as one could during the tenure of the institute. Our biological association was now operating as originally intended, a vehicle through which its members could interact, disseminate scientific information and procedures among its members and to foster scholarship and academic excellence. To better understand what occurred at the biological institutes, a brief summary of each one is provided.
ELECTRON MICROSCOPY INSTITUTES
CALIFORNIA STATE COLLEGE
January 1978 and January 1979

Dr. Barry Hunter and Dr. Foster Billheimer, Co-Directors

The Electron Microscopy Institutes provided the means for certain faculty in the state college system to share a biological specialty with their colleagues at sister institutions who have had little or no training in these special techniques. In many cases a teaching biologist may have adequate training in the area of his particular subdiscipline; however, he may realize his teaching performance could be enhanced through greater knowledge of other areas of biology. It was this philosophy which led to the inception of the Electron Microscopy Institutes as well as the other institutes sponsored by APSCUB.

It was felt that the acquisition of new skills would lead to better teaching, as well as provide retraining and updating. The information gained would be incorporated into classroom subject matter so that the students at each of the colleges would benefit from the participation of their staff members in this institute.

The Co-Directors of this institute were responsible for the organization, planning and implementation of the entire educational project. They along with Thomas Buckelew, provided the instruction, selected the topics covered in the institute, and the participants. The Co-Directors were also responsible for preparation of the institute budget, for publicity, and for evaluation of the institute (was rated excellent by the participants). They were assisted and advised in these endeavors by the Director of APSCUB Institutes, Dr. Blair T. Carbaugh.
The Electron Microscopy Institutes provided biologists of the state colleges with the opportunity for "hands-on" experiences with a variety of sophisticated microscopic instruments. Particular emphasis was placed on the participant's utilization of the scanning electron microscope, the transmission electron microscope, the Zeiss Photomicroscope II, and the X-ray energy analyzer. Each participant prepared a biological specimen or tissue for subsequent microscopic analysis.

The results of the Electron Microscopy Institutes have been gratifying. Colleges who have since acquired an electron microscope have made their instrument operational because a member of their biology faculty was a participant in the institute. Others have begun using the electron microscope in teaching and research, whereas before their participation in the institute, they were reluctant to do so. Many are using photographs in their teaching which were prepared by them during the institute.

We would recommend an advanced institute in electron microscopy be conducted in the future. This institute could provide additional time for selected electron microscopy techniques of a more specialized nature and would be available to participants of the earlier Electron Microscopy Institutes. Techniques such as DNA monolayering, vacuum evaporation, the freeze fracture technique, and sectioning of very hard specimens with the diamond knife would be included. Practicing electron microscopists from other state colleges could be called upon to present their own particular techniques at this institute.
During the week of June 4 – 9, 1978, an APSCUB institute in Natural History and Ecology was held at Lock Haven State College's Sieg Conference Center. Fifteen professors from eight of the Pennsylvania State Colleges participated in this academic enrichment program. The institute was organized on the premise that each participant, having expertise in one or more areas of ecology or natural history, could become an instructor to his colleagues by sharing his interests and skills. In addition, two consultants from outside of the state college system participated in the program: Catherine Keever in forest succession and Cary Miller in aquatic ecology.

Prior to the institute, co-directors James Parks of Millersville State College and Robert Reed of Shippensburg State College met on several occasions with institute coordinator Blair Carbaugh of Lock Haven State College to plan the program and select various study areas in the Lock Haven region. Streams, rivers, marsh lands, forests, ponds, lakes, fields, and strip mine areas became study sites. Activities such as visual observations, photography, water sampling, electro-fishing, seining, and collecting, all contributed to day-time learning. Morning hours were generally spent in the field, with afternoon periods devoted to sorting, identification, and data analysis. Most analytical work was done in Sieg Center's laboratory. Evening activities included seminars on such topics as Forest Succession, Community Involvement in Ecology and Fern Evolution.
Individual slide presentations on various nature topics were also a part of the after-supper program. Thursday was reserved as a "free day" giving participants an opportunity to work in areas of special interest. This resulted in fern collecting, herpetological searches, moss collections, nature photography and trips to special areas of biological interest.

The directors and participants all contributed to the informal learning process with the hope that new knowledge and increased enthusiasm would result in better instruction in college courses at home institutions. Evaluations by participants reflected a positive reaction to the week's activities. In retrospect, if there was any one criticism of the institute, it came from the co-directors. Perhaps we attempted to cover too much. Perhaps in the future, institutes in natural history-ecology should be more limited in scope but increased in depth of study. We believe that colleagues can and want to learn from each other. We believe such activities spark the mind and human spirit. We believe that we should try again.

MARINE SCIENCE INSTITUTES
WALLOPS ISLAND MARINE SCIENCE CENTER
August 1978 and August 1979

Dr. Alex Henderson, Director and Dr. Kenneth Miller, Assistant Director

Two Marine Science Institutes were held. The first one from August 6 - 11, 1978 and the second one in August 1979.

The purpose of the APSCUB training program was to bring together biology faculty members of the 14 state schools for academic growth through sharing of expertise. A second purpose was to permit participants to become better acquainted with faculty with similar interests.
from other institutions. A third purpose was to make APSCUB members aware of the excellent marine facilities available at the Wallops Island Marine Science Consortium.

The value of the Marine Biology Institute is realized when one considers the damage being done to the ocean, the fragility of the ocean and the economic value of our near shore waters and marshes. When we realize that four out of every five living creatures are found in the ocean and that the volume of the biosphere represented by the ocean is 300 times that of land, we can begin to appreciate its importance.

The two institutes were held at the Wallop's Island Marine Science Center located at Wallops Island, Va. It is a consortium of numerous eastern colleges and universities including most of the PA state owned and related colleges. The originator of the consortium and its current president are both APSCUB members.

The 1978 institute had 25 persons involved including 18 professors from 10 of the state colleges. Almost all of the 18 of these latter participants had little or no experience or training in marine science. In addition to Dr. Henderson, the institute director, and Professor Kenneth Miller, the assistant director, we used three specialists from the state college system: Dr. Herb Hays, an ornithologist, Dr. Sam Ha, an ichthyologist and Professor Harry Jones, a botanist. The outside specialists assisted on a one-day basis: Ms. Elaine Hodges from the Smithsonian Institution, Dr. Paul Hess, a shark physiologist, and Mr. William Roberts, an internationally acclaimed cinemaphotographer. WIMSC resident staff assisted as needed and Dr. Robert Hinds lectured on oceanographic instrumentation which although optional was well attended.
The group was introduced to succession of shore, beach, marsh, and estuary; methods of collecting including trawling, seining, as well as electroshocking in fresh water areas of estuaries; Bird watching, botanical transects, and limited collecting.

Evening lectures on marine aquatics, ornithology, scientific illustrations, piscine physiology, photography, conservation, ecology, as well as a session on the history and facilities of the consortium were held.

An evaluation was conducted and the unanimous opinion was that it was a very worthwhile experience and if at all possible should be offered again. As a result of the indication of interest, the institute was repeated in 1979. The 1979 program had the same number of participants and schools represented. We were unfortunately restricted to more beach work because of failure of the consortium vessels. It was unbelievable that so many things could go wrong with so many boat motors in one week. Dr. Anthony Provenzano of Old Dominion University was with us as a guest biologist and he added much to the institute's success. Dr. Donna Turgeon, a mollusc specialist, also contributed significantly to the institute so that in spite of equipment problems, the 1979 evaluations indicated that all the participants were pleased with their experiences.

ORGANISM PHYSIOLOGY INSTITUTE
SLIPPERY ROCK STATE COLLEGE
January 6 – 10, 1980

Dr. R. G. Hart and Dr. W. S. Morrison, Co-Directors

In a survey conducted during 1978, the biology faculty of the State College and University system showed enthusiastic response to a proposal
for an institute in this area. That institute became reality when, in early January 1980, sixteen persons representing nine campuses in the system as well as Grove City College and Westminster College participated in this institute on the campus at Slippery Rock State College. The institute was directed by Dr. R. G. Hart and Dr. William S. Morrison and was sponsored by APSCUB, the Pennsylvania State Colleges Educational Services Trust Fund, and Slippery Rock State College.

The institute included presentations in gamete physiology by Dr. J. R. Lodge of the University of Illinois, recent developments in reproductive physiology by Dr. R. H. Foote of Cornell University, functioning of male accessory sex glands by Dr. H. G. Williams-Ashman of the University of Chicago, techniques in radioimmunoassay by Dr. R. Falvo of the University of Southern Illinois. Attention was also given to the needs served by, and goals achieved of, the undergraduate physiology laboratory by Dr. Hart of SRSC.

In their evaluation of the institute, participants rated the institute excellent. The visiting scientists made significant contributions which most participants felt could be incorporated in their undergraduate teaching. In the opinion of the participants, institute format was excellent.

The institute objectives not only were fulfilled but also spawned two additional ideas. It identified a need for a similar institute in immunology and it became apparent that this content could be usefully applied in similar programs in other state systems.

The primary objectives of this institute were to stimulate participants to look critically to the future and to provide them with new insights and approaches which could easily be incorporated into their own teaching. Based upon participant evaluation, it can be concluded these objectives were accomplished.
SCIENTIFIC PHOTOGRAPHY INSTITUTE

California State College

May 1981

Barry B. Hunter, Director and Blair Carbaugh, Assistant Director

The Scientific Photography Institute was organized and structured to provide faculty participants with basic information and applied skills which would be useful to them in their teaching and research endeavors. Participants were able to learn scientific photographic applications by studying the prevailing principles and concepts in this discipline.

Sophisticated photomicroscopes were provided by American Optical Company, Leitz (through Broderson Instrument Company), and Nikon Instrument Division; these instruments enabled the participants to work with state of the art microscopes in photomicrography. Eastman Kodak Company donated educational materials for use in the institute. These commercial companies and the several representatives who assisted in this institute were in part responsible for its success; without their cooperation, interest and commitment to this institute, it would not have been possible.

Institute faculty were Dr. Barry B. Hunter, Dr. Kenneth Dowler, Mr. Bruce Carnivale, all of California State College and Mr. John Vetter, Chief of Medical Media Services, Western Pennsylvania Hospital, Pittsburgh, Pennsylvania. Mr. Vetter is recognized as one of the foremost authorities in scientific photography and Mr. Carnivale is presently a medical photographer at the Walter Reed Hospital in Washington, D.C. Dr. Dowler is now completing a Post-Doctoral position in virology at Yale University.

The participants learned theory and applied information in general photography, close-up photography, photomacrography, photomicrography
and illustrative photography. Recent developments in biological photography (new films, new cameras and photomicroscopes, and modern techniques and procedures) were discussed and "hands on activities" were undertaken to provide the participants ample opportunity to apply their newly learned skills/information. The participants worked and studied during the day and late into the night. They became proficient in developing color reversal films (E-6 chemistry) and in color printing of photographic slides (Cibachrome process). The gray card became an integral part of exposure determination and the photomicroscopes were always being utilized by the faculty participants. The twenty-one participants represented eleven of the Pennsylvania State Colleges and Indiana University. At times they seemed indefatigable as they tried to cover all of the prescribed photographic areas of study in the time allotted. Most participants succeeded in completing all of applied studies/procedures and they rated the institute as being an excellent educational experience. The final summation by all who attended the institute —— it was "kellerful".
PAST PRESIDENTS

Ship 1969 - 1970 Kenneth Michel ......... Slippery Rock State College
West Chester 1970 - 1971 Kenneth Michel ......... Slippery Rock State College
L-H 1971 - 1972 Gould Schrock ............... Indiana University
Clerkion 1972 - 1973 Carmela Cinquina ............. West Chester State College
Norm 1973 - 1974 Joseph Vaughn ............... Bloomsburg State College
Cal. 1974 - 1975 Gordon Kirkland ............. Shippensburg State College
E. Strouds 1975 - 1976 Blair Carbaugh ............. Lock Haven State College
Indiana 1976 - 1977 Barry Hunter .............. California State College
Kent 1977 - 1978 William Morrison ............. Slippery Rock State College
Millersville 1978 - 1979 Robert Reed ............. Shippensburg State College
Cedar Grove 1979 - 1980 Henry Vallowe ............. Indiana University
Cheeny 1980 - 1981 Alex Henderson ............. Millersville State College
Marlboro 1982 - 1983 Clifford Kelsey ............. East Stroudsburg State College
APSCUB OUTSTANDING STUDENTS

(1978 - 1982)

In 1977 APSCUB initiated an Outstanding Biology Student Award to a student at each college and Indiana University who best exemplified scientific scholarship and achievement. This ongoing award is presented each year to selected students at the Annual Meeting of APSCUB. The criteria for student selection were established by the departmental members at each educational institution. Funds are provided by APSCUB and by departmental members to provide transportation and room expenses for award winners.

This extraordinary honor of distinction is given to one student, but it is meant to represent the qualities and knowledge possessed by numerous students who attend the Pennsylvania State Colleges and Indiana University. Many of the previous year's winners are presently continuing their academic studies at dental, medical and graduate schools and in various career endeavors.

STUDENT AWARDS

1978

Stephen D. Fox - Bloomsburg State College

Jody Hughes - California State College

Mohammed Bey - Cheyney State College

Jacqueline Mellilo - Clarion State College

John Campbell - East Stroudsburg State College

Thomas Meyers - Edinboro State College

Deborah Schlegel - Indiana University
THOMAS KAMERZEL - KUTZTOWN STATE COLLEGE
PAT BUCHANAN - LOCK HAVEN STATE COLLEGE
ROBERT HOTCHKISS - MANSFIELD STATE COLLEGE
SCOTT HESSEN - MILLERSVILLE STATE COLLEGE
JOHN PRESOGNA - SLIPPERY ROCK STATE COLLEGE

STUDENT AWARDS

1979

CHRISTOPHER J. PETERSON - BLOOMSBURG STATE COLLEGE
MARGARET BRADLEY AND KENNETH DOWLER - CALIFORNIA STATE COLLEGE
CAREN LEE THOMPSON - CHEYNEY STATE COLLEGE
LINDA SIGISMONDI - CLARION STATE COLLEGE
HARLEN W. GESSNER - EAST STRoudsburg STATE COLLEGE
BARBARA COSGROVE - EDINBORO STATE COLLEGE
KAREN MONTGOMERY AND ERIC ROUTMAN - INDIANA UNIVERSITY
DEBRA SERFASS - KUTZTOWN STATE COLLEGE
BONNIE L. GORSIC - LOCK HAVEN STATE COLLEGE
SALLY LOU BENJAMIN - MANSFIELD STATE COLLEGE
KATHLEEN LUCAS - MILLERSVILLE STATE COLLEGE
NANCY CHAMBERLAIN - SHIPPENSBURG STATE COLLEGE
LAURIE L. MCCLURE & KENNETH D. ZIMMERMAN - SLIPPERY ROCK STATE COLLEGE
CLARENCE B. ALSTON - WEST CHESTER STATE COLLEGE
STUDENT AWARDS

1980

Richard D. Baylor – Bloomsburg State College
Douglas B. Molyneaux – California State College
Buster DeAngelo Smith – Cheyney State College
Bennett Van Houten – Clarion State College
Robert Lowell Claser – East Stroudsburg State College
Thomas James Perkoski – Edinboro State College
Roberta Lee Brueggman – Indiana University
Michael D. Lecce – Kutztown State College
David Michael Roth – Lock Haven State College
Loretta Clark – Mansfield State College
Carolyn J. Kroehler – Millersville State College
Sherilyn G. Gibson – Shippensburg State College
Janice Marie Kuczynski – Slippery Rock State College
Leslie Ann Teeple – West Chester State College

STUDENT AWARDS

1981

Leann Faye Mock – Bloomsburg State College
Joseph Anthony Berg, Jr. – California State College
Victoria Regina Lewis – Cheyney State College
Christopher William Borell – Clarion State College
Sherri L. Labar – East Stroudsburg State College
Carolyn Brothers – Edinboro State College
Robert Bell Walker – Indiana University
STUDENT AWARDS

1981 (cont.)

Michele Yarnall - Kutztown State College
Blair Siegfried - Lock Haven State College
Adrena Elaine Johnson - Mansfield State College
Harry A. Alden - Millersville State College
Robert E. Clay - Shippensburg State College
Eric Wikramanayake - Slippery Rock State College
Sharon A. Wright - West Chester State College

STUDENT AWARDS

1982

Randall Rhodes - Bloomsburg State College
Ronald Baird - California State College
Roger Scott, Jr. - Cheyney State College
Lisa Salerno - Clarion State College
Kathy Krezeminski - East Stroudsburg State College
Debra Fertiz - Edinboro State College
Keith Gibson and Ken Gibson - Indiana University
Steve Kocher - Kutztown State College
Judith Keegan - Lock Haven State College
Andrew Paolini II - Mansfield State College
Mike Steele - Millersville State College
Anthony Panettiere - Shippensburg State College
William Goldner - Slippery Rock State College
Virginia Weidenman - West Chester State College
CURRENT STATUS OF
REPRESENTATIVE AWARD WINNERS

Theresa Thompson - West Chester State College.

Is working towards her Master's Degree in Ethnology at the University of Maryland.

Clarence Alston - West Chester State College.

Completing his third year of medical school at the University of Pennsylvania School of Medicine.

Leslie Teeple - West Chester State College.

Completing her second year of medical school at Temple University Medical School.

Steven Winton - Mansfield State College.

A student in the School of Veterinary Medicine at the University of Pennsylvania.

Adrena Johnson - Mansfield State College.

Is studying to become a Physician's Assistant at the Hahneman Hospital in Philadelphia, Pennsylvania.

Andrew Paolini - Mansfield State College.

A teacher of high school biology in Virginia.

Nancy Chamberlain - Shippensburg State College.

Is a medical technologist at the Hershey Medical Center, Hershey, Pennsylvania.

Robert Clay - Shippensburg State College.

Working and taking graduate courses in the computer center at Shippensburg State College.

Ronald Baird - California State College.

First year of medical school at Philadelphia School of Osteopathic Medicine.
Joseph Berg, Jr. - California State College.
Is pursuing a Master's Degree in marine ecology at the University of Maryland.

Kenneth Dowler - California State College.
Received his Ph.D. in Medical Microbiology at West Virginia University. Presently a Post-Doctoral student at Yale University.

Douglas Molyneaux - California State College.
A fishery biologist for the United States Wildlife Service in Alaska.

Jacqueline Mellilo - Clarion State College.
Graduate student in biology at the University of Alaska.

Linda Sigismondi - Clarion State College.
Ph.D. candidate in aquatic biology at Oregon State University.

Bennett Van Houten - Clarion State College.
Ph.D. candidate in molecular biology at the University of Tennessee.

Christopher Borell - Clarion State College.
Pursuing Master's Degree in biology at Miami University of Ohio.
AMENDMENTS TO THE CONSTITUTION FOR THE
ASSOCIATION OF PENNSYLVANIA STATE COLLEGE
AND UNIVERSITY BIOLOGISTS (APPROVED BY
THE BOARD OF DIRECTORS ON OCTOBER 3, 1981)

Under Article III - Officers

Section 1

"The officers of the organization shall be a President, a Past
President, a President-Elect, a Vice-President, and a Secretary-Treasurer". Shall be changed to read ... The officers of the organization shall be a President, an immediate Past President, a President-Elect, a Vice-
President, and a Secretary-Treasurer.

"All officers shall serve for a term of one year and the Vice-
President and Secretary-Treasurer shall be eligible for reelection". Shall be changed to read ... All officers shall serve for a term of one
year and the Vice-President, Secretary and Treasurer shall be eligible
for reelection.

Note: All other parts of Article III shall remain as before in the
extant Constitution.

Under Article IV - Duties of Officers

Section 1: Officers

C. (Duties of Vice President). Delete ... "Shall act as a liaison
between the host institution and the Executive Committee in planning
the annual meeting" and substitute ... shall prepare and distribute
an up-to-date directory of Pennsylvania State College and University
Biologists.

D.1. The entire section shall be changed to read as follows:

D. The Secretary shall keep, or cause to be kept ...
Note: The two changes are the number 1 is dropped and the word
Treasurer removed.

D.2. The entire section shall be changed to read as follows:

E. The Treasurer shall have the authority ...
Note: The two changes are the letter D and number 2 are dropped
and replaced with the letter E and the word Secretary is
removed.

D.3. The entire section is replaced as follows:

F. The Secretary and Treasurer shall both maintain an up-to-date
mailing list of the regular and associate membership.
Note: All other parts of Article IV shall remain as before in the
extant Constitution.
Under Article VI - Committees

Section 2: Permanent Committees

A. The Executive Committee

A.1. and A.2. shall be changed to read as follows:

1. The committee shall consist of the President, the immediate Past President, the President-Elect, the Vice-President, the Secretary, the Treasurer, and the three Chairmen of the Regional Boards of Directors.

2. The President, the Secretary and the Treasurer shall perform these same offices on this committee.

In addition the Board of Directors on March 20 will act on the following amendments.

Under Article VI - Committees

Section 2: Permanent Committees

C. The Membership Committee

1. The Committee shall consist of three members including the Secretary of the organization.

Add 2d. to prepare and distribute a brochure documenting the purpose, activities, and accomplishments of APSCUB which shall be revised at the discretion of the Committee. This brochure shall be approved by the Board of Directors before publication.

D. The Publications Committee

Change 2. which now reads "The function of the Publications Committee shall be to maintain an up-to-date directory of Pennsylvania State College and University Biologists" to read: The function of the Publications Committee shall be to maintain and up-date the Proceedings of the Pennsylvania State College and University Biologists. These proceedings shall be published every five years and distributed to the membership at large and all interested parties.
SCIENTIFIC AND EDUCATIONAL

ABSTRACTS

of

FACULTY AND STUDENTS

of

APSCUB

(1978-1982)

I. Kutztown State College (1978)  
   (Abstracts 78-1 to 78-14)

II. Millersville State College (1979)  
    (Abstracts 79-1 to 79-15)

III. Edinboro State College (1980)  
     (Abstracts 80-1 to 80-12)

IV. Cheyney State College (1981)  
    (Abstracts 81-1 to 81-13)

V. Slippery Rock State College (1982)  
   (Abstracts 82-1 to 82-17)
SCIENTIFIC PAPER PRESENTATIONS

ABSTRACTS

INTRODUCTION

The presentation of research and educational papers by APSCUB faculty and students commenced at Rock Haven State College in 1972. At this Annual Meeting, eight researchers presented their data of ongoing research at their academic institutions. At the next five Annual Meetings of APSCUB there would be 51 more scientific paper presentations. The information disseminated at these presentations demonstrated that faculty and students of APSCUB were involved in numerous research studies at their academic institutions. Biological investigations were being pursued in numerous discipline areas such as: bacteriology; biochemistry; chemotaxonomy; dendrology; entomology; fungal morphology and physiology; herpetology; industrial microbiology; invertebrate zoology; limnology; mammalian ecology and physiology; microbial chemistry; microscopy; parasitology; soil microbiology; stream and lake ecology; and zoological and botanical ultrastructure. The data and interpretations derived from these studies were often published in numerous biological journals.

Biological research studies by APSCUB faculty and students continued during the next five years (1978-1982) as will be evidenced by the research abstracts published herein. Many of the students who began their research work at the state colleges and Indiana University have graduated and are presently pursuing graduate degrees in biological research areas. Many APSCUB faculty have also obtained grant and contract funding to carry out their research programs.

The abstracts of this Proceedings are indexed by author and by subject. These index listings are provided to enable readers to determine
the kinds of biological studies undertaken and the individuals involved in them.

The Senior Author of each abstract presented the biological paper, unless otherwise noted.