

PROCEEDINGS OF THE TENNESSEE ACADEMY OF SCIENCE 1990

Diane R. Nelson, Secretary TAS
East Tennessee State University

EXECUTIVE COMMITTEE MEETING

April 17, 1990

The Executive Committee meeting of the Tennessee Academy of Science was called to order by President Prem Kahlon at 7:00 p.m. C.S.T. in Room 314 of the downtown campus of Tennessee State University on April 27, 1990. Members present were Prem Kahlon, president; Ben Stone, president-elect; Bernard Benson, past-president; John Harris, treasurer; Libby Workman, *Journal* editor; Richard Raridon, director of the Collegiate Division; Tom Byrne, meeting coordinator; D.M.S. Bhatia and Michael Kennedy, members-at-large; and Robert Wilson, local arrangements chairperson. In the absence of the secretary due to illness, a tape recorder was used in the meeting and the minutes were later transcribed by the secretary.

The minutes of the November 1989 Executive Committee meeting and the Annual Business Meeting were published in the April 1990 issue of the *Journal* and copies were distributed to the executive committee. The minutes were approved as printed by a motion passed unanimously.

The treasurer's report was published in the April 1990 issue of the *Journal*. Discussion was postponed until the budget proposal was considered under New Business.

The editor, Libby Workman, reported that currently there are 20 manuscripts accepted for publication, 9 manuscripts in review, and 11 manuscripts in revision. Postage rates are expected to rise an average rate of 19%, which will affect the cost of mailing the *Journal*. The editor distributed copies of an article by Stewart Ware entitled "Prestige and Impact vs. Usefulness in Biological Journals or Am I Just a Regional Kind of Guy," which was published in the ASB Bulletin and included favorable comments about the *Journal* of TAS. The editor's report was accepted.

Ernestine Friedman, administrative assistant to the director of the Visiting Scientist Program, Dr. Wayne Stevenson, sent the following report: "Oak Ridge Associated Universities (ORAU) continues to administer the Tennessee Visiting Scientist Program. The program supports visits by scientists, engineers, physicians, and other professionals to junior and senior high schools throughout the state. Sponsored by the Tennessee Academy of Science, the program's services are offered to Tennessee's schools at no cost.

With the use of comprehensive mailing lists obtained from the Tennessee Department of Education, all junior and senior high school science and mathematics teachers received program fliers. These fliers describe the program and provide instructions on how to obtain a visiting scientist roster. The roster is currently being revised and updated. Those of you who are presently listed will be receiving a letter in the near future asking you to review your entry and make any necessary

changes. If you are not participating in the program and would like to, please call Maggie West at (615)576-3424.

Roster and application forms were also mailed to all Tennessee schools and to individual teachers upon request. Combined with promotional activities for other educational programs administered by ORAU, announcements were carried in educational newsletters, newspapers, and other media. The program was also promoted at the Tennessee Science Teachers' Association and other statewide meetings and conferences. The program continues to be recognized and used as a valuable teaching resource. The following is a summary of academic year 1989-90 program activities through April 20, 1990."

Number of Scientists on the Roster	170
Number of Visits Requested	66
Number of Visits Completed	36
Number of Requests Scheduled	9
Number of Requests Pending	8
Number of Students Contacted	2600
Number of Teachers Contacted	129

The director's report was accepted.

The Director of the Collegiate Division, Richard J. Raridon, presented the following report:

"The middle region of the TAS Collegiate Division under the direction of Dr. James X. Corgan of Austin Peay State University held its annual meeting March 31, 1990 at APSU. Twenty-three papers were presented by students representing seven schools. The eastern region under the direction of Dr. Irving T. Glover of Roane State Community College held its annual meeting April 10, 1990 at Pellissippi State Community College. Nineteen papers were presented by students from eight schools.

The western region under the direction of Dr. Charles J. Biggers of Memphis State University held its annual meeting April 20, 1990 at the University of Tennessee at Memphis. Fourteen papers were presented by students from three schools."

The director's report was accepted.

Dr. Raridon, AAAS representative, presented the following report:

"I represented the academy in New Orleans February 16-18, 1990, at the Section Y meeting of AAAS and the business meeting of the National Association of Academies of Science. I also visited the poster session for the junior academy at which we had a representative this year, Taunya Wright, from Webb School. She had a nice exhibit and represented us well!" The report was accepted.

A motion was passed unanimously to include the following items of information in the *Journal*:

"The Tennessee Academy of Science is affiliated with the

American Association for the Advancement of Science. TAS, and most of the other state academies, are in Section Y along with the U.S. Metric Association and other multidisciplinary groups. If you are a member of AAAS, please consider becoming a voting member of Section Y so that you can support candidates and programs from the academies. You can still remain a voting member of the section that you are in now, due to recent changes in the AAAS bylaws. The report from our AAAS representative is published each year in the minutes from the April executive committee meeting."

"Taunya Wright, a student at Webb School in Knoxville, represented the academy at the annual meeting of the American Junior Academy of Science in New Orleans, Louisiana, February 15-18, 1990. Taunya was chosen as one of the top paper presenters at the TAS Junior Academy program in the spring of 1989. Her abstract is as follows:

Three Dimensions in Three Dimensions

The purpose of this project was to determine whether or not it is easier to perceive three dimensions in three dimensions. The (W)Right Cube allows this to be done. Visualizing three dimensions on a two-dimensional surface requires practice and because of the difficulties involved, the understanding of the concept may be lost. The (W)Right Cube is an effective device for understanding the concept. Using the cube in education (geometry, linear algebra, etc.) gives the students a "hands-on" experience that will allow them to understand a concept and to be more confident in their understanding when they attempt to represent the idea on a two-dimensional surface."

The director of the Junior Academy, William Pafford, sent the following report:

"The 1990 spring meeting is scheduled for Friday, April 20, at Pearl-Cohn High School in Nashville. A total of twenty-five students have been invited to present their research papers. Fifty-eight papers were submitted from eighteen schools this year. This compares favorably with forty-four papers received from eleven schools last year. The number of schools involved in the Junior Academy program is increasing, and papers submitted this year seem to be of higher quality than in the recent past.

A representative from the Tennessee State Department of Education is scheduled to be with us at the April 20 meeting. At that time a certificate and a small honorarium will be presented to an outstanding science teacher from each of the three grand divisions of the state. The three teachers to be recognized are as follows: East Tennessee—Fredric George Wetzel, Science Hill High School, Johnson City; Middle Tennessee—Joe E. Nunley, Jr., Riverdale High School, Murfreesboro; and West Tennessee—Ruth Ann Tullis, Germantown High School, Germantown. Expenses of the annual meeting will be considerably more this year than in the past. More students will present and more school districts are involved than at any time during the past fifteen years. It is anticipated that the total budget will be expended after all meeting expenses are paid." The director's report was accepted.

Geraldine Farmer, State Board of Education, was unable to attend the executive committee meeting. Dr. Bernard Bensen, past-president, distributed copies of his report to Dr. Charles E. Smith, Commissioner of Education, thanking the State for its

support of the academy's secondary and post-secondary service programs.

Robert Wilson, chairperson of local arrangements, and Benjamin P. Stone, program chairperson and president-elect, reported on plans for the 1990 annual meeting at The University of Tennessee at Chattanooga.

OLD BUSINESS

Ben Stone presented the following report on the possibility of a joint meeting with the Kentucky academy in 1992:

"I have discussed with Dr. Debra Pearce, KAS president, the possibility of a joint meeting between TAS and KAS in 1992 or a later date. Dr. Debra Pearce expressed considerable interest in working out the complications involving a meeting between the state academies. The KAS executive committee will be meeting this Saturday, April 28th. She will bring this group for their advice and planning. This group is planning a joint meeting involving KAS, Ohio, and Indiana academies.

Dr. Pearce indicated the KAS has five to six hundred in attendance during their annual meetings. Consequently both academies would have a combined attendance in the range of eight to nine hundred. The KAS meetings involve two days with 17 concurrent sections."

Discussion was held and a motion was passed for TAS to develop plans for the TAS-KAS meeting for Friday-Saturday, November, 1992, with the plenary session Friday afternoon, banquet Friday night, and sectional meetings Friday and Saturday. The local arrangements committee was appointed: William Ellis, chairperson; Ben Stone, and D.M.S. Bhatia.

Tom Byrne, meeting coordinator, presented the following report:

"The computerization duties of the meeting coordinator for the Tennessee Academy of Science have been completed. All form letters have been "mail-merged" into data banks for the next meeting coordinator's use. Please be advised that this is my third and final year of service to the academy in this capacity."

Bernard Benson presented the following guidelines for the TAS Distinguished Service Awards. The guidelines were accepted by a motion passed unanimously.

TAS DISTINGUISHED SERVICE AWARDS

"The TAS Distinguished Service Award program was initiated in 1989. It serves as a primary means of providing formal recognition to individuals who have served the academy admirably for an extended period of time and often in several capacities. The first recipient of the award was Dr. Robert G. Ziegler of Lincoln Memorial University. Dr. Ziegler was honored at the eastern regional meeting of the Collegiate Division on March 31, 1989, for his contributions to the Collegiate Division of TAS. Four awards were given at the November 18, 1989, meeting of the academy. They were presented to Dr. James Caponetti and Dr. Paul Wishart of UT Knoxville, Dr. Robert L. Wilson of UT Chattanooga, and Dr. Gus Tomlinson of Tennessee State University.

This document serves to outline a procedure for administering the TAS Distinguished Service Award. It should be noted that this award was not established as an annual award. It will be given at the discretion of the executive board. Recommendations may be submitted at any time to the TAS president. The past recipients and

the members of the executive board including the president may submit recommendations. Recommendations should contain a detailed chronology of accomplishments for each individual respective to service to TAS.

The TAS secretary will substantiate that the information contained in each recommendation is accurate. Action on the nominations will be taken at the April executive committee meeting. Nominations for the DSA will be made in the order in which the recommendations were received. A two-thirds majority is required for approval.

It shall be the responsibility of the president to prepare the plaques for presentation at the annual luncheon and business meeting. The president shall formally invite the recipients to the TAS meeting. The nature of the award they are to receive should be communicated to them. A formal news release should be sent to the recipients and to their respective employers in advance of the annual meeting. The president will be responsible for making the formal presentation. The meeting coordinator or his/her designee will be responsible for having photographs taken of the recipients with the TAS president. Copies of these photographs should be sent to the TAS *Journal* editor, the TAS president, and the recipients.

The plaque shall have a walnut base with dimensions of approximately 9"x12." A brass plate affixed to the plaque will be overlaid with a black enameled plate. The lettering will be in gold. A standard circular science seal will be affixed to the top center of the plaque.

The wording on the plaque will be as follows:

TENNESSEE ACADEMY OF SCIENCE
DISTINGUISHED SERVICE AWARD
TO

FOR MANY YEARS OF UNTIRING EFFORT AS

THIS AWARD IS MADE THIS ____ DAY OF NO-
VEMBER, _____.

PRESIDENT

Note: Original plaque ordered from Mr. Trophy, Chattanooga, Tennessee."

Bernard Benson will report on the constitution amendments and bylaws at the November meeting.

Future TAS meetings will be held at MTSU, 1991; APSU, 1992; and MSU, 1993. Volunteer State has indicated its willingness to host TAS at a future date.

Standing committees have been formed by the president, Prem Kahlon, and will be listed in the program.

NEW BUSINESS:

A motion was passed to accept ORION, an Oak Ridge astronomy society, and the Cumberland Museum in Nashville as affiliate societies of the Tennessee Academy of Science.

A motion was passed to ask Dr. James Corgan to propose a plan of affiliation that the executive committee can discuss at the next meeting.

A letter from Dr. Corgan requesting academy support for his book entitled *Tennessee's Pioneer Scientists: A Biographical Dictionary* was discussed. A motion was passed to ask the president to write Dr. Corgan explaining that the executive committee reviewed the proposal but felt the request was beyond the scope and purview of the goals and mission of the academy. Dr. Corgan is to be encouraged and commended for his significant research on the history of science in Tennessee.

The following resolution was adopted by the History of Science section at the November 1989 meeting. The resolution was sent to the executive committee in April by Dr. George Webb, section chairperson.

RESOLUTION

"WHEREAS, the 1990 meeting of the Tennessee Academy of Science has been defined as the 100th meeting of the academy, despite the existence of only 98 meetings before 1990, and

WHEREAS, the History of Science section of the academy believes that such inaccuracies reflect adversely on the historical consciousness of the academy, therefore

BE IT RESOLVED, that the History of Science section urges the Tennessee Academy of Science to issue a clarification or correction concerning the 1990 meeting."

Dr. Corgan sent a history of the problem along with the following resolution:

WHEREAS there is significant doubt as to the historically proper enumeration of academy meetings, and

WHEREAS it is too late to alter the enumeration for the 1990 meeting, and

WHEREAS it may not be desirable to change the enumeration of meetings even if it is not historically accurate,

RESOLVE that Dr. George E. Webb, chairman of the History of Science section, form a committee of three members of the History of Science section to evaluate all evidence concerning the historically correct enumeration of academy meetings.

RESOLVE that Dr. Webb, or his designee, report to the executive committee during the next meeting of the committee.

RESOLVE that, if a change in the enumeration of academy meetings seems desirable, such change shall not be implemented prior to 1991.

Dr. Stone presented a possible clarification of the issue. The executive committee passed a motion to proceed with the 100th meeting in 1990 as scheduled. The History of Science section is encouraged to debate the issue, to investigate, and gather data and present such information to the executive committee if further action is needed.

NOTE: The tape recording of the minutes ended here. The remaining information is based on incomplete notes.

The APSU Center for Field Biology is sponsoring the 1991 Symposium on the Vertebrates of Tennessee and Kentucky. A special issue of the *Journal* containing the symposium papers was proposed. A motion was passed for the academy to co-sponsor the symposium and to provide \$4,000 toward the cost of the special issue. The remaining cost will be paid by the Center for Field Biology (approximately \$8,000).

A dues increase was discussed; it will be discussed and voted

on in November 1991 and will go into effect July 1992. Regular \$20; Student \$10; Emeritus \$10; Sustaining \$25; Supporting \$30; Life \$200.

The Treasurer's report was accepted and the following budget was adopted.

TREASURER'S REPORT

Cash Receipts and Disbursements for Year Ended June 30, 1990

RECEIPTS:

STATE OF TENNESSEE	19000.00
MEMBERSHIP DUES	8602.00
LIBRARY SUBSCRIPTIONS	2055.00
JOURNAL—SPECIAL ISSUE	5110.89
ANNUAL MEETING FEES	1789.00
INTEREST EARNED	1401.00
JOURNAL PAGE CHARGES	1282.00
AAAS AWARD	900.00
EXHIBITORS' FEES	200.00
CONTRIBUTIONS	143.00
Misc.	228.51
Total Receipts	\$40,711.40

DISBURSEMENTS:

PRINTING AND PUBLICATIONS	17790.93
TENN. JR. ACADEMY OF SCIENCE	4892.51
VISITING SCIENTIST PROGRAM	4600.00
ANNUAL MEETING	3657.09
RESEARCH GRANTS	1895.28
BOARD MEETING	1622.18
TREASURER'S OFFICE EXPENSE	1552.15
COLLEGIATE DIVISION	1034.92
AWARDS	1000.00
SECRETARY'S OFFICE EXPENSE	741.25
ACCOUNTING FEE	550.00
BROCHURES	547.33
TRAVEL	500.00
MEMBERSHIP COMMITTEE	300.00
PRESIDENT'S OFFICE EXPENSE	246.60
Misc.	80.00
TOTAL DISBURSEMENTS	41,010.24
CASH DECREASE FROM OPERATIONS	[298.84]
CASH BALANCE, JULY 1, 1989	20,724.10
CASH BALANCE, JUNE 30, 1990	\$20,425.26

SUMMARY OF CASH ACCOUNTS

JUNE 30, 1990

TENNESSEE SAVINGS BANK	
Box 568	
114 S. WILLOW AVENUE	
COOKEVILLE, TN 38503-0568	
NOW ACCOUNT	625.38
SAVINGS ACCOUNT	19,394.55
TOTAL	\$20,019.93
TENNESSEE TECHNOLOGICAL UNIVERSITY	
COOKEVILLE, TN 38505	
AGENCY ACCOUNT	405.33
CASH BALANCE, JUNE 30, 1990	\$20,425.26

BUDGET FOR 1990-91 (Projected Disbursements)

President's Office	\$500
Secretary's Office	600
Treasurer's Office	2000
Junior Academy	5500
Visiting Scientist Program	4600
Journal	18000
Research Grants	1000
Annual Meeting	3500
Collegiate Division	1000
Board Meetings	1500
AAAS	500
Meeting Coordinator's Office	300
Membership Committee	300
Audit Fee	500
TOTAL BUDGET	\$39,800

The meeting was adjourned at 10:25 p.m.

EXECUTIVE COMMITTEE MEETING

November 15, 1990

The executive committee meeting of the Tennessee Academy of Science was called to order by president Prem Kahlon at 7:10 p.m. EST in the Heritage Room of the University Center at The University of Tennessee at Chattanooga on November 15, 1990. Members present were Prem Kahlon, president; Benjamin P. Stone, president-elect; Bernard Benson, past-president; Diane R. Nelson, secretary; John Harris, treasurer; Libby Workman, *Journal* editor; William Pafford, director of the Junior Academy; Wayne Stevenson, director of the Visiting Scientist Program; Richard J. Raridon, director of the Collegiate Division; Tom Byrne, 1990 meeting coordinator; Betty Davis, 1991 meeting coordinator; Habte Churnet, D.M.S. Bhatia, and Michael Kennedy, members-at-large; Geraldine Farmer, State Department of Education; and Robert Wilson, local arrangements committee.

The secretary, Diane R. Nelson, distributed copies of the minutes of the April 1990 executive committee meeting which had been tape-recorded in the absence of the secretary due to illness. A motion to amend the minutes and to print the minutes as amended in the April issue of the *Journal* was passed.

The treasurer, John Harris, presented his audited report, which appears elsewhere in these proceedings. The report was accepted by a motion passed unanimously.

The editor, Libby Workman, reported that currently there are eight manuscripts in review, 12 in author revision, and 21 accepted for publication. The backlog is due partially to the special symposium issue even though the number of pages in the *Journal* has been increased from 28 to 44. The rejection rate for manuscripts is very low. The editor was requested to provide information about the cost of the *Journal* relative to the number of pages at the next executive committee meeting.

The director of the Visiting Scientist Program, Wayne Stevenson, presented the following report prepared by Ernestine Friedman, Oak Ridge Associated Universities: "The Tennessee Visiting Scientist Program is administered by Oak Ridge Associated Universities and supports visits by scientists, engineers, physicians, and other professionals to elementary, middle, junior, and senior high schools throughout the state. Funded by the Tennessee Academy of Science, the program is a service provided at no cost to schools and represents a commitment to precollege education by Tennessee's scientific community located at colleges, universities, and laboratories.

The goal of the Tennessee Visiting Scientist program is to enable outstanding professionals in science and other technical fields to make personal contacts with students and teachers, to acquaint them with science applications, and to provide information on careers. By making presentations, conducting informal discussions, or becoming involved in other school activities, a visiting scientist hopes to encourage students to pursue educational programs that lead to careers in science, mathematics, and engineering, while providing support and professional interaction for teachers.

During the past year, we have updated the speaker roster and revised it into a more readable and usable format. This new booklet has recently been mailed to the Title II coordinator or instructional supervisor in charge of science education at every school in the state. In addition, each teacher who has used the program during the past three years received a copy to be shared with colleagues. Lead teachers who participated in ORAU professional development programs also received a copy. A total of 2,100 speaker rosters have been mailed.

The promotional fliers were also revised to make them more visible and readable. Names of teachers were added to the school address file for mailing labels, so the fliers will reach a larger group of people who are potential users of the program. Approximately 2,990 science teachers received the flier.

In addition, an ORAU representative attended the meeting of the state association of science teachers and reached many teachers who were not familiar with the program.

SUMMARY OF PROGRAM ACTIVITIES:

	Academic Year	
	1989-90	1990-to-Date
Number of Visits Requested	73	27
Number of Visits Completed	52	7
Number of Students Contacted	3400	720
Number of Teachers Contacted	165	21

The number of visits completed in 1989-90 represents a 37% increase over the previous year. The volunteer scientists are dedicated people who are very willing to work with teachers in an effort to fit a visit into busy school schedules. Most unfilled requests are a result of the inability to work around these schedules.

Estimates of the number of contacts is based upon the return of completed evaluation forms. Although the return rate is high, the contact number is not available for all visits. An average of 70 students and more than three teachers were contacted per visit.

Program assessment and documentation is an integral part of this program's operation. An important element of this assessment is the collection of evaluation information from participating scientists and teachers. This information also serves as the

basis for modifications pertaining to procedures and overall program planning.

Over the years, the Tennessee Visiting Scientist program has been a strong and viable part of the education and scientific communities of Tennessee. The 1990-91 program is expected to show an increase in usage. Since the beginning of the academic year, 27 requests for visits have been received; seven lectures have been completed, 11 visits have been scheduled, and nine requests are being processed. Requests continue to come in at a steady rate, and we hope this will increase due to promotion at the recent Tennessee Science Teachers' Association meeting and recent mailing of the new program promotion materials." The report was accepted. Suggestions were made to advertise the program through the Journal and the Science Teachers Association of Tennessee.

The director of the Collegiate Division, Richard J. Raridon, presented the following report:

"Each year TAS can nominate two college students, one male and one female, for an honorary membership in the American Association for the Advancement of Science. This includes a year's subscription to *Science* magazine. On the basis of their paper presentations at regional Collegiate Division meetings, the students nominated for 1990 are Barbara Lawson, Tusculum College, and Douglas Tatham, Austin Peay State University." The director's report was accepted. The individuals will be recognized in the *Journal* and will also be given membership in TAS for one year. The director was charged to develop a standard procedure for recognizing the contributions of those involved in the program. The editor was charged to obtain information about the Collegiate Division from the director and to advertise the program in the *Journal*.

The director of the Junior Academy, William Pafford, presented the following report:

"The 1990 Annual Meeting of the Tennessee Junior Academy of Science was held on Friday, April 20, at Pearl Cohn Comprehensive High School in Nashville. A total of 58 papers were submitted from 14 schools, and 25 were selected by a panel of readers to be presented at the annual meeting. The two top presenters were Ms. Chesleigh Murray of Tullahoma and Mr. Scott Ballard of Camden. They have been invited to present their papers at the annual meeting of the National Junior Academies of Science in Washington. The meeting is held in conjunction with the AAAS meeting in February. The Tennessee Academy of Science will fund a portion of their expenses up to \$350 each. Both have indicated that they plan to attend.

Three outstanding science teachers were recognized at the Junior Academy meeting. They were Mr. Fredric George Wetzel, Science Hill High School, Johnson City (East Tennessee Representative); Mr. Joe E. Nunley, Jr., Riverdale High School, Murfreesboro (Middle Tennessee Representative); and Ms. Ruth Ann Tullis, Germantown High School, Germantown (West Tennessee Representative). Each received a framed certificate and a check in the amount of \$200. We are indebted to Dr. Geraldine Farmer of the Tennessee State Department of Education for assistance in selecting these outstanding teachers." The director's report was accepted. The Distinguished Teachers also are provided with a one-year membership in the academy and will be invited to attend the Science and Mathematics Teachers section and be recognized by the section chairperson. Dr. Pafford

will notify the treasurer, the section chairperson, and the editor of the names of the recipients for appropriate recognition.

The representative of the State Department of Education, Geraldine Farmer, stated that high school teachers should be encouraged to publish in the *Journal* and to become involved in the academy. High school and college teachers could co-author papers.

Robert Wilson, local arrangements committee, and Ben Stone, program chairperson, discussed arrangements for the 1990 meeting. They were commended for their excellent work.

The following reports from standing committees were presented.

AUDITING. Auditor James F. Mckinnie sent the following report:

"I have examined the receipts and disbursements records of the Tennessee Academy of Science for the fiscal year ended June 30, 1990, and in my opinion, the attached cash receipts and disbursements statement correctly reflects the cash position of the organization at June 30, 1990. The entire accounting system is well maintained.

I also prepared a Return of Organization Exempt from Income Tax, including a Schedule A. This Form 990 must be filed with the Internal Revenue Service no later than November 15, 1990."

FELLOWS. Dr. S. K. Ballal, chairperson of the Fellows Committee, submitted the following report:

"The Fellows Committee, chaired by Dr. S. K. Ballal, professor of biology, Tennessee Technological University, Cookeville, places the name of Dr. Martin V. Stewart of Middle Tennessee State University in nomination for Fellow of the Tennessee Academy of Science, and recommends that Dr. Stewart be elected a Fellow of the academy."

Dr. Stewart has served as chairperson of the chemistry section, has presented papers at the annual meeting, and has had students present papers at the Collegiate Division regional meetings. A motion was passed to present Dr. Stewart's name to the membership at the annual business meeting for approval.

MEMBERSHIP. Dr. James X. Corgan, chairperson of the membership committee, submitted the following report:

"The membership committee has active representatives on most college and university campuses of the state. Effective recruitment at the large institutions remains a problem, but the total effort for 1989-1990 produced laudable results. In advance of the November meeting, we had 125 recruits and anticipate a total enrollment for the year well in excess of 160 new members. This should be the academy's second best recruitment year of all time. The best year thus far was 1948 when integration of the academy and the return of veterans yielded a total recruitment of 201 people."

A list of new members in 1990 was compiled by the treasurer and the individuals will be presented to the membership for approval at the annual business meeting.

NECROLOGY. Robert Wilson, chairperson, reported the deaths of two members of TAS: Amy Elizabeth Anderson, retired ORAU research associate, and Norman Campbell, TAS president in 1967.

NOMINATING. Dr. Bernard Benson, chairperson, presented the following slate of officers recommended by the committee for 1991:

President: Dr. Benjamin P. Stone

President-Elect: Dr. Michael Kennedy

Secretary: Dr. Diane R. Nelson

Treasurer: Dr. John Harris

The proposed slate of officers was approved and will be presented to the membership at the annual business meeting.

RESEARCH. The report of the research committee, chaired by Dr. Fred Wolf, will be presented at the annual business meeting. **RESOLUTIONS.** Ms. Betty C. Davis, chairperson, submitted the Resolution of Appreciation. Two other resolutions from AAAS were read by the secretary, Diane R. Nelson. All three resolutions were approved and will be presented to the membership at the annual business meeting.

OLD BUSINESS

The proposed joint meeting with the Kentucky Academy of Science will be pursued at a later date, i.e. for 1995.

Bernard Benson will review the constitution and bylaws. The proposed dues increase requires a change in the bylaws. Libby Workman, editor, will announce the proposed dues change in the *Journal*.

William Ellis will be replaced as chairperson of local arrangements for the APSU meeting by Dr. Bhatia. Ben Stone and Floyd Scott will also serve on that committee.

NEW BUSINESS

A motion was passed to list in the program the past-presidents and dates of service.

Future meetings will be held at MTSU in 1991, APSU in 1992, MSU in 1993, and David Lipscomb College in 1994. The 1995 meeting could be held at Volunteer State or in conjunction with the Kentucky academy.

A motion was passed to appoint Betty C. Davis as the new meeting coordinator. Her three-year term will run January 1991-December 1993. Appreciation was expressed to Tom Byrne.

A motion was passed to express the appreciation of the executive committee to Bernard Benson for his outstanding service to the academy.

The meeting was adjourned at 9:30 p.m.

THE ONE HUNDREDTH MEETING OF THE TENNESSEE ACADEMY OF SCIENCE

November 15-16, 1990

The annual meeting of the Tennessee Academy of Science was held on November 15-16, 1990, at The University of Tennessee at Chattanooga. Dr. Robert L. Wilson was chairperson of local arrangements. Dr. Benjamin P. Stone, APSU, was program chairperson.

The executive committee meeting was held in the University Center Heritage Room on Thursday, November 15, 1990. The general session, luncheon, and section meetings were held in the University Center on Friday, November 16. The general session was held in the Tennessee Room, University Center, beginning at 9:00 a.m., with Dr. Benjamin P. Stone presiding. The academy was welcomed by Dr. Charles Renneison, vice-chancellor of student affairs. The TAS Plenary Session began at 9:15 a.m. with the keynote address given by Dr. Diane R. Nelson, department of biological sciences, East Tennessee State University. Dr. Nelson's

presentation was "Marine Life on the Great Barrier Reef: The Good, the Bad, and the Beautiful." At 10:00 a.m. TAS past-presidents were recognized and each received a plaque honoring them for their service to the academy. Those attending included: Benjamin P. Stone, 1991; Prem Kahlon, 1990; Bernard W. Benson, 1989; David E. Fields, 1988; David Yarbrough, 1986; William H. Ellis, 1985; Robert L. Wilson, 1984; H. Gordon Morris, 1983; S. K. Ballal, 1982; A. Paul Wishart, 1981; Clay M. Chandler, 1980; James D. Caponetti, 1979; Robert E. Martin, 1978; Raymond L. Tanner, 1977; John M. Mallette, 1976; Albert L. Myers, 1975; J. Gerald Parchment, 1973; Richard J. Raridon, 1971; Melburn R. Mayfield, 1966; J. Gordon Carlson, 1961; Arlo I. Smith, 1958; Claude S. Chadwick, 1956; Frederick T. Wolf, 1955; and Dr. A. J. Sharp, 1953. The annual business meeting followed the recognition of the past presidents; President Prem Kahlon presided. A luncheon cruise down the Tennessee River was held on the "Southern Belle" riverboat.

Section meetings were held Friday afternoon as listed in the program. Collegiate Division papers were presented in the appropriate sectional meetings.

ANNUAL BUSINESS MEETING

November 16, 1990

The annual business meeting of the Tennessee Academy of Science, Inc., was called to order by President Prem Kahlon. The president determined that a quorum was present.

The reports of the secretary, treasurer, editor, and directors of the three educational programs were similar to those presented the previous evening at the executive committee meeting. The reports were approved and will be recorded in the Minutes.

The secretary, Diane R. Nelson, presented the reports of the standing committees. The report of the auditor was read. The secretary read the recommendation of the Fellows Committee, chaired by S. K. Ballal, which was approved by the executive committee. A motion was passed that Dr. Martin V. Stewart be elected a Fellow of the academy. New members were recruited through the efforts of the membership committee. A motion to accept the new members was passed. The secretary reported two deaths among the membership during the year: Amy Elizabeth Anderson, retired ORAU research associate, and Norman Campbell, TAS president in 1967. A moment of silence was observed in memory of these individuals.

Dr. Fred Wolf, chairperson of the research committee, submitted the following report:

"The research committee had available for support of science projects by secondary school students the sum of \$1900. Of this amount \$900 was contributed by AAAS, and \$1000 came from the academy's own funds. Thirty-five applications were received from 14 different institutions. The total amount requested was slightly in excess of \$4800. Awards will be made in the near future."

The secretary presented the slate proposed by the nominating committee and approved by the executive committee. The president asked for further nominations. The name of Tom Byrne was placed in nomination for president-elect. The two candidates were requested to leave the room, and members then voted by a show of hands. Dr. Michael Kennedy was elected as president-elect. A motion was passed to elect Dr. Benjamin P. Stone as president; Dr. Diane R. Nelson as secretary, and Dr. John

Harris as treasurer.

The following resolutions were presented and accepted by motions passed by the membership:

RESOLUTION OF APPRECIATION

"WHEREAS, the Tennessee Academy of Science, including the Collegiate Division, is enjoying a most pleasant, profitable and well-organized series of meetings at the University of Tennessee at Chattanooga, and

WHEREAS, the success of these meetings has resulted mainly from the efforts of the officers of the respective sections, the local arrangements committee representing the University of Tennessee at Chattanooga, composed of Dr. Robert Wilson, chairman, Bernard Benson, Gail Meyer, Barbara Walton and Jane Womack; the program chairman, Dr. Benjamin Stone; from the recognition given the meetings by the press, television, and radio stations; and from the generous hospitality of the host institution, the University of Tennessee of Chattanooga and its chancellor, Dr. Frederick W. Obear,

BE IT RESOLVED, therefore, that the Tennessee Academy of Science expresses its sincere appreciation to these and all others who have contributed to the success of these meetings."

AAAS RESOLUTION ON FEDERAL LEGISLATION PROVIDING IMMUNITY FOR INVESTIGATIONS AND REPORTING OF SCIENTIFIC FRAUD AND MISCONDUCT

"WHEREAS the primary mission of the AAAS is furthering the work of scientists, facilitating cooperation among them, fostering scientific freedom and responsibility, improving the effectiveness of science in the promotion of human welfare, to advance education in science, and increasing the public understanding and appreciation of the importance of the methods of science in human progress; and

WHEREAS incidents of scientific fraud and misconduct destroy the trust among scientists that is essential for collaborative research and for scientific progress and may undermine public confidence in the methods and achievements of science; and

WHEREAS some institutions and individuals have been reluctant to report confirmed incidents of fraud and scientific misconduct, due to fears of lawsuits and of potential legal liability; and

WHEREAS some scientific journals also have been reluctant, for similar reasons, to publish retractions of discredited articles or to print notices of formal findings of fraud and misconduct; and

WHEREAS because the law of defamation, intentional interference with the contract rights of others, and similar causes of action differ widely among the states, there is an acknowledged fear of burdensome lawsuits and potential legal liability arising from the truthful reporting of scientific fraud and misconduct; and

WHEREAS the problem of fraud and misconduct will not diminish until scientists, administrators, and editors fulfill their responsibility to the larger community by reporting confirmed incidents of scientific fraud and misconduct;

BE IT RESOLVED that the AAAS encourages federal legislation providing immunity from legal liability for academic institutions, commercial and non-profit research entities, peer review groups, and scientific journals which investigate allegations of scientific misconduct and who report on the outcomes of

responsibly conducted investigations, so long as due process is afforded to the accused; and

BE IT FURTHER RESOLVED that similar immunity should be afforded to persons who in good faith cooperate with or participate in such investigations."

AAAS RESOLUTION ON THE USE OF ANIMALS IN RESEARCH, TESTING, AND EDUCATION

"WHEREAS society as a whole, and the scientific community in particular, supports and encourages research that will improve the well-being of humans and animals, and that will lead to the cure or prevention of disease; and

WHEREAS the use of animals has been and continues to be essential not only in applied research with direct clinical applications in humans and animals, but also in research that furthers the understanding of biological processes; and

WHEREAS the American Association for the Advancement of Science supports appropriate regulations and adequate funding to promote the welfare of animals in laboratory or field situations and deplores any violations of those regulations; and

WHEREAS the American Association for the Advancement of Science deplores harassment of scientists and technical personnel engaged in animal research, as well as destruction of animal laboratory facilities; and

WHEREAS in order to protect the public, both consumer and medical products must be tested for safety, and such testing may in some cases require the use of animals; and

WHEREAS the American Association for the Advancement of Science has long acknowledged the importance and endorsed the use of animal experimentation in promoting animal welfare and in advancing scientific knowledge;

BE IT RESOLVED that the American Association for the Advancement of Science continues to support the use of animals in scientific research; and

BE IT FURTHER RESOLVED that scientists bear several responsibilities for the conduct of research with animals; (1) to treat their subjects with proper care and sensitivity to their pain and discomfort, consistent with the requirements of the particular study and research objectives; (2) to be informed about and adhere to relevant laws and regulations pertaining to animal research; and (3) to communicate respect for animal subjects to employees, students, and colleagues; and

BE IT FURTHER RESOLVED that the development and use of complementary or alternative research or testing methodologies such as computer models, tissue, or cell cultures, be encouraged where applicable and efficacious; and

BE IT FURTHER RESOLVED that the use of animals by students can be an important component of science education as long as it is supervised by teachers who are properly trained in the welfare and use of animals in laboratory or field settings and is conducted by institutions capable of providing proper oversight; and

BE IT FURTHER RESOLVED that scientists support the efforts to improve animal welfare that do not include policies or regulations that would compromise scientific research; and

BE IT FURTHER RESOLVED that the American Association for the Advancement of Science encourages its affiliated societies and research institutions to support this resolution."

NEW BUSINESS

Future meetings will be held at MTSU in 1991, APSU in 1992, MSU in 1993, and David Lipscomb in 1994.

A dues increase will be voted on in November 1991, which will go into effect in July, 1992. The proposed dues schedule is: Regular, \$20; Student, \$10; Emeritus, \$10; Sustaining, \$25; Supporting, \$30; Life, \$200.

Mrs. Betty C. Davis was introduced as the new meeting coordinator appointed by the executive committee. Her three-year term will run January 1991–December 1993.

A special award was given to Dr. Bernard Benson by Dr. Prem Kahlon in appreciation of Dr. Benson's service to the academy.

The gavel was passed from Dr. Kahlon to Dr. Ben Stone, who adjourned the meeting at 11:00 a.m.

TREASURER'S REPORT

November 15, 1990

John W. Harris, Treasurer

Cash Balance—July 1, 1990	\$20,148.46
RECEIPTS:	
STATE OF TENNESSEE	1900.00
MEMBERSHIP DUES	1197.00
LIBRARY SUBSCRIPTIONS	60.00
INTEREST EARNED	560.01
JOURNAL PAGE CHARGES	630.00
JOURNAL SALES	0.00
CONTRIBUTIONS	0.00
REGISTRATION AND LUNCHEON FEES	0.00
AAAS AWARD	900.00
TOTAL RECEIPTS	22347.01
TOTAL CASH AVAILABLE	42495.47
DISBURSEMENTS:	
JOURNAL PRINTING COSTS	9300.00
VISITING SCIENTIST PROGRAM	0.00
TENN. JR. ACADEMY OF SCIENCE	450.00
ANNUAL MEETING	737.49
BOARD MEETING EXPENSES	122.64
TREASURER'S EXPENSES	291.11
PRESIDENT'S EXPENSES	183.75
STUDENT RESEARCH GRANTS	0.00
COLLEGIATE DIVISION EXPENSES	200.00
SECRETARY'S EXPENSES	421.54
TOTAL DISBURSEMENTS	11,706.53
CASH BALANCE—NOVEMBER 1, 1990	30,788.94
RECEIPTS	22,347.01
DISBURSEMENTS	11,706.53
CASH INCREASE	10,640.48
CASH BALANCE—JULY 1, 1990	\$20,148.46
CASH BALANCE—NOVEMBER 1, 1990	\$30,788.94
BREAKDOWN OF HOLDINGS	
TTU ACCOUNT	351.96
CHECKING ACCOUNT, TN SAVINGS BANK	4,015.61
SAVINGS ACCOUNT, TN SAVINGS BANK	26,421.37
TOTAL HOLDINGS AS OF NOV. 1, 1990	30,788.94