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## 73rd Annual Meeting, 1989. Secretary's Report and Financial Statement

**Academy Editors** 

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# PROCEEDINGS ARKANSAS ACADEMY OF SCIENCE

Volume XXXXIII

1989

Dave Chittenden President Dick Speairs President-Elect Walt Godwin Secretary

Robert Wiley Treasurer James Fribourgh NAAS Delegate Henry Robison Historian

## Secretary's Report

#### MINUTES OF THE SEVENTY-THIRD ANNUAL MEETING, - APRIL 1989

#### FIRST BUSINESS MEETING

Dave Chittenden, President, called the meeting to order.

Jim Daly, Local Arrangements Chairman, welcomed the Academy to the Annual Meeting. Daly made several announcements including mentioning the availability of Dave Saugey's paper from last year's meeting. He asked the judges to meet for instructions after the business meeting. He also asked the section chairs to pick up copies of the abstracts to post. He introduced Dr. Harry Ward, Chancellor, who welcomed the group to the University of Arkansas for Medical Sciences campus. He stated that the campus was pleased to host the Academy. He summarized the campus and mentioned that a new research building has been approved.

Henry Robinson, Historian, stated that this was the 73rd meeting and that the meeting had been held six times previously on the med sciences campus. He stated that a history of the Academy is planned for the 75th meeting.

Walter Godwin, Secretary, presented the minutes of the Seventy-Second Annual Meeting. He stated that there were copies in the Proceedings and extras at the back of the room. He asked for any corrections to be presented in writing before the Second Business Meeting.

Bob Wiley, Treasurer, presented the Financial Report. He indicated that extra copies were available in the back. He briefly discussed the report and indicated that the Academy is in good financial shape. He indicated that expenses exceeded income since we paid for two volumes of the *Proceedings* during the past year. He stated that more money will be coming in to cover these expenses. An Audit Committee consisting of Dick Speairs and Art Johnson will examine the report. A copy of the report follows.

## ARKANSAS ACADEMY OF SCIENCE ANNUAL FINANCIAL STATEMENT

#### SUMMARY

(17 MARCH 1988 TO 20 MARCH 1989)

<b>\$15,112.84</b>
-5132.36
\$9980.48

#### DISTRIBUTION OF ACCOUNTS

and To	: Bearing Checking Account (Union Bank rust Co., Monticello, AR)		3694.2
Certific	rates of Deposit		
Dw	ght Moore Endowment (1st National Bank Convay - No. 78940 - 7% Interest)	of	1077.2
Li	e Membership Endowment (Heritage Federa and Loan - Monticello - No. 502440 - 8%	i Savings Interest)	5209.0
TOTAL			99980.4
INCOME:	17 March 1988 to 20 March 1989		
1.7	ANNUAL MEETING: ARKANSAS TECH UNIVERSIT	ry.	371.1
2.	INDIVIDUAL MEMBERSHIPS		
	a. Regular (140) b. Sustaining (12) c. Sponsoring (2)	2100.00 240.00 60.00	
	d. Life (10) e. Associate (11)	550.00 55.00	
	Total	3005.00	9005.0
э.	INSTITUTIONAL MEMBERSHIPS (6)		300.0
4.	PROCEEDINGS, LIBRARY SUBSCRIPTIONS		478.0
5.	PROCEEDINGS, MISC. SALES (UAF)		1918.1
6.	PROCEEDINGS, PAGE CHARGES		3685.0
7.	BIOTA RECEIPTS		48.0
6.	INTEREST		
	a. Interest Bearing Checking Account b. Dwight Moore Endowment c. Life Membership Endowment	184.22 75.41 353.46	
	Total	613.09	613.0
7.	ENDOWMENTS		965.0
TOT	AL INCOME		910,783.4
EXPENSES	11 17 March 1988 to 20 March 1989		
1	AWARDS		

Luke Eggering (#514) Yvette Randle (#515) J. G. Ross (#516) John D. Peck, Plaques - Arkansas Science Talent Search (#518) Arkansas Junior Academy of Science (#519) Arkansas Science Fair Association (#517)

Total

653.01

103.01 250.00 200.00 -----653.01

2.	MEETING EXPENCES CARKANSAS TECH UNIV.	):	
	a. The Shirt Shop (Plaques) (#520) b. David Chittenden (Plaques) (#523)	74.20 42.67 116.87	116.87
Э,	PROCEEDINGS		
	a. Phillips Litho (Vol. 40) (#526) b. Peggy Brown, Editorial Consultant Vol. 40 (#529) c. Phillips Litho (Vol. 41) (#522) d. Robin Hatthews, Editorial Consultant Vol. 41 (#511)	6175.20 500.00 7122.79 500.00	
	Total	14,297.99	14,297.99
4.	OFFICE EXPENSES		
	a. Secretary's Office (#513,#525,#5; b. Treasurer's Office (#521,#528) c. Editor's Office (#524)	27) 375.00 51.02 188.46	
	Total	614.48	514.48
51	DUES - National Association of Academies of Science (#530)		39.00
6.	MISCELLANEOUS (#510)		194.46
TO	AL EXPENSES		#15,915.81

#### ENDOWMENTS

NAME: DWIGHT HOORE ENDOWMENT
PLACE: 1st National Bank of Conway
NUMBER: 78940
AMOUNT: \$1077.25
DATE PURCHASED: 2 January 1987
INTEREST RATE: 7% (Interest paid to AAS semiannually)
DURATION: 30 Months
MATURITY DATE: 2 July 1990

The funds for this CD are derived from money contributed by members and friends of the AAS in memory of Dwight Munson Moore 1891-1985. It is intended that the interest generated from this capital be used to give awards in the name of the honoree. There is no obligation to use all of the interest so that the fund can grow. No provision has as yet been made as to what the awards might be other than they would be in education and would honor outstanding work in the sciences.

NAME: LIFE MEMBERSHIP ENDOWNENT
PLACE: Heritage Federal Savings and Loan Assn. (Monticello)
NUMBER: 502440
AMOUNT: 95209.02
DATE PURCHASED: 11 March 1989
INTEREST RATE: 8% (Interest compounded quarterly)
DURATION: 1 month
NATURITY DATE: 11 April 1989

The funds for this CD are derived from money paid by members of the AAS for Life Memberships (8200.00). It is thought that these monies should be kept separate from other monies and perhaps earmarked for eome special purpose. As individuals become life members they no longer pay annual dues. Thus it may be desirable to annually remove from this endowment an amount equal to the number of life members at he annual dues and deposit it in the checking account. The additional interest earned would be used for other purposes (education and research). Life members would thus be contributing to the Arkaness Academy of Science long after they have become inactive. Life Memberships would have value not only for the life of the individual, but for the life of the Arkaness Academy of Science.

NAME: AREANSAS ACADEMY OF SCIENCE ENDOWMENT PLACE: NUMBER: ANGUNT: DATE PURCHASED: INTEREST RATE: DURATION: MATURITY DATE:

The majority of funds in this CD are unrestricted as to their use. However some funds within the Arkaneas Academy of Science Endowment were donated with restrictions as to their use within the following categories: Student Research Awards/Grants, Publications, and Other.

[NOTE: When CD's mature additional monies collected for that particular CD since investment are added to the maturity amount and reinvested in a new CD.]

## \* ARKANSAS ACADEMY OF SCIENCE \* - COST OF PROCEEDINGS -

VOL.	COPIES	PAGES	PRINTER CG.	TOT. VOL.	COST/COPY	COST/PAGE	
35 (1981)	450	96	<b>#3694.68</b>	04620.99	*10.27	948.14	
36 (1982)	450	110	<b>#5233.28</b>	*5291.69	#11.76	948.11	
37 (1983)	450	103	95326.91	05944.44	013.21	057.71	
38 (1984)	460	97	<b>\$5562.97</b>	96167.72	913.71	863.58	
39 (1985)	450	150	e7856.20	08463.51	918.81	<b>#56.42</b>	
40 (1986)	469	98	<b>66175.20</b>	06675.20	914.23	<b>968.11</b>	
41 (1987)	450	116	87122.79	07811.25	017.36	067.34	
42 (1988)		116					

The Total Volume Cost equals the printers charge (Phillips Litho) plus the editor, editorial assistant, and other miscellaneous charges.

Respectfully Submitted.

R. WILEY

Annual Heeting: 7-8 April 1989 University of Arkansas for Medical Sciences, Little Rock, AR

Dick Speairs, Chairman of the Constitution Committee, reported on recommendations by the committee. The committee recommends that the Institutional Dues be raised from \$50 to \$100 and that the Life Membership be raised from \$200 to \$300 which may be paid in four installments of \$75 each. The recommendation was seconded.

Chittenden stated that a graduate student award has been underwritten by Sigma Xi and will be presented this year.

Chittenden reported for Jim Peck, Editor of the *Proceedings*, and indicated that Peck has resigned to become editor of a national journal in his field. He stated that Harvey Barton had been appointed to fill the unexpired term. Barton presented the following motion:

Mr. President, I move that the Academy appropriate \$500.00 for editorial assistance and \$120.00 for travel for preparation of Volume 43 of the *Proceedings* for the year 1989. The travel expenses will be used only if needed.

The motion was seconded and will be voted on at the Second Business Meeting. He also reminded section chairs to be sure to collect papers at the sessions and to turn in those papers.

Gary Tucker, Editor of the Newsletter, presented the following motion:

Mr. President, I move that the Arkansas Academy of Science appropriate \$250.00 in support of the Arkansas Academy of Science Newsletter for the academic year 1989-90.

The motion was seconded and will be voted on at the Second Business

John Peck, reported for Mike Rapp, Director of the Arkansas Science Fair Association. He presented the following motion:

Mr. President, I move that the Arkansas Academy of Science provide \$200.00 support to the Arkansas Science Fair Association for distribution among the seven regional science fairs and the state science fair.

#### **Arkansas Academy of Science**

The motion was seconded and will be voted on at the Second Business Meeting.

John Peck reported for Paul Krause concerning the Arkansas Junior Academy of Science. He presented the following motion:

Mr. President, I move that the Arkansas Academy of Science provide \$250.00 support to the Arkansas Junior Academy of Science.

The motion was seconded and will be voted on at the Second Business Meeting.

John Peck, Director of the Arkansas Science Talent Search, presented the following report:

Following is the winner of the 38th annual Arkansas Science Talent Search, held in conjunction with the 48th Annual Westinghouse Science Talent Search.

First Place Christopher McLean Skinner 3724 Sierra Forest Drive Little Rock, AR 72212

On the Diophantine Equation

Hall High School  $ap^x + bq^y = c + dp^zq^w$ Sponsored by Mr. Dennis R. Brant

He presented the following motion:

Mr. President, I move that the Arkansas Academy of Science provide \$100.00 for the purpose of a plaque to be presented to Chris Skinner.

The motion was seconded and will be voted on at the Second Business Meeting.

Tom Palko, Director of the Arkansas Junior Science and Humanities Symposium, stated that he was not requesting any financial support but did want the blessing of the Academy. He stated that the Symposium was held the previous weekend involving 47 schools. Seventy-one papers were submitted of which 16 were read and six of those will be going to the national symposium.

Leon Richards reported for the Nominating Committee consisting of himself and Tom Lynch. The nominees for Vice President were Dick Cohoon, Arkansas Tech University, and Mike Rapp, University of Central Arkansas. The nominees for Secretary were Robert Wright, University of Central Arkansas, and John Rickett, University of Arkansas at Little Rock.

Leo Paulissen reported on the Biota Survey. Combined checklists are available for \$10. Several collected lists will be released in the future as supplements.

Robbin Anderson, Chairman of the Science Education Committee, presented a report concerning the reorganization and duties of the Committee. This report follows.

Make-up and duration of service.
 The committee should consist of no more than 12 members, chosen to be representative of different regions, institutions, or fields in the Academy, but with membership open to members with industrial or agency backgrounds.

The term of service should be three years, but with the initial appointments staggered by lot so that one third of the group will rotate off each year. The continuing members will be responsible for submitting a list of suggestions for replacements each year, and additional suggestions may be made by other Academy members, the officers, or the Executive Committee.

#### 2. Duties.

The general responsibilities of the committee on science education would seem to be covered well within the objectives of the Academy for "promotion and diffusion of knowledge of the fields of science." Perhaps some specific attention should be recommended also to the next objective on "unification of these interests in the state." This would seem to indicate that, in addition to planning activities that will take place at the annual meetings, the science education committee should also work actively to foster cooperative activities and programs with other educational groups in Arkansas.

He noted that this reorganization had been approved by the Executive Committee. He also discussed some general plans for the committee and invited suggestions from all members.

President Chittenden announced that the Resolutions Committee will consist of George Harp.

President Chittenden asked section chairmen to keep their sections on time.

President Chittenden mentioned that Banquet tickets were still available.

President Chittenden adjourned the First Business Meeting.

#### SECOND BUSINESS MEETING

Dave Chittenden, President, called the meeting to order.

Walter Godwin, Secretary, moved the approval of the minutes of the Seventy-Second Annual Meeting as printed with no corrections. The motion was seconded and passed.

Art Johnson presented the following report from the Audit Committee.

We have examined the financial records of the Arkansas Academy of Science. The records are kept by Dr. Robert Wiley, Treasurer of the Academy.

We find the books to be legible and logical. The posting is convenient for the auditors to follow as it is accurate and organized. Documentation of monies in certificates of deposit and checking accounts is excellent.

The Academy is justified in having confidence in the manner in which its financial affairs are handled. All the figures in the 1989 financial statement are in order. We commend Dr. Wiley on his care and precision.

> Signed: The Audit Committee Richard K. Speairs, Jr. Arthur A. Johnson

It was moved and seconded to accept the report of the Audit Committee. The motion passed. Robert Wiley, Treasurer, moved that the Treasurer's Report be approved. He indicated that copies were available if needed. The motion was seconded. The motion passed.

Chittenden stated that the nominees for Vice President were Dick Cohoon, Arkansas Tech University, and Mike Rapp, University of Central Arkansas and the nominees for Secretary were Robert Wright, University of Central Arkansas, and John Rickett, University of Arkansas at Little Rock. He called for additional nominations. It was moved, seconded and passed to cease nominations. Ballots were distributed and collected.

#### Secretary's Report

The motion presented at the First Business Meeting by Harvey Barton, Editor of the Proceedings, to allocate \$500 for editorial assistance and \$120 for travel for the Proceedings for next year was passed without additional comment.

The motion presented at the First Business Meeting by Gary Tucker, Editor of the Newsletter, to allocate \$250 for the Newsletter for next year was passed without additional comment.

The motion presented at the First Business Meeting by John Peck on behalf of Mike Rapp, Director of the Arkansas Science Fair Association, to provide \$200 support to the Arkansas Science Fair Association for next year was passed without additional comment.

The motion presented at the First Business Meeting by John Peck on behalf of Paul Krause, Director of the Arkansas Junior Academy of Science, to provide \$250 support to the Arkansas Junior Academy of Science for next year was passed without additional comment.

The motion presented at the First Business Meeting by John Peck, Director of the Arkansas Science Talent Search, to provide \$100 to the Arkansas Science Talent Search for a plaque for Chris Skinner was passed without additional comment.

Robbin Anderson, Chairman of the Science Education Committee, noted the acceptance of the reorganization of the Committee by the Executive Committee and again asked for comments and suggestions. He moved for the acceptance of the committee report from the first meeting. The motion was seconded and passed.

Leo Paulissen reported on the Biota Survey. He urged members to purchase the composite lists which are now available.

Robert Watson reported on the undergraduate awards. He reported that the awards had been won by:

Physical Sciences: (\$50) Anders Amelin - UCA Research Octane Numbers by Nuclear Magnetic Resonance Spectroscopy.

Life Sciences: tie (\$25 each) Bryant Turbeville - UALR The Potential for Nonglycolytic Energy Production in Diving and Nondiving Vertebrates. D. K. Cartwright - UAF Preliminary Evaluation of a Dodder Anthracnose Fungus from China as a Mycoherbicide for Dodder Control in the U.S.

John Sorenson reported on the graduate award. He reported that the award of \$50 and a plaque had been won by:

George T. Blevins - UAMS Extradiol (E2) Influences Cholecystokinin (CCK) Stimulated Amylase Release from Rat Pancreatic Acini.

George Harp, Chairman of the Resolutions Committee, moved the adoption of the following resolution.

#### Be it resolved:

The members of the Arkansas Academy of Science express their gratitude to University of Arkansas for Medical Sciences for hosting the Academy's 1989 meeting. In particular, the Academy thanks James Daly, who was in charge of local arrangements, and the entire Local Arrangements Committee. Appreciation is expressed to all who helped provide comfortable and convenient facilities and an excellent banquet. Dr. Joycelyn Elders' outstanding banquet address concerning environmental health was a highlight of the meeting.

The Academy appreciates the work of the various section chairmen and recognizes the important role they played in the conduct of the meeting. They are as follows: Cliff Orr, John Sorenson and Parimal Chowdhury (Biomedical); Gary Tucker (Botany); Kim Fifer (Chemistry); Hal Berghel, Ron Goforth, Richard Rankin, Rama Reddy, David Sallach, Frederick Spiegel and John Talburt (Computer Science); Edmond Bacon and Forest Payne (Environmental and Aquatic); Wayne Gray and Dwight Talburt (Microbiology and Immunology); V. Rick McDaniel (Vertebrate Zoology); and Robbin Anderson (Physics, Geology and Science Education).

The Academy expresses gratitude to the various directors of the science youth activities supported by the Academy: Robbin Anderson, the Science Education Committee; Mike Rapp, Director of the Arkansas State Science Fair; Tom Palko, Director of the Junior Science and Humanities Symposium; Paul Krause, the Arkansas Junior Academy of Science; John Peck, Director of the Arkansas Science Talent Search; Leo Paulissen, the Biota Committee; and Ed Bacon, the Development Committee.

The Academy is only as successful as its leadership in planning, working, and directing the various activities. To David Chittenden, President; Richard Speairs, President-Elect; Robert Watson, Vice President; Walter Godwin, Secretary; Robert Wiley, Treasurer; Gary Tucker, Past-President and Newsletter Editor; Jim Peck, Proceedings Editor; and Henry Robison, Historian, the Academy expresses gratitude and thanks for an excellent

The Academy expresses thanks and encouragement to continue to the exhibitors for their booths at the meeting.

The Academy recognizes with appreciation the work of Dennis Baeyens, Parimal Chowdhury, and John Sorenson for their efforts on the Awards Committee; Leon Richards and Tom Lynch for their work on the Nominating Committee and as tellers; George Harp, Resolutions Committee; and Dick Speairs and Art Johnson, Audit Committee.

Finally, the Academy appreciates the work in designs of plaques and calligraphy by Robert Wiley and Calvin Cotton.

The motion was seconded and passed. Harp then moved the adoption of a second resolution.

#### Be it resolved:

The members of the Arkansas Academy of Science express their congratulations to Christopher Skinner, a senior at Hall High School, for his scientific accomplishments which resulted in several honors this year.

Mr. Skinner's research paper presented to the 23rd Arkansas Junior Science and Humanities Symposium was judged to be the top research paper and will represent Arkansas at the National Science and Humanities Symposium at West Point, New York in May.

Mr. Skinner was also chosen as first place winner of the Arkansas Talent Search. He culminated this year of achievement by being selected as a National Winner in the 48th Annual Westinghouse Science Talent Search and was awarded a \$20,000 unrestricted scholarship.

The motion was seconded and passed.

President Chittenden announced that the Academy will meet at Arkansas State University in 1990 on April 6 & 7, and at the Univer-

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#### Arkansas Academy of Science

sity of Arkansas at Fayetteville under the sponsorship of Sigma Xi in 1991, probably the first weekend in April.

President Chittenden called for Old Business. None was forthcoming.

President Chittenden called for New Business. John Sorenson asked for an opinion on whether the Academy favored presenting awards in each discipline both at the graduate and undergraduate levels. Considerable discussion followed. It was suggested that the Executive Committee should discuss this at its next meeting. This should also be discussed with Sigma Xi. The possibility of support by other societies, such as ACS, etc., was mentioned. The possibility of additional awards such as first, second and third was also mentioned. It was suggested that this might generate more interest in some areas. Both agreement and disagreement in general were indicated.

The recommendation of the Constitution Committee that the Institutional Dues be raised from \$50 to \$100 and that the Life Membership be raised from \$200 to \$300 which may be paid in four installments of \$75 each was restated. The recommendation which was seconded at the First Business Meeting was passed with the change in Institutional Dues being effective immediately and the Life Membership dues change being effective January 1, 1990.

It was suggested that publicity for the Academy should be discussed by the Executive Committee.

The possibility of the inclusion of engineers in the Academy was also mentioned and referred to the Executive Committee.

President Chittenden discussed the establishment of liaison with SILO. Communications with a designated member have been established. SILO will notify the Academy of pending legislation. The Academy may furnish additional persons for advice on issues when SILO needs assistance. The possibility of revising the Directory of Scientific and

Research Personnel was mentioned. Chittenden will meet further with SILO later.

Leon Richards announced the results of the election. John Rickett was elected Secretary and Mike Rapp was elected Vice President.

President Chittenden thanked the Executive Committee and other members for help he has received in the past year.

President Chittenden called on President-Elect Dick Speairs and passed the gavel to him.

President Speairs recognized the services in the past of retiring Executive Committee members. He presented retiring Editor Jim Peck with a plaque in recognition of his years of service. He presented retiring Secretary Walter Godwin with a plaque in recognition of his five years of service. He presented Past-President Chittenden with a plaque in recognition of his year of service.

President Speairs encouraged members to support the Academy. He also encouraged members to let retirees know that they were missed. He expressed hope that members would encourage younger scientists to participate. He encouraged increased participation by two-year institutions.

President Speairs asked that a representative from each institution or organization pick up copies of the *Proceedings* for those not in attendance.

It was moved, seconded and passed to adjourn the meeting.

Respectfully submitted,

Walter E. Godwin Secretary

#### REGULAR MEMBERS

Stephen R. Addison John W. Ahlen Syed M. Aijaz Bob Allen Robert T. Allen Silke Hufnagel Allen T. Allison Cynthia Annett John T. Annulis Michael L. Armstrong Robert K. Bacon Gwen Barber Sara Mills Barnett Henry Barwood Adelphia M. Basford John K. Beadles Relen Benes Ann Marie Benson Hal Berghel C. Bhuvaneswara Veryl V. Board Marilyn D. Bocksnick Laurence J. Boucher William R. Bowen Leo H. Bown Jimmy D. Bragg Marge A. Brewster John F. Bridgman Arthur V. Brown Connell J. Brown Helen G. Brown Richard H. Brown Charles T. Bryant Charles T. Bryant, Jr. Neal D. Buffaloe Gary Burtle Kay Cargill Robert Carius Michael Cartwright Carl E. Cerniglia Phyllis Chaffin Stanley L. Chapman John S. Choinski, Jr. Frances E. Clayton

University of Central Arkansas Arkansas Science & Technology Authority University of Arkansas at Pine Bluff Arkansas Tech University University of Arkansas Hendrik College University of Arkansas Univ. of Ark./Payetteville University of Arkansas at Monticello Arkansas Game & Fish Commission University of Arkansas University of Central Arkansas Texas Education Agency & UT-Austin Arkansas Mining Institute Henderson State University (Retired) Arkansas State University University of Arkansas for Medical Sciences University of Arkansas for Medical Sciences Univ. Ark/Fayetteville University of Arkansas for Medical Sciences Arkansas College Arkansas Tech University Arkansas State University University of Arkansas at Little Rock Arkansas Tech University Henderson State University University of Arkansas for Medical Sciences University of the Ozarks University of Arkansas University of Arkansas University of Arkansas Ouachita Baptist University Water Resources Associates of Arkansas Water Resources Associates of Arkansas University of Central Arkansas University of Arkansas at Pine Bluff University of Arkansas Arkansas College Arkansas Game & Fish Commission National Center for Toxilogical Research Ark. State Univ. Univ. of Ark. Cooperative Extension Service University of Central Arkansas University of Arkansas

Malsolm K. Cleaveland Richard R. Cohoon George W. Colton Janice L. Cooper Robert M. Cordova William Coutts Bob W. Cowling Randy T. Cox James G. Culpepper Fred Dalske James J. Daly James T. Daniels Stanley N. David Leo Carson Davis Don C. De Luca Robert H. Dilday Ronald H. Doran Larry W. Dorman Peggy Rea Dorris Marian Douglas Lee Lee Doyle Benjamin T. Dubart Danny J. Ebert Tammy Kay Ebsen Rudolph J. Eichenberger Thomas K. Ekman Don England Lawana England-Whaley Carole R. Engle Claude E. Epperson Ray Erickson Wilbur W. Everett Steve Filipek Sheldon Fitzpatrick E. P. Floyd Thomas L. Foti Paul B. Francis Winifred Fraser Kenneth Freiley Jack Gaiser Diana Garland Joe P. Gentry

University of Arkansas Arkansas Tech University Arkansas Geological Commission Arkansas State University Cordco Consulting Univ. of Ark./Little Rock

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University of Arkansas for Medical Sciences University of Arkansas at Pine Bluff U. S. Forest Service
University of Arkansas at Little Rock Southern Arkansas University
Southern Arkansas University
University of Central Arkansas
Harding University
Arkansas State University Alumnus
University of Arkansas at Pine Bluff
University of Arkansas for Medical Sciences
Soil Cons. Service
Ouachita Baptist University
Arkansas Game & Fish Commission
University of Arkansas at Pine Bluff
U. S. Public Health Service (Retired)
Arkansas Natural History Commission
University of Arkansas at Monticello
University of Arkansas at Little Rock
Arkansas College
Univ. Centr. Ark.
University of Central Arkansas
University of Arkansas at Little Rock
Arkansas Science & Technology Authority

#### Secretary's Report

Timothy J. O'Brien Kelly H. Oliver

Michael George Phillip S. Gipson John Glese Mattie Glover Glynn Good Thomas E. Goodwin D. Leroy Gray Donald C. Greenland B. R. Griffin Gaston Griggs Tyrrel C. Grohman Mark Gross Peggy Guccione William C. Guest Jim Guilden Rao P. Gullapalli Paul D. Gwinup Bruce Haggard Michael Halter Earl L. Hanebrink B. J. Hankins Richard H. Hanson James W. Hardin Jarvis Harper John L. Harris Calvin J. Haskins Roger M. Hawk Ronnie Helms Mustafa Hemmati Burton Henderson Jo Ann Heslip Craig Hilburn Larry Hinck Maxine R. Hite Art Hobson John K. Hodges Kathy M. Holobar Kay Holtman Arthur Hoyt, Jr. E. E. Hudson Jim Huey Joe Jeffers Jugh A. Johnson James E. Johnson Michael I. Johnson Jay Justice Alvan A. Karlin Phillip L. Kehler William E. Keith Raj V. Kilambi Scott Kirkconnell Maurice G. Kleve Richard Kluender Scott S. Knight Robert G. Knox Roger B. Koeppe II C. K. Koltman Richard A. Komoroski Randall A. Kopper Walter A. Korfmacher Timothy A. Kral Paul Krause Jack C. Kreie Timothy T. Ku Forrest E. Lane Danny L. Lattin Marie L. Lavaliard Norman Lavers Kwang Lee Linda A. Lee Jerry L. Linnstaedter A. H. Ludwig Thomas J. Lynch Ali Mansouri Mitchell K. Marks Chris T. McAllister William H. McArthur Nancy G. McCartney Clark W. McCarty Rose McConnell Dennis W. McMasters Harlan McMillan Walter E. Meshaka, Jr. Lawrence A. Mink Richard S. Mitchell Jewel E. Moore Ronald D. Moore Leland F. Morgans G. J. Musick Paul Nave Walter Neasbitt Nathaniel Nehus Thomas Nelson W. Donald Newton William F. Nicholson Joe Nix

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John Brown University
University of Arkansas for Medical Sciences
University of Arkansas for Medical Sciences
University of Arkansas Graduate Institute of
Univ. of Ark./Fayetteville
University of Arkansas at Monticello
University of Arkansas at Little Rock - GIT
Arkansas State University
Hendrix College
University of Central Arkansas
Arkansas State University
Univ. of Ark. Cooperative Extension Service
University of Arkansas at Little Rock
University of Arkansas for Medical Sciences
Alcoa
Arkansas Highway & Transportation Department
Arkansas Highway & Transportation Department
Arkansas Game & Fish Commission
University of Arkansas at Little Rock
University of Arkansas at Little Rock
University of Arkansas at Pine Bluff
Arkansas Tech University
Univ. of Ark./Monticello
Arkansas Tech University
Univ. of Ark./Hottle Rock
University of Arkansas at Pine Bluff
Arkansas Game & Fish Commission
Arkansas State University

University of Arkansas
University of Arkansas at Little Rock
Everglades National Park
University of Arkansas at Little Rock
University of Arkansas at Little Rock
University of Arkansas at Little Rock
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University of Arkansas at Monticello
University of Arkansas
University of Arkansas for Medical Sciences
University of Arkansas (Retired)
Arkansas State University University of Arkansas at Pine Bluff Pocahontas High School Pocanontas High School
Arkanass State University
U. S. Geological Survey
University of Arkansas at Little Rock
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