

JOURNAL

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NEW PRESIDENT OF THE TENNESSEE ACADEMY OF SCIENCE



GUSTAVE H. LUNDBERG, newly elected President of the Tennessee Academy of Science, is presently Professor of Mathematics at Austin Peay State University. In 1967 he was named Professor Emeritus of Applied Mathematics of Vanderbilt University, where he had been a member of the teaching staff since 1942.

Dr. Lundberg was born in Fremont, Nebraska, in 1901. He received his preparatory education in the Fremont schools and his undergraduate education at Midland College and the University of Nebraska. After graduation he was basketball coach and Professor of Mathematics at Dana College, Blair, Nebraska, and Professor of Mathematics at Allen Academy, Bryan, Texas. In the meantime he received an M.A. degree from Colorado State College. In 1941 he was named a Fellow in Mathematics at Vanderbilt University and the following year was granted a Master of Arts degree. His doctorate was received from George Peabody College. He has been a participant in the Summer Faculty programs of Boeing Airplane Company, Seattle, and a research participant and consultant in programs of the Oak Ridge National Laboratory and Institute of Nuclear Studies.

He has been associated with the Tennessee Academy of Science since 1944. He has served as Chairman of the Mathematics Section, Treasurer of the Academy, and Editor of the Journal. In 1962 he was elected a Fellow in the Academy. He is a member of a number of other professional organizations, among which are the Mathematical Association of America, The Society of Industrial and Applied Mathematics, The American Association for the Advancement of Science, Phi Delta Kappa, The Engineers Club of Nashville, and Sigma Xi, of which he is past-president of the Vanderbilt Chapter.

His publications have appeared in state and national magazines.

JOURNAL OF THE TENNESSEE ACADEMY OF SCIENCE

Volume 44, Number 2, April, 1969

PROCEEDINGS OF THE TENNESSEE ACADEMY OF SCIENCE FOR 1968

JAMES D. CAPONETTI, *Secretary*

THE UNIVERSITY OF TENNESSEE, *Knoxville*

EXECUTIVE COMMITTEE MEETINGS

January Meeting, 1968

The Executive Committee Meeting of the Tennessee Academy of Science was called to order by President Roger Rusk at 7:20 p.m. EST in Room 406 of the Physics Building, University of Tennessee, Knoxville, on January 26, 1968. Members present were Roger

Rusk, President; Norman Campbell, Past-President; Gustave Lundberg, President-Elect; James D. Caponetti, Secretary; Robert L. Wilson, Treasurer; Donald Caplenor, Journal Editor; Richard J. Raridon, Director of the Collegiate Division; John H. Bailey, Director of the Junior Academy; Paul Wishart, Director of the Visiting Scientists Program; William Ellis and Albert L. Myers, Members-at-Large.

The secretary passed out printed copies of the Minutes of the November Executive Committee Meeting and the Annual Business Meeting. They were read and approved. Since the Annual Meeting, 21 new members have joined the Academy making the total membership 889 at this moment.

The Director of the Visiting Scientists Program presented a progress report:

"The current Visiting Scientist Program was initiated in November, 1967, after notification from the Tennessee Academy that limited funds were available to operate the program. Previously, prepared announcements were sent out immediately to 469 high schools throughout the state. The first announcement was mailed from the State Department of Education under the signature of Commissioner Howard Warf. The second announcement also was sent to every high school in the State. Each letter addressed to the principal had a pink tag attached to the outside of the envelope which called for the immediate attention of the science department. Publicity was given the program through an announcement submitted to the *Tennessee Teacher*, January 1968 issue, page 25. The number of scientists in the roster for 1968 is somewhat smaller than in the previous year. All scientists whose names appeared in the 1967 roster were contacted to inform them of the necessity of reducing costs. Each individual was given an opportunity to respond whether or not he wished to continue his cooperation in the 1967-68 program. The great majority wished to continue to participate. A few additions and deletions were made in the preparation of the new roster to maintain balance between the geographic areas. *Current Operations*: 68 schools as of January 25 have requested Visiting Scientists, 40 visits have been scheduled, 16 visits have been completed. A serious effort has been made to schedule visits within geographic areas which would involve for the most part travel of no more than 100 miles one way from the resident campus of the scientist. It is felt that operations are proceeding normally and that no unusual problems have arisen during the current program."

A motion was made, seconded, and carried that the Visiting Scientists Program be continued as best as possible with limited funds and that the Director be allowed to modify the program as he sees fit.

The Director of the Junior Academy submitted the following report:

"The period from the annual meeting to January has been filled with routine office activity preliminary to our spring calendar which follows: March 16—Final date for receiving papers; March 29—Completions of report evaluations; April 4—Mailing invitations to 25 students and teachers; April 19-20—Annual Meeting at Vanderbilt. Two of last year's top papers were presented to the National Junior Academy of Science in New York by John Hooker and Gary Settle. In a report from the Westinghouse Science Talent Search program this week, it was found that Tennessee schools had four students to receive honors. Of these, two students, Gail Thurmond of White Station High School in Memphis and Thomas Trauger of Oak Ridge High School, had presented their papers to the Tennessee Junior Academy of Science in 1967. We are grateful to the State Department of Education for distributing letters to all public school systems urging cooperation in the Junior Academy program. To date we have received 112 requests for cover sheets for submission of papers for this spring meeting. These will be mailed approximately February 15. This represents a slight increase over last year's requests as of this date. The outlook for financial support of this program in the future is difficult to predict in light of the uncertainties of the budget condition of the federal government. However, the interest is in the schools, and I am sure that the Tennessee Academy of Science will have reason to find support."

The Director requested that one of the top four student papers of the Junior Academy be presented at the General Session of the Senior Academy's annual meeting and then be published in the Journal. This was approved.

The Director of the Visiting Scientists Program, Dr. Wishart, is also Director of the Tennessee Junior Science and Humanities Symposium which is held annually on the Knoxville campus of The University of Tennessee. Dr. Wishart described the program briefly. Since the Symposium is for the benefit of high school students, President Rusk suggested that he, Dr. Wishart, Dr. Bailey, and Mr. Davis have meetings so they can correlate high school science in the state.

The Director of the Collegiate Division, Dr. Raridon, gave his report:

"The Collegiate Division met at Tennessee Technological University on November 18, 1967, in conjunction with the meeting of the Senior Academy. Students representing 12 schools presented 16 papers on a variety of subjects. Expenses were paid for 72 students in addition to the many Tech students who attended the sessions. Total expenses for the year have amounted to \$1,170.98, leaving a balance of approximately \$960. This should be sufficient to finance the three regional meetings this spring. No more NSF funds will be available after this year. Dr. John T. Netterville of David Lipscomb College has replaced Dr. Robert E. Martin as regional sponsor for the middle section of Tennessee. Dr. Martin's work for the Collegiate Division for the past 4 years is greatly appreciated."

As the Director has stated, there are no NSF funds after this year to operate the Collegiate Division. About \$2,000.00 could be available from the State Department of Education. The Director felt that he would be able to operate on \$2,000.00 for 1968-69 and recommended that the program continue. A motion was introduced, seconded, and carried that the Collegiate Division be continued pending the availability of funds from the State Department of Education.

The Editor submitted his report, and it was approved.

"Galley proof of the January 1968 issue has been received from the printer. The issue should appear in February. A relatively good supply of manuscripts are on hand, but more are needed, especially in mathematics, physics, and engineering. Dr. Robert Martin, Tenn. Technological University, has accepted the responsibility as news editor. The editor remains willing to work on a cumulative index volume, subject to the judgment of the Executive Committee and dependent upon all index volumes being supplied the editor. The editor reaffirms his decision to resign with the publication of the October 1968 issue and recommends that steps be taken to find a replacement."

Since Dr. Caplenor wishes to resign as Journal Editor, a motion was introduced, seconded, and carried that President Rusk be authorized to seek nominations for a new editor.

Both the editor and the treasurer brought up the problem of what to do with members who are in arrears of their dues. It was moved, seconded, and carried that those members who are in arrears for one year be carried for one more year and then dropped from membership.

In regard to a cumulative index volume, it was moved, seconded, and carried that Dr. Caplenor in-

vestigate further the groundwork of what is needed to put such an index together and report his recommendations to the Executive Committee at the next Annual Meeting in November.

The following is a summary of a report submitted by Dr. William Ellis who, as our Academy Conference representative, attended the Academy Conference Meeting of the AAAS in New York, December 27, 1967.

"At 9:00 a.m. on December 27, the first session convened with Dr. Harry J. Bennett (LSU), Dr. George W. Mallinson (West Mich. Univ.) and Dr. John R. Mayor (Director of Education, AAAS) presenting a panel discussion. The topic was: Relationships between the AAAS and the State and Local Academies of Science. Dr. Bennett's discussion centered around the topic The Relationship of the AAAS and the Academy Conference. Specifically he discussed the organization of the AAAS and its sub-organizational units. Dr. Mallinson described the Michigan Academy and told of its activities. The third speaker, Dr. Mayor, presented a paper entitled The Affiliated Academies and AAAS. He described the present relationship of mutual cooperation and listed specific contributions of AAAS to the academies. In the afternoon session Dr. Wallace R. Brode (Scientific Consultant, Washington, D.C.) gave a paper entitled Youth Science Activities. The text of his discussion pertained to how youth become interested in science and how some of them eventually become professional scientists. Dr. Wayne Taylor (Michigan State Univ.), Chairman of the Joint Teacher Education Subcommittee of the Cooperative Committee on the Teaching of Science and Mathematics of the AAAS, provided copies of the final report of that subcommittee. The title of the report is Guidelines for Content of Pre-service Professional Education for Secondary School Science Teachers. I have filed a copy of this report with the secretary and have also brought copies for each member of the Executive Committee of the Tennessee Academy of Science. The Academy Conference banquet was particularly enjoyed by this representative. A social hour, dinner, an award presentation by Dr. Clinton L. Baker (Southwestern, Memphis) to Dr. James A. Rutledge (Univ. of Nebraska) for outstanding service to the Academy Conference, and the Presidential address by Dr. V. Elving Anderson (Univ. of Minn.) were the order of the evening. Dr. Anderson's talk was rather general and was entitled Academies by Other Names. I also made an effort to give moral support to our two Tennessee delegates, Gary Settle and John Hooker, Jr., to the American Junior Academy of Science, by attending their session on Thursday. In addition to the papers already mentioned, I have filed with the secretary the following titles pertinent to Academy activities: 1. Abstracts of papers presented at the Sixth Annual meeting of the American Junior Academy of Science; 2. Directors of Junior Academies of Science; 3. Report of American Junior Academy of Science Committee to the Academy Conference; 4. The Annual Statement (of the Academy Conference) 1967; 5. Academies of Science and the National Science Foundation; 6. Academies of Science and the United States Office of Education."

For the AAAS Meeting next December in Dallas, Texas, it was moved, seconded, and carried that Dr. Clinton L. Baker be appointed AAAS Council Representative, and that Dr. Richard J. Raridon be appointed Academy Conference Representative.

The treasurer reported that the Academy's operating account had a balance of \$7,322.76 available January 1, 1967. Total receipts were \$13,813.75, making the total cash available \$21,136.51. Total disbursements were \$18,706.81, leaving a balance of \$2,429.70 available January 1, 1968.

Other Business

The following items were moved, seconded and carried:

1. The President and Secretary were requested to prepare material for a brochure to promote the Academy and stimulate membership.
2. The President was authorized to consult a lawyer in an effort to get the Academy incorporated.
3. An amendment is needed in the constitution to make the Director of the Visiting Scientists Program a member of the Executive Committee of the Academy. This amendment will be presented to the membership present at the next Annual Meeting for a vote.
4. A special committee was appointed to study freedom of inquiry in regard to the teaching of evolution in the state of Tennessee. The following members were appointed to the Committee on the Freedom of Inquiry: Dr. Paul Wishart, University of Tennessee, Knoxville; Dr. Albert L. Myers, Carson-Newman College, Jefferson City; and Dr. James D. Caponetti, University of Tennessee, Knoxville.
5. The nomination of Dr. Robert Martin, Tennessee Technological University, Cookeville, as Journal Editor was accepted.
6. The invitation to hold the next Annual Meeting of the Academy at Austin Peay State University, Clarksville, November 22-23, 1968, was accepted.

The meeting was adjourned at 12:50 a.m. EST.

TREASURER'S REPORT

OPERATIONS ACCOUNT

January 1, 1968-December 31, 1968

Cash in Bank, January 1, 1968 \$ 2,429.70

Receipts:

Membership		
Regular	\$3,485.96	
Other	131.00	\$3,616.96
Journal Subscriptions		1,170.54
Advertising		32.00
Sale of Publications		10.45
Cuts		40.00
State Grant		3,000.00
Junior Academy		243.00
Total Receipts		8,112.95
Total Cash Available		\$10,542.65

Disbursements:

President's Office Expense	\$ 70.68
Secretary's Office Expense	298.63
Editor's Office Expense	537.36
Treasurer's Office Expense	824.15*
Journal Expense	2,621.90
Executive Committee Meeting	161.76
AAAS Meetings	603.80
Annual Meeting Expense	65.30

Dues AAAS 1969-1970	35.88
Auditor's Fee	30.00
Fidelity Bond	62.50
Total Disbursements	5,311.96
Balance on Hand, December 31, 1968	\$5,230.69

*Includes \$100.00 prepaid expenses.

REELFOOT LAKE BIOLOGICAL STATION

November 1, 1967-December 31, 1968

Balance per Bank, November 1, 1967	\$2,013.97
Receipts:	
Tennessee State Grant	3,000.00
Total Available	\$5,013.97

Disbursements:

Internal Revenue Service	\$ 400.00
Printing of Journal	1,397.86
Salary (Director-C. L. Baker)	800.00
Biological Station	
Operating Expenses	313.17
Biological Station	
Expenses (1967)	316.11
Scholarship	
(Schoffman 1967-1968)	200.00
Total Disbursements	3,427.14
Balance on Hand, December 31, 1968	\$1,586.83

VISITING SCIENTIST'S PROGRAM

November 28, 1967-December 31, 1968

Revenue:

Tennessee Academy of Science	\$5,500.00
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Disbursements:

Postage and Telephone	\$ 69.22
Office Supplies	32.65
Director's Salary	1,000.00
Honoraria	2,711.84
Per Diem Expense	48.93
Other Travel Expense	817.57
Total Disbursements	4,680.21
Balance Per Bank, December 31, 1968	\$ 819.79

REPORT OF THE AUDITOR

To the Tennessee Academy of Science:

I have examined the Treasurer's Report of cash receipts and disbursements, operations account, and Reelfoot Lake Biological Station, Tennessee Academy of Science for the period, January 1, 1968 to December 31, 1968.

In my opinion, on the basis of information made available to me, the statements fairly present the transactions of these accounts. Signed: Rayford J. McLaurin, Auditor.

The Executive Committee meeting of the Tennessee Academy of Science was called to order by President Roger Rusk at 7:10 A.M. CST in the restaurant meeting room of the Holiday Inn in Clarksville, Tennessee, on November 22, 1968. Members present were Roger Rusk, President; Norman Campbell, Past-President; Gustave H. Lundberg, President-Elect; James D. Caponetti, Secretary; Robert L. Wilson, Treasurer; Clinton L. Baker, Director of the Reelfoot Biological Station; Richard J. Raridon, Director of the Collegiate Division; John H. Bailey, Director of the Junior Academy; Paul Wishart, Director of the Visiting Scientists Program; William H. Ellis, Albert L. Meyers, and Robert L. Amy, Members-at-large.

The Secretary passed out printed copies of the Minutes of the January Executive Committee meeting. They were read and approved. From the start of 1968 to this moment, there were 31 new members. No drops and no deaths were reported to the Secretary. Total membership is now 794.

The Director of the Visiting Scientist Program submitted his report. During the academic year 1967-1968, a budget of only \$5,500.00 was available to the program. There were 100 actual visits which cost \$3,525.34. Operating costs were \$1,101.87 giving a total expenditure of \$4,627.21. The balance from \$5,500.00 will be applied to the next academic year. The Director then submitted a proposed budget for 1968-1969. A total of \$5,675.00 is requested; \$4,420.00 for visitor costs and \$1,255.00 for operational costs. A motion was seconded and passed to approve the projected program subject to the access of state funds.

The Director of the Junior Academy began his report by stating that the NSF instructed him not to exceed a budget request of \$5,000.00 for 1968-1969. Accordingly then, the Director submitted a proposed budget of \$4,994.00 last October. This fall the NSF informed him that they were thinking of making available only \$24,000.00 for 12 programs, i.e. \$2,000.00 for each of 12 programs. The decision was not final, and the Director was asked to wait for further word. Up to annual meeting time, the Director had not heard from the NSF.

Last year 126 high school students submitted papers for the Junior Academy Meeting in April, 1968. A screening committee at East Tennessee State University and at The University of Tennessee, Knoxville, selected the best 25 papers. The respective students and their teachers were invited to the spring Junior Academy meeting at Vanderbilt University. Five papers of excellence were chosen, and these were published in the 1968 Junior Academy Handbook and Transactions along with abstracts of the 20 other papers. All students received a separate printed abstract of their paper and a copy of the Handbook and Transactions. Two of the five students with papers of excellence were taken to the AAAS meetings, and they presented their papers. Announcements for next year's program and meeting will be mailed to 2,800 high school teachers

and officials in the state. Judges and readers will be needed from the Vanderbilt community to help in next year's program with the understanding that limited funds are available for expenses.

The Director feels that the Junior Academy program merits continuation, and he has the faith that we will do it somehow. In his proposed budget, he has requested \$2,990.00 from the Senior Academy. This amount plus the \$2,000.00 from the NSF would make \$4,990.00 available to the program for the 1968-1969 academic year. A Motion was passed to approve the budget in principle but definite action was postponed to the January (1969) Executive Committee meeting. If, however, the NSF definitely allocates \$2,000.00 to the Junior Academy before January, then the Director could go ahead with the program on a limited basis.

The Director of the Collegiate Division submitted the following report:

"The Collegiate Division had good attendance at its meetings during the academic year 1967-68. Approximately 110 students attended the annual meeting held November 18, 1967, at Tennessee Tech. University. Sixteen papers were presented by students representing 12 schools. Regional meetings were held during the spring 1968 at King College, Vanderbilt University, and Bethel College. These were attended by a total of 165 students and faculty, with 44 papers being given. Each regional meeting had a luncheon and invited speaker. The NSF grant of \$2,250.00 was sufficient to cover the expenses of the Collegiate Division for the year. A copy of the final report to NSF is attached."

A Motion was passed to accept the Director's report. The Director further reported that the \$2,250.00 utilized for 1967-1968 marked the end of NSF support. He could not now submit a proposed budget for next year. At the present annual meeting, only six papers are being presented at the Collegiate Division meeting because there is no money available for expenses. Those six students attending are paying all of their expenses. A Motion was passed favoring continuation of the Collegiate Division subject to the availability of state funds. Moreover, another Motion was passed to reimburse the six students who presented papers if sufficient money becomes available.

Mr. James Davis, the Director of the Science Talent Search Committee was absent from the meeting. Dr. Paul Wishart reported that he, Mr. Davis, and Dr. John Bailey were studying the feasibility of inviting the top Science Talent students to the Junior Science, Engineering, and Humanities Symposium which is to be held at the Knoxville campus of The University of Tennessee in the latter part of February, 1969. Furthermore, Dr. Christopher Keim would be asked to play host to both groups in a field trip to the Oak Ridge National Laboratory (part of the J.S.E.H.S. program) subject to the approval of the Union Carbide Corporation.

The Editor was absent from the meeting and at this point the President gave his own report so that he could comment on efforts to obtain a new Editor. Dr. Robert Martin at Tennessee Technological University was nominated last year, but he declined the Editorship after he was consulted. The following is the President's report:

"As the president reviews the activities of the Academy during the past year, several problems continue to require the attention of all officers and members interested in maintaining a high quality of service to the scientific community in Tennessee.

"It is natural that the continuing activities of the Academy are contingent upon the financial support received. Receipts from annual dues are scarcely adequate for the performance of the services required and projected by the Academy. Federal funding of our various educational services has virtually disappeared, due to the shifting emphases in the kinds of programs supported by the National Science Foundation and the economy drives in federal agencies which affect NSF. Two years ago, action was taken to secure additional funds from the State of Tennessee to support the work of the Academy. Senator Halbert Harvill of Clarksville, in consultation with Mr. J. H. Warf, Commissioner of Education, introduced legislation which resulted in the appropriation of certain sums of money to support the programs of the Academy. In addition to the item giving \$3,000.00 annually to support the Reelfoot Lake Biological Station, very little of these funds has actually been received by the Academy. Your president has been in continual contact with Commissioner Warf and, through Professor Melburn Mayfield, with Senator Harvill concerning this problem. The transfer of these appropriated funds hinges upon the allotment of funds out of revenue received by the Commissioner of Finance. As of today, we have not heard the results of a conference between the two commissioners scheduled last week, and the Commissioner of Education is not available this present week for consultation. It is to be hoped that some resolution of this difficulty will be forthcoming before many days have passed. We look forward to a request to the state legislature in its next biennium session for continuing and additional financial support through legislation which provides a more straight-forward procedure for channelling such financial support to the Academy.

"In view of the fact that we are not incorporated as a non-profit organization, it is difficult to obtain financial support from business and industry. A move to incorporate would enhance the success of efforts to secure financial support from these sources because of the tax advantage offered. Although the Tennessee Academy of Science is now recognized by the Tennessee Department of Revenue as an organization exempt from the payment of taxes on purchases, we are not an organization recognized by the Internal Revenue Service as an organization providing tax advantage to donors. Therefore, it is highly recommended that steps be undertaken to secure this status through incorporation, even if such steps require certain amendments to our constitution.

"In a continuing effort to secure a new Editor for our Journal, the president has worked closely with Dr. Donald Caplenor, our present Editor, over a period of several months. We considered many prospects and have interviewed several but with no success. Dr. Caplenor has done a magnificent job as Editor, not only with regards to the quality of publication, but in managing the affairs of the Journal so as to make its publication current by printing as many as six editions in one year. He has been generous in offering his services through at least one issue in 1969, but beyond that a new editor should be ready to take over. We are continuing our efforts to secure someone.

"The period of the last ten years to us has been a time during which the educational services of the Academy to the school science program in Tennessee have been vigorous and acceptable. We have established an excellent working relationship with men in the Tennessee Department of Education including Dr. Ed Eller, Dr. John Ed Cox, Mr. Don Wood, Mr. Joe Minor and others who have repeatedly told us that the services of Academy Scientists have been valuable to the teachers and pupils in the various school science programs of the state. These activities constitute a real contribution to science education in Tennessee, and we should look forward to a continuing

effort in this field. Our Science Talent Search, our Junior Academy, our Visiting Scientist Program, our Reelfoot Lake Station, and our Collegiate Division are all activities in which we should take some pride and seek ways of increasing their value in the cause of promoting science in Tennessee. We have been assured that all the personnel in the Department of Education will regard with favor our efforts in these areas.

"It has been a privilege to serve as your president. I want to thank all those who have helped in so many ways to make the task pleasant and who have given of themselves and of their time to the service of the Academy. Although many problems remain, the work of the Academy goes on, and I am confident that it will be handled with efficiency and devotion by your new president."

The Director of the Reelfoot Biological Station submitted the following report:

"The thirty-seventh summer session of this inland biological station marks the end of an era of biological and limnological research on Reelfoot Lake.

"Dr. Robert J. Schoffman of Griffin High School, Springfield, Illinois, spent his thirty-second consecutive session in a study of the growth rate of fishes by scale analyses and has attempted to summarize the general conditions relating to conservation of the lake during this very extensive period.

"Students and teachers representing summer institutes and research programs visited the Station for brief periods and members of the participating institutions composing the Jackson Purchase Biological Association held a summer meeting on the Station grounds.

"The first summer session for the present Director was the fifth for the Station. During this 1936 period nine investigators were in residence in addition to periodic visits by representatives of the Public Health Service. The next five years saw eight to ten each session with two to four additional from the Public Health Service. During World War II and thereafter only one or two received scholarships. Thereafter the increase in living costs with no corresponding increase in operating funds necessitated workers living in the Station. This restricted the number and sex of investigators. During the past twenty years twenty-eight scholarships were awarded to those residing at the Station and remaining for more than one month.

"Since the Station opened for full time summer investigators in 1936, there have been 94 investigators on scholarships and 100 papers have been published dealing with their researches in the Annual Report. Some published several articles in our Report while many published their results in other Journals.

"It is of interest to compare a few expenditures of 1938 with those of 1968 as follows:

	1938	1968
Annual Report	\$325.00	\$1,393.00
Automobile Expense	.03	.08
Paint (one gallon)	.85	7.00
Axe	1.15	6.70
Laborer per day (plus a mule)	1.50	12.00 (no mule)
Carpenter per day	2.50	20.00
One load gravel	.50	8.00
Auto Windshield	5.00	62.00
Hotel-motel per week	10.00	56.00

"A proposal has been submitted for the establishment of a teaching-research laboratory by The University of Tennessee at Martin. It is anticipated that a number of institutions, particularly those of the Jackson Purchase Biological Station, will participate as affiliates in the functioning of the Station with The University of Tennessee at Martin bearing the major administrative and operational responsibility. The Tennessee Academy of Science will retain ownership and control of the Station through the Board of Trustees and a Director from the staff of the

Biology Division of The University of Tennessee at Martin would be appointed who will be advised and assisted by an Advisory Committee made up of faculty members from affiliated institutions. Each institution of higher learning in the state will be offered an opportunity to be an affiliate of the laboratory, making the facility available to students throughout Tennessee as originally intended by the founders of the Station. Students from non-affiliated institutions may be accepted provided space is available.

"The proposal envisions use of the existing facility for teaching courses at the upper division and graduate level, for summer institutes, and for conducting research on the lake. The summer session will be divided into two 6-week terms with 2-3 courses being taught during one term and research and institutes being sponsored during the second. Teachers for these courses can be drawn from affiliates. It is anticipated that enrollment in each course will be limited to 15 students.

"The courses offered at the biological station should be acceptable to institutions who wish to become affiliated with The University of Tennessee at Martin in this endeavor. This will require cooperation among the various departments of biology as well as administrative departments of the schools involved. With proper support, the Reelfoot Lake Biological Station can become functional and provide outstanding opportunities for participating institutions.

"It is the recommendation of the present Director that this proposal for the reactivation of the Reelfoot Lake Biological Station be approved by the Executive Committee of the Tennessee Academy of Science.

"The thirty-third summer session for your Director marks the end of an era for he desires to retire from this activity."

The announcement of the Director that he wished to retire precipitated several Motions. The following were moved, seconded, and passed:

1. To accept the retirement of Dr. Baker with regrets and with thanks for his 32 years of service to the Academy.
2. To approve the nomination (by Baker) of Dr. William F. Nelson, University of Tennessee, Martin, as the new Director of the Reelfoot Biological Station. President Rusk will send him a letter of appointment.
3. To approve the program for the Station prepared by the Biology Staff at Martin and to give them permission to operate summer programs for teaching and research for all colleges and universities in the state.

The Chairman of the Ad Hoc Committee on Evolution, Dr. Albert L. Myers, presented the following report:

REPORT ON FREEDOM OF INQUIRY

"This statement is prepared in response to an action of the Tennessee Academy of Science directing that a committee be constituted to consider our position with respect to the teaching of the theory of evolution in public schools of the state of Tennessee. The committee was appointed during a meeting of the Executive Committee of the Tennessee Academy of Science on January 26, 1968. The committee proposes the following basic principles:

1. The theory of organic evolution is recognized as a useful scientific concept having world-wide acceptance.
2. This theory is a part of the thinking in scientific education at all levels: elementary, secondary, college, and university.
3. For maximum progress in the sciences it is necessary

to have freedom of inquiry and teaching in a setting of professional responsibility.

4. All instructional staff members in any educational institution should be allowed to teach facts and principles, within the framework of freedom of inquiry and expression, concerning organic evolution or any other theory without being subjected to any form of harassment or persecution.

"The above resolution is proposed for endorsement by the Executive Committee and the membership of the Tennessee Academy of Science meeting in Clarksville, Tennessee, on November 22 and 23, 1968."

By Dr. James D. Caponetti, Dr. A. Paul Wishart, and Dr. Albert L. Myers, Chairman.

A Motion was seconded and passed to accept the report and to present it to the membership at the business meeting.

Since the time of the general session was drawing near, a Motion was passed at 9:35 A.M. CST to recess the Executive Committee meeting until lunchtime.

The meeting was resumed at 12:30 P.M. CST in a meeting room of the Austin Peay State University Cafeteria.

The Treasurer reported that as of November 20, 1968, the following balances were on the books of the Academy; the operating account is \$3,081.74, the Reelfoot Lake account is \$1,786.83, the Visiting Scientists Program account is \$819.79, and the Junior Academy account is \$312.23. Since the treasury books are audited on December 31, the Treasurer will give a full report at the next Executive Committee meeting in January, 1969.

This year's AAAS Council Representative, Dr. Clinton L. Baker presented a "food for thought" report.

"The Tennessee Academy of Science has always and continues to rate near the top in overall academy activities and relations to the Academy Conference and the AAAS Council. Recall that in 1927 our beloved Dr. J. T. McGill, the long-time academy secretary, was instrumental in organizing all affiliated academies, that were formerly loose "Associates," into the Academy Conference, at first with seven academies, then eighteen, and now forty-five academies.

"Until 1951 this Academy Conference was an informal half-day round table discussion for academy secretaries, but in that year a constitution and by-laws were adopted, the meeting lasted an entire day, and soon afterwards it sponsored the American Junior Academy and the Junior Scientists Assembly. Each academy is now urged to have two representatives at each conference, one preferably an academy officer, the other a fellow of the AAAS who can also serve as a member of the AAAS Council.

"This year the name of Academy Conference will be changed to American Association of Academies.

"Financial support of this Conference comes from \$2,000.00 from AAAS and \$2.00 per hundred members from each academy each year. The academies receive research grants from AAAS resulting from \$1.00 for each academy member who is also a member of AAAS, but not less than \$100.00 or approximately \$12,000.00 annually to all academies. AAAS recommends, but does not require, that these grants be used to encourage research projects by students. AAAS considers itself a parallel organization rather than a parent organization of the affiliated academies. The academies faithfully promote membership and loyalty to AAAS, and AAAS has been strengthened as a result. Many young scientists have been introduced to AAAS through the academies, and many

scientists continue to learn what they know about AAAS from the affiliated academy meetings and publications.

"The Conference has many problems, chiefly that of communication. Questionnaires are sent annually to each affiliated academy and never have all academies replied. Names and addresses of current officers are not always available and materials mailed to academy officers do not reach the membership. The Academy Conference therefore urges each academy to appoint representatives for a minimum of three years, preferably longer, so that continuity results, and also insists that each academy should appoint, as a member of their Executive Committee, a permanent secretary. Eighteen academies now have such an officer and no academy that has had such an officer has ever reverted to the older system. A representative of a prominent academy comments on a lack of vitality in his academy due to: (1) no centrally established office; (2) the fields are too diverse and too many divergent interests; (3) there seems to be no organic ties in the personnel, and there is too large a turnover of officers which leaves us with no integration.

"Many of you recall in days of old the lengthy Academy Conference reports made by Dr. McGill at our annual business meetings. In recent years this business meeting has not had good representation and the agenda is rushed. This is not the appropriate time for this report, (given at the January Executive Committee meeting,) from the national meeting, nor does such a report reach many of the membership. It is hoped that our Executive Committee and Program Committee of subsequent years will consider the possibility of the report of the Academy Conference representative and AAAS Council be given to the general meeting of our academy.

"There are now thirty-six academies with Junior Academies, seven with Collegiate Academies, and twenty-one are closely associated with Science Fairs. Ten years ago the National Science Foundation began supporting activities of academies, mainly Junior and Collegiate activity and Visiting Scientists Programs. Through 1967 approximately \$3,000,000.00 has been appropriated for these activities. Aside from reduction in congressional appropriations to NSF, it was not the intention of NSF to continue such academy aid. NSF hoped to stimulate the development of these programs with the understanding they should be continued after their support is withdrawn. NSF still has funds and will consider new and original academy projects for possible support. Many state academies are continuing the Junior activity on their own and are obtaining funds from industry, institutional support, and supporting or contributing memberships. Some academies find it quite remunerative to include on their notice of annual dues another line stating 'contributions to academy activities.'

"What should academies now consider for the future? Dael Wolfe, of AAAS, suggests more emphasis on importance of action by groups more localized than is the AAAS as a national organization. Some suggestions are: (1) teacher qualifications on a state-by-state basis; (2) public understanding of science; (3) local committees to provide lecturers to educational and lay groups and (4) emphasis on the importance of high ethical standards in science. Can we answer the following for our state? What percent of our schools are using BSCS, PSSC, and the two chemistry programs, and is the teaching of the courses like the teaching that those who prepared the courses intended it to be? Can the academy assist in surveying our state in the present uses of guidelines of NASDTEC? (National Association of State Directors of Teacher Education and Certification). Each academy should be familiar with the guidelines used by its own state department and be prepared to take the initiative in bringing about a revision of these guidelines if it is found that a revision is needed. The next guidelines should be developed within the states through state academy leadership. The physicists are developing a revised set of guidelines for the preparation of physics teachers. Can the academy assist? No one seems to know what to do regarding technical education and

science in junior colleges. The NSF-sponsored commissions are concerned but no one seems to know what to do. Are we recognizing each year outstanding elementary teachers for competency in teaching science, secondary school science teachers, and yes, college science teachers? School superintendents have talked about a state seminar sponsored by someone; perhaps the state academy."

CONSTITUTIONAL MATTERS

President Rusk reiterated the recommendation he made in his report that steps be undertaken to get the Academy incorporated, even if such a step would require certain amendments to our Constitution. One change would be to obtain a permanent address for the Academy; such change is also a requirement for incorporation. Accordingly then, it was moved, seconded, and carried to make the Secretary's address the permanent one for the Academy Corporation. It was also moved and carried that the president seek incorporation and that the President, the President-Elect, the immediate Past-President, the Treasurer, and the Secretary be a committee of five Academy officers to act as incorporators, and have the authority to propose changes in the Constitution that may be required to conform with the laws of incorporation. Such changes will be submitted to the membership along with the annual meeting notice so that they may be voted on the next (1969) annual business meeting.

OTHER BUSINESS

1. President Rusk proposed the formation of a new directorship in the Executive Committee; a Director of Educational Services. Such a new director would coordinate educational services throughout the state. It was moved and carried that the President and the President-Elect be a committee to seek such a new director and report such attempts at the next Executive Committee meeting in January, 1969.

2. It was moved, seconded, and passed that those named to be Fellows of the Academy be recommended for election by the membership.

3. The Secretary read a letter from Dr. John R. Olive, Executive Director of the American Institute of Biological Sciences dated March 25, 1968, and stating that he and the Governing Board of A.I.B.S. take pleasure in inviting our Academy to affiliate membership in the institute. At that moment the Secretary answered Dr. Olive's letter by stating that the decision to affiliate had to be first passed by the Executive Committee, at the next meeting in November, 1968, and if passed would then be presented to the membership for approval. A Motion was introduced to affiliate, seconded, but it failed to pass. The Secretary was instructed to write an appropriate letter of refusal to affiliate to the Executive Director.

4. President Rusk requested Drs. Raridon, Wishart, Bailey, and Baker to prepare a one-page summary budget request for support of their respective programs in the hope that state money would be available.

5. The Secretary was instructed to prepare letters of nomination for Fellow of the AAAS those members of the Academy who are both Fellows of the Academy and members of the AAAS.

6. President Rusk appointed Dr. Clinton L. Baker to write a history of the Academy.

7. The Secretary read a letter from Dr. H. Malcolm Owen, University of the South, Sewanee, dated November 7, 1968, stating that the Academy is invited to hold its 1970 annual meeting at the University of the South. A Motion was passed to discuss the invitation at the next Executive Committee meeting in January, 1969.

The meeting was adjourned at 2:15 P.M. CST.

THE SEVENTY-EIGHTH MEETING OF THE TENNESSEE ACADEMY OF SCIENCE

NOVEMBER 22-23, 1968

AUSTIN PEAY STATE UNIVERSITY

The seventy-eighth meeting of the Tennessee Academy of Science was held November 22-23, 1968 at Austin Peay State University, Clarksville, Tennessee. Dean William H. Ellis was Chairman of the Local Arrangements Committee, and Dr. Gustave H. Lundberg, Austin Peay State University, was Program Chairman.

A total of 301 persons registered for the meeting. Of these, 270 were college-university professors and students; 7 were high school teachers and students; and 24 were from ORNL, TVA, medical institutions, state divisions, and private industry.

The General Session was held in the ballroom of the University Center on Friday morning beginning at 10:00 A.M. CST. President Roger Rusk presided, and the welcome was delivered by Dr. Joe Morgan, President of Austin Peay State University. Section meetings were held Friday afternoon; 66 papers were presented.

The annual business meeting was held in Room 103 of the Claxton Education Building at 5:00 P.M. CST.

The annual dinner was held in the ballroom of the University Center at 7:00 P.M. CST, Friday evening. President Roger Rusk presided, and the address was delivered by Dr. Aaron J. Sharp, Professor of Botany, The University of Tennessee, Knoxville, who spoke on "A Frame of Mind."

The Collegiate Division held its meeting on Saturday morning at 9:00 A.M. CST in Room 102 of the McCord Science Building. Dr. Richard J. Raridon chaired the meeting, and six papers were presented.

ANNUAL BUSINESS MEETING

The annual business meeting of the Tennessee Academy of Science was called to order by President Roger Rusk at 5:05 P.M. CST in Room 103 of the Claxton