

PROCEEDINGS OF THE TENNESSEE ACADEMY OF SCIENCE 1992

Sarah H. Swain, Secretary TAS

Middle Tennessee State University

TAS EXECUTIVE COMMITTEE MEETING

April 24, 1992

The Executive Committee meeting of the Tennessee Academy of Science was called to order by President Michael Kennedy at 7:10 PM CST in the Presidential Conference Room, Avon Williams Campus, Tennessee State University, Nashville, TN, on April 24, 1992. Members present were Michael Kennedy, President; Benjamin Stone, Past President; Sarah Swain, Secretary; John Harris, Treasurer; George Murphy, President-Elect; William Pafford, Director of Junior Academy; Richard Raridon, Director of Collegiate Division; Geraldine Farmer, State Department of Education; Libby Workman, *Journal* Editor; D. M. S. Bhatia, Member-at-Large and Chairperson of Local Arrangements Committee; John Freeman and Andy Sliger, Members-at-Large; and Jack Rhoton, Assistant Director of Junior Academy.

Motion was made and unanimously approved to accept minutes of November, 1991 Executive Committee meeting as submitted by Dr. Diane Nelson, Secretary.

Treasurer John Harris expressed optimism regarding the financial status of the Academy considering the absence of state support this year (loss of \$19,000). Expenses for the 1991 annual meeting at MTSU in November were less than revenues collected.

Treasurer Harris stated that the Junior Academy would not be able to operate without State Department of Education grant funds. It is undetermined at this time if these funds will be available to support Junior Academy. President Kennedy requested that Dr. Wayne Stevenson, VSP Director, and Dr. Jack Rhoton, Junior Academy Assistant Director, submit a proposal requesting grant funds for both programs to State Department of Education by July 30.

Dues increases go into effect beginning July 1, 1992 as approved by vote of the membership, November 1991. Discussion of 1992-93 budget is considered under New Business.

Journal editor, Libby Workman, reported there are 25 manuscripts accepted for publication, 11 in review, and 11 in author revision. *Journal* publication is restricted due to limited funds even though there are manuscripts available now for three issues.

Director Wayne Stevenson was not present to report on the Visiting Scientist Program. Committee members verified that participation in VSP continues to increase and that state funds will be requested to support the program.

Director of Collegiate Division, Richard Raridon, reported that 25-30 papers are expected to be presented at the West Regional meeting Saturday, April 25. Approximately 50 papers were presented at the Middle Regional meeting, and 20 participants presented papers at the East Regional meeting this spring. This represents an increase in participation over spring 1991.

Director of Junior Academy, William N. Pafford, presented the following report: "The 1992 spring meeting is scheduled for Friday, April 24, at Pearl-Cohn High School in Nashville. A total of twenty students have been invited to present their research papers. This year we received a total of forty-one papers from seven schools. Nine teachers sponsored one or more students.

A representative from the Tennessee State Department of Education is scheduled to be with us for the April 24 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: Jennifer Birchfield, Elizabethton High School, Elizabethton; Middle Tennessee: Larry Barnickle, Smyrna High School, Smyrna; West Tennessee: Janice Young, Dyersburg High School, Dyersburg. We are indebted to Dr. Geraldine Farmer for her assistance and cooperation in selecting these outstanding teachers.

I would like to thank members of the Executive Committee for the high degree of cooperation and assistance I have received during the years I have served as Director of the Junior Academy. It has been a real privilege to be associated with each member of the Committee. Even though this is my last year to serve, I hope to continue my association with the Tennessee Academy of Science and attend the annual meetings."

Zemer Gitai, student from White Station High School, Memphis, represented TAS at the annual meeting of the American Junior Academy of Science in Chicago, February 7-10, 1992, presenting a paper: "Antifreeze Glycopeptides in *Ictalurus punctatus* (catfish)."

The report was accepted.

OLD BUSINESS

At the November 1991 meeting of the Executive Committee a Distinguished Service Award committee was appointed. The following names were presented by the committee and approved for the award: Dr. James Corgan, Dr. Diane Nelson, and Dr. William Pafford. The awards will be presented at the November 1992 annual meeting.

Dr. Andy Sliger presented a report for the Committee on Treatment of Animals in Research. A revised statement, as submitted by Betty Davis, Resolution Committee chairperson, follows:

"WHEREAS, the Tennessee Academy of Science recognizes that the use of animals in research has been and continues to be essential for advances in the life sciences and medicine,

BE IT RESOLVED that the membership of the Tennessee Academy of Science adds its support to the American Association for the Advancement of Science in its 1990 resolution on the use of animals in research, testing and education, and

BE IT FURTHER RESOLVED that the Tennessee Academy of Science adds its support to the American Institute of Biological Sciences 1992 guidelines for the use of organisms in biological education and research, and

BE IT FURTHER RESOLVED that upon review and approval of the Executive Committee of the Academy, the Editor of the *Journal* of the Tennessee Academy of Science may refuse to publish a submitted paper when it is evident that the criteria set forth in the above resolutions and guidelines have not been met."

Similar resolutions from the American Institute of Biological Sciences and the American Association for the Advancement of Science will also be presented for approval by the membership at the November annual business meeting.

Vote by Executive Committee approved these appointments to the Executive Committee:

Dr. D. M. S. Bhatia, Member-at-Large, Two-Year Term

Dr. John R. Freeman, Member-at-Large, Three-Year Term

Dr. Andy Sliger, chairperson, provided copies of constitution revisions proposed by the Constitution Committee for review by members of the Executive Committee. President Kennedy charged members of the Executive Committee to study the revision and to forward suggestions for change to Dr. Sliger by July 1. It is the goal of the committee to present an approved revised form to the TAS membership for ratification at the 1993 November annual meeting.

Dr. George Murphy presented the report of the Journal Study Committee charged by 1991 President Ben Stone to study all aspects of TAS *Journal* printing. Journal Study Committee members are Dr. Geraldine Farmer, Dr. Prem S. Kahlon, Dr. Richard Raridon, and Dr. George Murphy, chairperson. As stated in the report: "The committee philosophy was to make recommendations that will provide maximum cost savings with minimum impact on journal quality. The committee met in Nashville on Monday, 6 April, 1992. In addition to the above committee members, Dr. Mike Kennedy, TAS President, was in attendance. Recommendations of the committee are respectfully submitted as follows: (1) The current quality of the TAS journal is very good and the editor is to be congratulated for her efforts. (2) Dr. Raridon presented the results of his survey of the state academies of science. In looking at these data it is obvious that our charges are not comparable to those of other states. As costs of printing the TAS journal have gone up, offsetting increases have not occurred in several revenue sources."

Based on the recommendations of the Journal Study Committee, the following motions were approved by the Executive Committee: (1) to accept the committee recommendations regarding page charges as proposed at \$45 per page; (2) to consider adding pages to the journal (i.e. above the number that TAS is financially able to publish) if the author(s) bore the entire cost of these extra pages; (3) to accept the committee recommendation to increase library subscription rate from the current \$15 to \$30 per year, and foreign subscriptions from the current \$15 to \$30 per year; (4) that the Journal Study Committee review and establish acceptable format with the editor; (5) that, as recommended by the Journal Study Committee, the Constitution Committee give consideration to revising the wording for selection of section editors. [NOTE: Committee recommends as follows: "Section editors are currently elected by members present at each section meeting. This may result in election of less interested individuals. It is recommended that the editor nominate section editors and the executive committee give approval. No change in current editors is anticipated."]

The Journal Study Committee also recommends "that the practice of paying for editorial services should be discontinued." The recommendation "is based on the fragile financial condition of the Academy, and a philosophical opposition to paying for some Academy services (editorial) and not for others (all other offices, but especially secretarial duties)."

A motion to adopt the policy of no longer contributing financial support for editorial services was approved.

President Kennedy offered praise to Libby Workman for quality editorial work performed for the Academy. A motion to add Libby Workman's name to those to be honored with the Distinguished Service Award was approved by vote and applause in appreciation for her work. In addition, a motion to award a Life Membership in TAS to Libby Workman was approved.

Lastly, a motion to charge the Journal Study Committee to resolve the immediate problem of editorship and to recommend its resolution to the President was approved. Discussion included the committee's suggestion to consider separate duties of a managing editor and a journal

editor, and the suggestion that individual TAS members be encouraged to recruit industrial members.

Dr. Robert L. (Rock) Wilson forwarded to President Kennedy a copy of his letter to state congressmen encouraging the reinstatement of financial support for TAS. The Executive Committee approved the preparation of a similar letter from the President of TAS and encouraged similar efforts by members.

NEW BUSINESS

Dr. D. M. S. Bhatia, APSU, discussed local arrangements for the November 1992 meeting at APSU.

Future annual meetings are scheduled as follows: 1992, APSU; 1993, MSU; 1994, David Lipscomb University. Past President Ben Stone reported that a joint meeting with Kentucky Academy of Science could not be worked out this year, but a joint meeting in 1995 at Western Kentucky University is being considered.

Recommendations for 1992-93 expenditures outlined in the 1992-93 Budget Worksheet prepared by the Treasurer were based on holding expenses within projected income. Following discussion of budget limitations due to the absence of state financial support, a motion to accept the budget proposed by the Treasurer, April 24, 1992, and to hold expenses within the proposed budget, and to avoid the use of reserve funds was approved.

The meeting of the Executive Committee was adjourned at 10:20PM CST.

BUDGET FOR 1992-93

Projected Income for 1992-93:	
State of Tennessee	\$ 5,000*
Membership Dues	10,000
Annual Meeting Fees	2,000
Journal Page Charges	900
Library Subscriptions	2,000
Interest Earned	400
Exhibitor's Fees	200
Contributions	200
AAAS	700
TOTAL	\$21,900
Projected Disbursements:	
President's Office	\$ 0
Secretary	600
Treasurer	1,500
Junior Academy	5,500*
Visiting Scientist Program	0
Journal	9,000
Research	1,050
Annual Meeting	2,000
Collegiate Division	900
Board Meetings	800
AAAS	0
Meeting Coordinator	0
Membership	0
Audit Fee	575
TOTAL	\$21,925

*Pending approval of grant from State Department of Education.

EXECUTIVE COMMITTEE MEETING November 19, 1992

The Executive Committee of the Tennessee Academy of Science was called to order by President Michael Kennedy at 6:35 PM CST. The meeting was held in the Cumberland Room of the Joe Morgan University Center, Austin Peay State University, Clarksville, TN following a dinner for the Executive Committee hosted by APSU Vice President for Academic Affairs, Dr. John Butler. Members present were Michael Kennedy, president; Benjamin P. Stone, past-president; George G. Murphy, president-elect; Sarah H. Swain, secretary; John Harris, treasurer; Phyllis Kennedy, *Journal* editor; Jack Rhoton, Director of Junior Academy; Richard J. Raridon, Director of Collegiate Division; Geraldine Farmer, State Science Supervisor, TN Dept. Education; John R. Freeman and Andy Slinger, members-at-large; D.M.S. Bhatia, local arrangements chairperson.

Dr. Bhatia, local arrangements chairperson, welcomed the Executive Committee to the APSU campus. President Kennedy expressed appreciation, on behalf of the committee, for the dinner provided by VPAA Dr. John Butler.

The secretary has mailed copies of the minutes of the April 1992 Executive Committee meeting to members. Minutes were unanimously approved following a wording correction recommended by the president.

Treasurer John Harris presented the report which is printed in full within this publication. The report was accepted by unanimous vote of the committee. Dr. Harris explained that a separate account had been established for *Journal* expenses. Treasurer Harris expressed appreciation to TAS membership for last year's swell of contributions, which insured financial survival through a crisis year, and noted that it was therefore possible to end the fiscal year with no drain on reserve funds.

The following report was presented by *Journal* editor, Dr. Phyllis Kennedy:

"The office of the *Journal of the Tennessee Academy of Science* was moved to Memphis State University in May 1992. Files received in the transfer contained 23 accepted manuscripts, 13 manuscripts in revision, and 10 manuscripts in review. Many logistical details of operating the Editorial Office and publishing the *Journal* at minimal cost were handled in May and June 1992.

Two issues of the *Journal*, 67(3) and 67(4), were printed through the new Editorial Office in July and October 1992. Volume 67(3) consisted of eight manuscripts and featured the new format and style of the *Journal*. Volume 67(4) consisted of eight manuscripts, the abstracts of the Collegiate Division meetings in Spring 1992, and an erratum. Abbreviated guidelines for authors were printed in 67(3) and 67(4) on the inside back cover. A breakdown of costs for the two issues is given in Table 1. The Academy has not yet been billed for any mailing costs or for cost of producing reprints of papers in 67(4).

There are still seven of the previously accepted manuscripts awaiting to be published. Volume 68(1) will contain fewer papers than 67(3) or 67(4) due to a lengthy paper that will appear in 68(1). Few manuscripts will appear in 68(2) since that issue will contain minutes of Executive Committee meetings and the annual business meeting in 1992 as well as the abstracts of papers presented at the 1992 annual meeting. The seven manuscripts should be published with three issues of the *Journal*. Since there are currently 36 manuscripts in revision or review, there will soon be additional accepted manuscripts awaiting publication.

Detailed guidelines for manuscripts have been drafted. The anticipated date for a final form is January 1993.

Costs of publishing the *Journal* have been reduced with a number of changes. The paper used in the *Journal* was changed from glossy to vellum resulting in a substantial reduction in cost of printing. Also,

typesetting is done in the Editorial Office (by the Editor) at no charge to the Academy. The style of the *Journal* was changed to allow more efficient use of space while maintaining a professional appearance. Some manuscripts can now be printed on fewer pages with the style and format changes.

The Editorial Office is now subsidized by the Department of Biology, Memphis State University, through use of their equipment and supplies. This allows business to be conducted at virtually no cost to the Academy.

Some authors have helped the Academy through this time of limited funds by paying the new subsidized page charges of \$45/page although they were obligated to pay only \$15/page. Three authors have paid the full charge of \$90/page which allowed earlier publication of their manuscripts."

TABLE 1. Costs for publication of 67(3) and 67(4).

Item	67(3)	67(4)
Date of publication	July 1992	October 1992
Number of copies printed	1000	900
Number of pages in issue (excluding 4 cover pages)	36	40
Cost of camera work	\$115.06	\$215.01
Cost of printing	\$1926.90	\$2079.21
Total cost of publication	\$2041.96	\$2294.22
Cost per page	\$56.72	\$57.36
Page charges from authors	\$1200.00	\$1230.00
Number of authors paying:		
\$15 per page	3	4
\$45 per page	4	2
\$90 per page	1	2
Cost of publication minus page charges	\$841.96	\$1064.22
Cost of producing reprints	\$40.65	?
Charges for reprints	\$246.00	\$203.00
Mailing costs	?	?

The report was accepted.

A motion to re-establish compensation for typesetting, providing funds are available, was unanimously approved by the Executive Committee. Dr. Ben Stone expressed appreciation to Dr. Phyllis Kennedy for the improved *Journal* format and for the high quality of her work as editor.

The report for the Visiting Scientist Program submitted by Dr. Wayne Stevenson, Director, follows:

"INTRODUCTION: The Tennessee Visiting Scientist (TVS) Program is supported by the Tennessee Academy of Science and administered by the Science and Engineering Education Division (SEED) of the Oak Ridge Institute for Science and Education (ORISE) and supports visits by scientists, engineers, physicians, and other professionals to elementary, middle, junior, and senior high schools throughout the state.

Teacher comments provided on program evaluation forms indicate that this is a needed and valuable program. For instance, one teacher remarked about the response of the students to the lecture, "Excellent, a lot of curiosity, excitement, and learning took place." Another teacher said, "The students were excited and asked to have the speaker visit again." In a letter requesting a visit the teacher wrote, "Let me say what a thrill this program is! I have tried to get scientists into the classroom, but did not know how to go about it. This program is wonderful."

SUMMARY OF PROGRAM ACTIVITIES: For the 1991-1992 academic year, the Tennessee Academy of Science was unable to provide financial support for the TVS program. Promotion efforts were cut substantially and the program operated at a greatly reduced level. The Oak Ridge Institute for Science and Education, knowing the importance and impact of this program, provided \$2000 of support for the program. Operating on less than one half of the funds of the previous year, 89 requests were processed, 55 visits were completed, 29 requests were declined (lack of funds, schedule conflicts), and 5 trips were canceled. About 6,800 students, teachers, aides, and parents were reached through the TVS program; however, this number represents less than half (47%) of the number contacted the previous year.

Often a school will request a series of lectures that either precede and introduce or follow and reinforce lesson plans. Operating with reduced funds this past year meant that some of these requests could not be approved. Although the teachers understood, many were disappointed.

ASSESSMENT AND DOCUMENTATION: Program assessment and documentation are important for the health and continued existence of any program. The Tennessee Visiting Scientist Program supplies teachers and lecturers with evaluation forms that are completed after each presentation. The information is used to make modifications in program procedures and overall program planning. A few interesting excerpts from the questionnaires are given below.

Was the level of the lecture appropriate for the level of students?

"The speaker was wonderful."

"The speaker did an excellent job; students' interest was kept for approximately an hour!"

What was the general response of the students?

"The students responded very well. They listened, enjoyed the experiences, and asked questions."

"Excellent--spellbound."

"They were very interested--especially in the hands-on tests."

General comments:

"This program promotes learning and discipline of motivation."

"No suggestion other than please keep the program."

"The speaker illustrate practical and hands-on equipment. He is flexible and experienced, well-read, and up-to-date. He knows his subject well."

One comment seen throughout the forms and also received verbally was about how much better the students responded to activity-oriented, hands-on lectures. And in addition to searching for particular topics, more than one teacher was searching for a woman scientist (role model) to present career options lectures.

THE FUTURE: The Tennessee Visiting Scientist Program is an important part of the education of many Tennessee students. It is possible that without this program many students, especially students from rural schools, would not have any contact with the scientific community. Many students might not consider careers in science, mathematics, or engineering without the spark that the "gee whizz" chemistry demonstrations and hands-on experiments of this program provide. One teacher commented, "Please continue this wonderful service to our school--we desperately need your program and others like it."

The report was accepted.

Following discussion of the report, it was suggested that TAS members who participate in the VSP consider participating without reimbursement when possible and reasonable. Dr. Geraldine Farmer, State Science Supervisor, expects funds to be approved for 1992-1993 for VSP and Junior Academy. President Kennedy expressed thanks to Dr. Farmer for her help in acquiring financial support for these programs.

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

"The Middle Regional meeting of the Collegiate Division was held April 3 at Austin Peay State University. Twenty-nine papers were presented by students representing 7 schools. The Eastern Regional meeting was held April 10 at Lincoln Memorial University. Twenty papers were presented by students representing 5 schools. The Western Regional meeting was held April 25 at Memphis State University. Thirty-two papers were presented by students representing 3 schools.

Thanks are due the regional sponsors, Dr. Charles J. Biggers of MSU, Dr. Vincent Anigbogu of APSU, and Dr. Dan Barnett of Tusculum College. Dr. Anigbogu later resigned and has been replaced by Dr. Frederick Matthews of APSU."

The report was accepted.

Director of Junior Academy, Dr. Jack Rhoton, presented the following report:

"The 1992 spring meeting of the Tennessee Junior Academy of Science was held on Friday, April 24, at Pearl Cohn Comprehensive High School in Nashville. A total of 41 papers were submitted from seven schools and 20 were selected by a panel of readers to be presented at the annual meeting. The two top presenters were Ms. Julie Jones, Webb School of Knoxville, Knoxville, TN; and Mr. Alox Kumar, White Station High School, Memphis. The title of Ms. Jones's paper was "Determining the Effects of Three Chemical Pollutants from Automobiles on the Germination and Growth of Kentucky 31, Rye and Clover." "Do Cytokinin Genes Occur on the Rhizobium Sym Plasmid" was the title of Mr. Kumar's research. Both papers were published in the 1992 *Handbook and Transactions of the Tennessee Junior Academy of Science* along with three other papers of the top five winners. In addition, the abstract of each presenter at the annual meeting was printed in the Handbook. The Handbook was sent to all high school science departments as identified in the Tennessee State Department of Education's *Directory of Public Schools, Approved Nonpublic and Special State Schools*.

Three outstanding science teachers were recognized at the Junior Academy meeting. They were: Ms. Jennifer Birchfield, Elizabethton High School, Elizabethton (East Tennessee Representative); Mr. Larry Barnickle, Smyrna High School, Smyrna (Middle Tennessee Representative); Ms. Janice Young, Dyersburg High School, Dyersburg (West Tennessee Representative). Each received a framed certificate and a check in the amount of \$100.00. We are indebted to Dr. Geraldine Farmer of the Tennessee State Department of Education for assistance in selecting these outstanding teachers.

As incoming director of TJAS, I would like to thank Dr. Bill Pafford for the outstanding work he has done for the Academy. He served as Director of the Tennessee Junior Academy of Science from 1976-1992. Through his leadership, he has developed the TJAS into one of the best of its kind in the nation. Mention Dr. Pafford's name to science teachers in any region of the state, and the vast majority of the teachers will recognize him as representing excellence in science education. He has earned this title, not only through the thousands of lives he has touched at ETSU, but also through thousands of others who have benefited directly and indirectly from his professional involvement in programs such as the TJAS. We wish him well in his retirement years."

1993 Proposed Budget
Tennessee Junior Academy Science

I. Travel Expenses	\$2,045
A. Annual Meeting	
1. Students, teachers, parents who drive	
25 x 250 mi. = \$1,375	
25 x \$12 for meals = \$300	

2. Director	
overnight lodging = \$35	
meals (3) = \$18	
600 mi. x 0.22 = \$132, total \$185	
B. Director, attend meeting of Executive Committee	
Planning of Junior Academy Program	
Total = \$185	
II. Salaries and Honoraria	\$800
A. Secretary	
type all correspondence, type and prepare annual	
<i>Handbook</i> , mail all materials	
Total = \$600	
B. Judges, readers, local arrangements	
3 readers @ \$15 = \$45	
3 judges @ \$35 = \$105	
arrangements = \$50	
Total = \$200	
III. Office supplies	\$300
paper, certificates, typewriters and computer	
ribbons, etc.	
IV. <i>Handbook</i>	\$1,855
A. Printing, estimated \$1,800	
B. Mailing, estimated \$55	
TOTAL BUDGET REQUESTED	\$5,000

The report was accepted.

Director Rhoton requests the help of the TAS membership in locating back issues of Junior Academy handbooks published prior to 1976. He would appreciate copies or information regarding the whereabouts of such copies.

The following reports were submitted from standing committees: **AUDITING:** Auditor James F. McKinnie reported as follows: "I have examined the receipts and disbursements records of the Tennessee Academy of Science for the fiscal year ended June 30, 1992, and in my opinion the attached Cash Receipts and Disbursements Statement correctly reflects the cash position of the organization at June 30, 1992. The entire accounting system is well maintained and to be commended. I have 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 16, 1992."

Chairperson of Audit Committee reported: "The Audit Committee has met and reviewed the audit of Mr. James McKinnie, CPA. We feel his findings are in order and we recommend that the Academy accept the audit and records for the year 1991-1992 and commend Dr. Harris for an excellent job as treasurer this past year."

NOMINATING: Chairperson Benjamin Stone presented the following slate of officers for 1992:

- President: Dr. George Murphy (MTSU)
- President-Elect: Dr. Wilburn Andy Sliger (UT MARTIN)
- Secretary: Ms. Sarah H. Swain (MTSU)
- Treasurer: Dr. John Harris (TTU)

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

RESEARCH: The following report was submitted by Dr. Prem Kahlon, chairperson:

"The Academy received \$500 from AAAS as a result of our application for funds for the Secondary School Students science projects.

1. The Chair of Research Committee sent about 150 letters to the science teachers in the state soliciting application.
2. The Committee will meet after the general session on November 20, 1992 to review the applications and recommend awards.
3. A subcommittee of the steering Committee of International

Science and Engineering Fair (ISEF) composed of David Wilson of Vanderbilt (chair), Prem Kahlon of TSU and Ron Robertson of APSU has made a proposal to ISEF board on behalf of TAS. This subcommittee was asked by the Steering Committee to submit a proposal to the board detailing how the unused funds of ISEF will be used if that money is transferred to TAS. Larry Hall of Vanderbilt, who is Vice-President of the ISEF Board and Chair of the Steering Committee is very supportive of our efforts. We are hoping to get substantial amount of unused funds of ISEF. It may be next year by the time we get funds from ISEF."

A summary of requests for funds from Tennessee science teachers shows that 18 applications were received from 6 schools. \$3845.51 = amount requested. A total of \$500 was awarded in 6 awards.

FELLOWS: Dr. Clay Chandler, chr., submitted the following report: "Members of the Fellows Committee were asked by letter on 18 Sept. 1992 to submit nominations for Fellows. No nominations have been received by me as of this date (11/16/92)."

NECROLOGY: Dr. Robert Wilson, chr., reported the deaths of the following individuals:

- John W. Ruch, ORNL
- Robert J. Bradshaw Jr., Chattanooga

RESOLUTIONS: Resolutions submitted by Ms. Betty C. Davis, chr., were approved by the Executive Committee and will be presented to the TAS membership for approval at the annual business meeting. A motion to forward new AAAS resolutions to the Resolutions Committee for action was approved.

MEMBERSHIP: No report was received.

A motion to accept all standing committee reports was approved.

OLD BUSINESS

President Kennedy distributed to the Executive Committee copies of his "Proposal for Reinstatement of State Funds for Tennessee Academy of Science" sent to legislative/government officials. (TAS membership also received copies by mail) Discussion centered around possible effective means of persuading officials to reinstate state funds for TAS. It was agreed that efforts by members to contact legislators on behalf of funding for TAS is needed at this time.

Dr. Andy Sliger, chairperson of ad hoc committee for constitution revision, presented a draft of recommended revisions. After careful review by the Executive Committee, a motion to approve the revision was approved. A motion by Dr. Ben Stone to mail copies of the revised constitution to the TAS membership with the July issue of the *Journal* was approved. The revised constitution could possibly be presented to the TAS membership for a vote at the November 1993 annual meeting. President Kennedy expressed thanks to Dr. Andy Sliger for his work on the revision.

NEW BUSINESS

President Kennedy reported that TAS has been invited to meet with the Kentucky Academy of Science in 1995. Planning discussions are continuing and Western Kentucky University is a possible host for the joint meeting. A motion to approve, in spirit, a 1995 meeting with the Kentucky Academy of Science, and to appoint an ad hoc committee to explore details, was approved.

Request for affiliation with TAS was made by Dr. Andy Sliger on behalf of the recently organized Tennessee Association of Science Department Chairs (TASDC). A motion to approve the affiliation passed unanimously.

Dr. John Harris presented a petition signed by the required number of TAS members requesting the formation of a Cell and Molecular Biology Section. A motion to approve the request passed. Dr. Harris will serve as chairman of the new section in 1993.

Appreciation was expressed to Dr. Michael Kennedy for his dedicated service to the Academy as 1992 President. Special thanks

were expressed for his persistent efforts to educate state government officials regarding the value and services of TAS.

The meeting was adjourned at 9:50 PM CST.

THE ONE-HUNDRED AND SECOND MEETING OF THE TENNESSEE ACADEMY OF SCIENCE

November 19-20, 1992
Austin Peay State University

The annual meeting of the Tennessee Academy of Science, Inc. was held on November 19-20, 1992, at Austin Peay State University, Clarksville, Tennessee. Dr. D.M.S. Bhatia served as chairperson of local arrangements. Dr. George Murphy, MTSU, was program chairperson.

The Executive Committee meeting was held in the Cumberland Room of the Joe Morgan University Center on the APSU campus Thursday evening, November 19, 1992. The general session, luncheon, and section meetings were held on the APSU campus Friday, November 20, 1992. General session began at 9:30 AM in the Music/Mass Communications Bldg. Performance Hall with President-Elect George Murphy presiding. The Academy was welcomed by Mr. Joe White, Executive Assistant to the President, Austin Peay State University. The TAS Plenary Session began at 9:45 AM with the keynote address, "In Pursuit of Bluebirds", delivered by Dr. T. David Pitts, Professor of Biology, University of Tennessee at Martin. The annual business meeting followed with President Michael Kennedy presiding. A luncheon was held in the Ballroom of the Joe Morgan University Center. Section meetings convened in McCord and Ziegler Buildings Friday afternoon as listed in the printed program.

ANNUAL BUSINESS MEETING November 20, 1992

President Michael Kennedy called the annual business meeting of the Tennessee Academy of Science, Inc. to order and determined that a quorum was present. A motion to suspend the reading of the minutes of the 1991 meeting was approved. These minutes are published in the Jan.-April 1992 issue of the *Journal of the Tennessee Academy of Science*. The treasurer's report was read by secretary, Sarah H. Swain. *Journal* editor, Dr. Phyllis Kennedy, provided the editor's report and announced a meeting of the editorial board for 2:30 PM. Dr. Richard Raridon, Director, reported on the Collegiate Division, and Dr. Jack Rhoton, Director, summarized the activities of the Junior Academy. In the absence of Dr. Wayne Stevenson, Director of the Visiting Scientist Program, President Kennedy read portions of the report submitted by the director. Treasurer John Harris informed the membership that the Academy had been able to survive a crisis year without the use of reserve funds. All reports were approved and are recorded in full in the minutes of the November 19, 1992 meeting of the Executive Committee.

Sixty-one new members, whose names are listed in the January-April 1992 issue of the *Journal*, were approved for membership. A motion to suspend the reading of the names was approved.

The following resolutions, submitted by the Resolutions Committee and read by secretary Sarah H. Swain, were accepted:

RESOLUTION OF APPRECIATION

"WHEREAS, the Tennessee Academy of Science is enjoying a most pleasant, profitable, and well-organized series of meetings at Austin Peay State University, 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 Austin Peay State University, composed of Dr. D.M.S. Bhatia, chairperson, Dr. Tom Hamel, Dr. James McCluskey, Dr. Phillip Kemmerly, Dr. Benjamin Stone, Dr. Robert Sears, Dr. Abu Sarwar, Dr. Ruth Young, Ms. Elizabeth McCluskey, and Ms. Rose Austin; and program chairman, Dr. George Murphy; from the recognition given the meetings by the press, television, and radio stations; and from the generous hospitality of the host institution, Austin Peay State University and its president, Dr. Oscar C. Page,

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

RESOLUTION OF SUPPORT

"WHEREAS, the Tennessee Academy of Science recognizes that the use of animals in research has been and continues to be essential for advances in the life sciences and medicine,

BE IT RESOLVED that the membership of the Tennessee Academy of Science adds its support to the American Association for the Advancement of Science in its 1990 resolution on the use of animals in research, testing and education, and

BE IT FURTHER RESOLVED that the Tennessee Academy of Science adds its support to the American Institute of Biological Sciences 1992 guidelines for the use of organisms in biological education and research, and

BE IT FURTHER RESOLVED that upon review and approval of the Executive Committee of the Academy, the Editor of the *Journal of the Tennessee Academy of Science* may refuse to publish a submitted paper when it is evident that the criteria set forth in the above resolutions and guidelines have not been met."

AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES GUIDELINES FOR THE USE OF ORGANISMS IN BIOLOGICAL EDUCATION AND RESEARCH

"Biology is the study of living things--their structure and function, their diversity and evolution, and their interactions in communities and ecosystems. As a science, biology is both a body of knowledge and a method of inquiry.

The use of organisms, both living and preserved, plays an integral part in biological education and research at every level. It is only through direct study of organisms that we can fully understand the complexities of life. For a biological researcher, new knowledge is gained by careful experimentation and observation of organisms in the laboratory and in the field. For the educator, the use of organisms in the classroom and in laboratory exercises enhances student sensitivity to, and understanding of all forms of life.

The guidelines given here have been prepared to assist both the educator and researcher in designing experiments and activities which involve the use of organisms.

1. The number of individual organisms used in an experiment or educational exercise should be the minimum needed to accomplish the goals of the experiment or exercise.
2. To minimize the effects of collecting on wild populations, the use of wild-collected organisms in education and research should be carefully controlled.
 - a. Whenever possible, especially when large numbers of individuals are required, organisms specifically bred and reared for laboratory or human use (e.g., mice, fetal pigs, common beans) should be used.

- b. If appropriate, wild-collected organisms should be returned to the site of collection as soon as possible after observation or experimentation.
3. All organisms used in education and research should be treated in a humane manner appropriate to the species.
 - a. All living animals should be provided with adequate and appropriate food, shelter, and space.
 - b. Organisms used in experiments or exercises which might cause pain or suffering should be anesthetized and, if necessary, humanely euthanized as appropriate to the species and the needs of the experiment or exercise.
4. Professional biologists and biology teachers have the responsibility to foster a respect for life to their students, colleagues, and the general public.
 - a. Teachers and researchers should ensure that full and proper preparations are made prior to the initiation of any exercise or experiment.
 - b. Teachers should ensure that classroom exercises are appropriate to the age group and level of sophistication of their students.
 - c. Teachers should ensure that all students behave in a manner of appropriate decorum while performing exercises with organisms.
 - d. By her/his own behavior, a teacher or researcher should convey a sense of deep respect for and intellectual interest in the patterns and processes of life--in the classroom, in the laboratory, and in the world at large."

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 deplors any violations of those regulations; and

WHEREAS the American Association for the Advancement of Science deplors 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

President Kennedy extended thanks to past *Journal* editor, Libby Workman, and current editor, Phyllis Kennedy, for their cooperative efforts in the transfer of the editor's office to Memphis State University.

The President reported that efforts to acquire support funds continue with correspondence and personal contacts with government officials. No official word on the reinstatement of state support will be available until April. President Kennedy encouraged all members to contact legislators on behalf of TAS.

APSU and TTU have contributed \$1000 each as institutional sustaining members of TAS. Other institutions are expected to respond in the near future.

The revised draft of TAS Constitution will be mailed with the July issue of the *Journal* for membership review. Revisions include the removal of sexist language, some re-wording for clarification, and removal of dollar amounts in dues sections.

Future meetings of TAS will be held at MSU, Memphis, in 1993, and David Lipscomb Univ., Nashville, in 1994. TAS has an invitation to meet with the Kentucky Academy of Science in 1995. An ad hoc committee to explore details will be appointed by the President. An informal show of hands indicated that a majority of members present were interested in the possibility of a joint meeting with the KAS.

President Kennedy announced the Executive Committee's approval of a request for affiliation with TAS by the Tennessee Association of Science Department Chairs. The formation of a Cell and Molecular Biology Section was also approved.

The following TAS members were presented the TAS Distinguished Service Award:

Dr. Diane Nelson, for 14 years of service as TAS Secretary
Dr. William Pafford, for 15 years of service as Director of Junior Academy

Dr. James X. Corgan, for 11 years of service as Director of Middle TN Collegiate Division

Ms. Libby Workman, for 6 years of service as *Journal* editor.

President Kennedy expressed the appreciation of the membership to these honored members who have served the Academy with dedication for many years. Members present demonstrated their appreciation with applause.

Past President Benjamin Stone was presented a plaque in recognition of his dedicated service to the Academy as 1991-1992 President.

The gavel was passed from Dr. Michael Kennedy to Dr. George Murphy, 1992-1993 President, who adjourned the meeting at 11:15 AM CST.