



AMERICAN PHILOSOPHICAL SOCIETY

*Year Book 105*

# *American Philosophical Society*

HELD AT PHILADELPHIA

FOR PROMOTING USEFUL KNOWLEDGE

---

YEAR BOOK 1979

JANUARY 1, 1979 — DECEMBER 31, 1979

THE AMERICAN PHILOSOPHICAL SOCIETY

INDEPENDENCE SQUARE

PHILADELPHIA 19106

1980

The *Year Book* constitutes the  
Annual Report of the  
American Philosophical Society.  
104 and 105 South Fifth Street  
Philadelphia, Pa. 19106  
Telephone: (215) MA 7-0706

Library of Congress Catalog  
Card Number: 39-2034  
ISBN 0-87169-991-5

Printed in U.S.A.  
George H. Buchanan Co., Philadelphia, Pa.

# CONTENTS

	PAGE
Officers and Committees, 1979-1980 .....	5
A Proposal for Promoting Useful Knowledge among the British Plantations in America .....	11
Charter .....	13
Laws .....	20
A Brief History of the Society .....	34
Endowment Funds .....	40
Biographical Memoirs:	
John Biggs, Jr. ....	45
Karl Richard Bopp .....	50
Vincent du Vigneaud .....	54
Richard Ettinghausen .....	58
Myron Piper Gilmore .....	62
Samuel A. Goudsmit .....	65
George Russell Harrison .....	71
Heinrich Klüber .....	78
John Allen Krout .....	81
Wilmarth Sheldon Lewis .....	83
George Carpenter Miles .....	86
Walter R. Miles .....	89
Harold Marston Morse .....	95
William Jacob Robbins .....	100
Lessing J. Rosenwald .....	103
E. C. Stakman .....	107
Warren Weaver .....	113
Alexander Wetmore .....	117
Arthur Preston Whitaker .....	123
Walter G. Whitman .....	128

Meetings of the Society, 1979 .....	131
-------------------------------------	-----

#### Reports of Committees:

Hall .....	143
Curator .....	144
Library .....	146
Meetings .....	166
Publications .....	167

#### List of Members:

Research .....	173
Resident .....	389
Foreign .....	436
Classified .....	448
Representation of Subjects .....	461
Geographical or Professional Locations .....	463
Elected during the Year .....	473
Deceased during the Year .....	474
Table of Totals .....	475

#### Reports on Finance:

Report of Committee on Finance .....	476
Auditor's Report .....	480

Index .....	501
-------------	-----

# OFFICERS AND COMMITTEES

(1979-1980)

## Patron

The Governor of Pennsylvania

## President

Jonathan E. Rhoads

## Vice-Presidents

Allen V. Astin

Erwin N. Griswold

Emily D. Townsend Vermeule

## Secretaries

Maurice Heckscher

Roland M. Frye

## Curator

Edgar P. Richardson

## Treasurer

The Fidelity Bank

## Councillors

### 1977-1980

Walter Orr Roberts

Tracy M. Sonneborn

Robert A. Nisbet

Mabel L. Lang

Crawford H. Greenewalt

### 1978-1981

Joseph S. Fruton

Vernon B. Mountcastle, Jr.

Carl Bridenbaugh

Lynn T. White, Jr.

Morris Lloyd

### 1979-1982

Marshall Clagett

Victor A. McKusick

Gerard Piel

Emanuel R. Piore

David B. Truman

The Council consists of Officers, Councillors,  
and Chairmen of the Committees on  
Finance, Publications, Meetings, Hall, Research, and Library

## Executive Committee

(1979-1980)

Jonathan E. Rhoads, *President*

George R. Clark

Morris Duane

Crawford H. Greenewalt

Edgar P. Richardson

Joseph R. Strayer

Whitfield J. Bell, Jr., *by invitation*

**Executive Officer  
and Librarian**

Whitfield J. Bell, Jr.

**Chairman, Committee  
on Research, and  
Editor**

George W. Corner

**Assistant Secretary**

Carl F. Miller

## COMMITTEES

The President is *ex officio* a member of all committees except the Committee on Nomination of Officers. The first member named in each committee is Chairman. The Executive Officer sits with all committees but does not vote unless a member.

### Finance (1979-1980)

George R. Clark  
Morris Duane  
William B. Eagleson, Jr.  
Lawrence R. Klein  
Morris Lloyd  
William McChesney Martin, Jr.  
Howard C. Petersen  
R. Stewart Rauch, Jr.

### Publications

Joseph R. Strayer (1979-82)  
Albert C. Baugh (1978-81)  
Whitfield J. Bell, Jr. (1978-81)  
Harold F. Cherniss (1977-80)  
Thomas C. Cochran (1979-82)  
George W. Corner (1978-81)  
H. Bentley Glass (1977-80)  
Mark Kac (1978-81)  
Eugene B. Power (1979-82)  
James B. Pritchard (1978-81)  
Thorsten Sellin (1978-81)

### Meetings (1979-1980)

Whitfield J. Bell, Jr.  
Philip H. Abelson  
Britton Chance  
George W. Corner  
Arthur S. Link  
† Esmond R. Long  
Gerard Piel  
Kenneth M. Setton  
Eliot Stellar

### Hall

Morris Duane (1977-80)  
Whitfield J. Bell, Jr. (1978-81)  
† Deceased, November 11, 1979

George W. Corner (1979-82)  
Emerson Greenaway (1977-80)  
Edgar P. Richardson (1979-82)  
Edwin Wolf, 2nd (1977-80)

### Research

George W. Corner (1978-81)  
Albert C. Baugh (1978-81)  
Whitfield J. Bell, Jr. (1977-80)  
Marshall Clagett (1978-81)  
Leonard S. Cottrell, Jr. (1978-81)  
Henry M. Hoenigswald (1978-81)  
Harry W. Jones (1978-81)  
Lawrence R. Klein (1977-80)  
Frederic C. Lane (1977-80)  
Benjamin D. Meritt (1977-80)  
Robert R. Palmer (1978-81)  
Emanuel R. Piore (1978-81)  
Edgar P. Richardson (1979-82)  
William Roach (1978-81)  
Tracy M. Sonneborn (1977-80)  
Eliot Stellar (1979-82)  
John W. Tukey (1977-80)  
Charles W. Wagley (1977-80)  
Marvin E. Wolfgang (1977-80)

### Library

Whitfield J. Bell, Jr. (1978-81)  
Carl Bridenbaugh (1978-81)  
Curt F. Bühler (1977-80)  
George W. Corner (1977-80)  
Joseph S. Fruton (1977-80)  
Owen J. Gingerich (1979-82)  
David R. Goddard (1979-82)  
Emerson Greenaway (1978-81)  
Kenneth M. Setton (1977-80)  
Anthony F. C. Wallace (1978-81)  
John A. Wheeler (1979-82)

## COMMITTEES

### Membership

#### Class I. Mathematical and Physical Sciences

Allen V. Astin (1977-80)  
Mark Kac (1979-82)  
Joseph S. Fruton (1976-80)  
James G. Baker (1978-81)  
Emanuel R. Piore (1979-82)

#### Class III. Social Sciences

Gordon A. Craig (1979-82)  
Frank W. Notestein (1976-80)  
Robert A. Nisbet (1977-81)  
Robin M. Williams (1978-81)  
Harry W. Jones (1979-82)

#### Class II. Biological Sciences

Alexander G. Bearn (1977-81)  
John T. Bonner (1976-80)  
Britton Chance (1978-80)  
James D. Ebert (1978-81)  
H. Bentley Glass (1979-82)

#### Class IV. Humanities

Robert J. Braidwood (1979-81)  
Roland M. Frye (1978-81)  
Willard V. Quine (1977-80)  
James B. Pritchard (1977-81)  
Robert M. Lumiansky (1979-82)

#### Class V. Members at Large

R. Stewart Rauch, Jr. (1979-82)      Gerard Piel (1977-81)  
Howard C. Petersen (1979-82)      Walter Gellhorn (1978-81)  
Crawford H. Greenewalt (1976-80)

### Nomination of Officers (1979-1980)

John A. Wheeler, *Chairman*  
*Retiring Councillors*

Crawford H. Greenewalt	Walter Orr Roberts
Mabel L. Lang	Tracy M. Sonneborn
Robert A. Nisbet	

### Advisory on Election of Members (1979-1980)

Jonathan E. Rhoads, *President*      Whitfield J. Bell, Jr., *Executive Officer*  
*Chairman*      *Class Representative*

Class I:	Allen V. Astin	John A. Wheeler
Class II:	Alexander G. Bearn	David R. Goddard
Class III:	Robin M. Williams	David B. Truman
Class IV:	Roland M. Frye	Mabel L. Lang
Class V:	Crawford H. Greenewalt	Julian P. Boyd



## COMMITTEES

(1979-1980)

### Daland Fund

Victor A. McKusick  
George W. Corner  
John F. Enders  
Charles B. Huggins  
Jonathan E. Rhoads

### Jayne Lectures

George W. Corner  
Britton Chance  
Thomas C. Cochran  
Rensselaer W. Lee  
Gerard Piel  
Jonathan E. Rhoads

### Lashley Award

Theodore H. Bullock  
Neal E. Miller  
Vernon B. Mountcastle, Jr.  
Carl Pfaffmann  
Francis O. Schmitt

### Lewis Prize

Whitfield J. Bell, Jr.  
Frederic C. Lane  
Emanuel R. Piore  
Jonathan E. Rhoads

### Magellanic Premium

Allen V. Astin  
Horace W. Babcock  
Owen J. Gingerich  
Donald F. Hornig

### Michaux Fund

George W. Corner  
Sterling B. Hendricks  
Paul J. Kramer  
Paul C. Mangelsdorf  
Marcus M. Rhoades

### Phillips Prize

Harry W. Jones  
Walter Gellhorn  
Erwin N. Griswold  
John N. Hazard  
Philip C. Jessup

## COMMITTEES

(1979-1980)

### Franklin Papers Project Administrative Board

#### *Representatives of*

##### *The Society*

Thomas C. Cochran  
Whitfield J. Bell, Jr.  
Carl Bridenbaugh

##### *Yale University*

Chester Kerr  
Edmund S. Morgan  
William B. Willcox, *Editor*

Lawrence W. Towner, *Member-at-large*

### The Joseph Henry Papers

#### *Representatives of the Society*

Whitfield J. Bell, Jr.  
Henry D. Smyth

##### *The National Academy of Sciences*

Frederick Seitz  
Lee Anna Embrey Blick

##### *The Smithsonian Institution*

Charles Blitzer  
S. Dillon Ripley

### American Council of Learned Societies

Albert C. Baugh

## Executive Office

Whitfield J. Bell, Jr., Executive Officer and Librarian  
George W. Corner, Editor  
Julia A. Noonan, Associate Secretary Emerita and Secretary to  
Committee on Research  
Carl F. Miller, Assistant Secretary and Assistant Librarian  
Carole N. LeFaivre, Assistant to Editor  
Mary A. Margeson, Sales Coordinator  
Jean T. Williams, Secretary to the Executive Officer  
Susan Hersker Rubinstein, Editorial Assistant  
Susan L. S. Miller, Secretarial Assistant (part-time)  
Joseph P. McNeill, Custodian  
Alexander Stridgett, Custodian (part-time)  
Marie C. Taylor, Part-time Assistant

## Library

Murphy D. Smith, Associate Librarian  
Hildegard G. Stephans, Assistant Librarian and Cataloguer  
Roy E. Goodman, Reading Room Librarian  
James Stephen Catlett, Manuscripts Librarian  
Willman Spawn, Conservator  
Terrance M. Harvey, Assistant Conservator  
Bertram V. Dodelin, Jr., Photographer  
Annemarie E. Candy, Library Stack Supervisor  
Linda L. Camburn, Library Assistant (part-time)  
Marian Christ, Assistant Cataloguer  
Helen Black Irwin, Receptionist  
James H. Fleming, Custodian  
Vincent McConnell, Custodian (part-time)  
Ruth E. Brown  
Bentley Glass  
Daythal Kendall  
Peter Masi

} On Mellon Foundation Grant

---

## General Meetings for 1980

April 17, 18, 19

November 13 and 14

# A PROPOSAL for Promoting USEFUL KNOWLEDGE among the *British Plantations in America.*

**T**HE *English* are possess'd of a long Tract of Continent, from *Nova Scotia* to *Georgia*, extending North and South thro' different Climates, having different Soils, producing different Plants, Mines and Minerals, and capable of different Improvements, Manufactures, &c.

The first Drudgery of Settling new Colonies, which confines the Attention of People to mere Necessaries, is now pretty well over; and there are many in every Province in Circumstances that set them at Ease, and afford Leisure to cultivate the finer Arts, and improve the common Stock of Knowledge. To such of these who are Men of Speculation, many Hints must from time to time arise, many Observations occur, which if well-examined, pursued and improved, might produce Discoveries to the Advantage of some or all of the *British* Plantations, or to the Benefit of Mankind in general.

But as from the Extent of the Country, such Persons are widely separated, and seldom can see and converse, or be acquainted with each other, so that many useful Particulars remain uncommunicated, die with the Discoverers, and are lost to Mankind; it is, to remedy this Inconvenience for the future, proposed,

That One Society be formed of Virtuosi or ingenious Men residing in the several Colonies, to be called *The American Philosophical Society* who are to maintain a constant Correspondence.

That *Philadelphia* being the City nearest the Centre of the Continent-Colonies, communicating with all of them northward and southward by Post, and with all the Islands by Sea, and having the Advantage of a good growing Library, be the Centre of the Society.

That at *Philadelphia* there be always at least seven Members, viz. a Physician, a Botanist, a Mathematician, a Chemist, a Mechanician, a Geographer, and a general Natural Philosopher, besides a President, Treasurer and Secretary.

That these Members meet once a Month, or oftner, at their own Expence, to communicate to each other their Observations, Experiments, &c. to receive, read and consider such Letters, Communications, or Queries as shall be sent from distant Members; to direct the Dispersing of Copies of such Communications as are valuable, to other distant Members, in order to procure their Sentiments thereupon, &c.

That the Subjects of the Correspondence be, All new-discovered Plants, Herbs, Trees, Roots, &c. their Virtues, Uses, &c.; Methods of Propagating them, and making such as are useful, but particular to some Plantations, more general, Improvements of vegetable Juices, as Cyders, Wines, &c.; New Methods of Curing or Preventing Diseases. All new-discovered Fossils in different Countries, as Mines, Minerals, Quarries; &c. New and useful Improvements in any Branch of Mathematicks; New Discoveries in Chemistry, such as Improvements in Distillation, Brewing, Assaying of Ores; &c. New Mechanical Inventions for saving Labour; as Mills, Carriages, &c. and for Raising and Conveying of Water, Draining of Meadows, &c.; All  
new

new Arts, Trades, Manufactures, &c. that may be proposed or thought of; Surveys, Maps and Charts of particular Parts of the Sea-coasts, or Inland Countries; Course and Junction of Rivers and great Roads, Situation of Lakes and Mountains, Nature of the Soil and Productions; &c. New Methods of Improving the Breed of useful Animals; Introducing other Sorts from foreign Countries. New Improvements in Planting, Gardening, Clearing Land, &c.; And all philosophical Experiments that let Light into the Nature of Things, tend to increase the Power of Man over Matter, and multiply the Conveniencies or Pleasures of Life.

That a Correspondence already begun by some intended Members, shall be kept up by this Society with the ROYAL SOCIETY of *London*, and with the DUBLIN SOCIETY.

That every Member shall have Abstracts sent him Quarterly, of every Thing valuable communicated to the Society's Secretary at *Philadelphia*; free of all Charge except the Yearly Payment hereafter mentioned.

That, by Permission of the Postmaster-General, such Communications pass between the Secretary of the Society and the Members, Postage-free.

That, for defraying the Expence of such Experiments as the Society shall judge proper to cause to be made, and other contingent Charges for the common Good, every Member send a Piece of Eight *per Annum* to the Treasurer, at *Philadelphia*, to form a Common Stock, to be disburs'd by Order of the President with the Consent of the Majority of the Members that can conveniently be consulted thereupon, to such Persons and Places where and by whom the Experiments are to be made, and otherwise as there shall be Occasion; of which Disbursements an exact Account shall be kept, and communicated yearly to every Member.

That at the first Meetings of the Members at *Philadelphia*, such Rules be formed for Regulating their Meetings and Transactions for the General Benefit, as shall be convenient and necessary; to be afterwards changed and improv'd as there shall be Occasion, wherein due Regard is to be had to the Advice of distant Members.

That at the End of every Year, Collections be made and printed, of such Experiments, Discoveries, Improvements, &c. as may be thought of publick Advantage: And that every Member have a Copy sent him.

That the Business and Duty of the Secretary be, To receive all Letters intended for the Society, and lay them before the President and Members at their Meetings; to abstract, correct and methodize such Papers, &c. as require it, and as he shall be directed to do by the President, after they have been considered, debated, and digested in the Society; to enter Copies thereof in the Society's Books, and make out Copies for distant Members; to answer their Letters by Direction of the President, and keep Records of all material Transactions of the Society, &c.

*Benjamin Franklin*, the Writer of this Proposal, offers himself to serve the Society as their Secretary, 'till they shall be provided with one more capable.

*Philadelphia*, May 14. 1743.

(From the original in the Benjamin Franklin Collection of the  
Yale University Library.)

# CHARTER<sup>1</sup>

STATUTES AT LARGE OF PENNSYLVANIA

## CHAPTER DCCCXCIV.

---

### AN ACT

for incorporating the American Philosophical Society held  
at Philadelphia for promoting useful knowledge.

---



**Whereas** the cultivation of useful knowledge, and the advancement of the liberal arts and sciences in any Country, have the most direct tendency towards the improvement of agriculture, the enlargement of trade, the ease and comfort of life, the ornament of society, and the encrease and happiness of mankind;

**And whereas** this country of North America, which the goodness of Providence hath given us to inherit, from the vastness of its extent, the variety of its climate, the fertility of its soil, the yet unexplored treasures of its bowels, the multitude of its rivers, lakes, bays, inlets, and other conveniences of navigation, offers to these United States one of the richest subjects of cultivation, ever presented to any people upon earth: **And whereas** the experience of ages shows that improvements of a public nature, are best carried on by societies of liberal and ingenious men, uniting their labours, without regard to nation, sect or party, in one grand pursuit, alike interesting to all, whereby mutual prejudices are worn off, a humane and philosophical spirit is cherished, and youth are stimulated to a laudable diligence and emulation in the pursuit of wisdom; **And whereas**, upon these principles, divers public-spirited gentlemen of Pennsylvania and other American States did heretofore unite themselves, under certain regulations, into one voluntary Society, by the name of "The American Philosophical Society held at Philadelphia, for promoting useful knowledge," and by their successful labours and investigations, to the great credit of America, have extended their reputation so far, that men of the first eminence in the republic of letters in the most civilized nations of Europe have done honour to their publications, and desired to be

<sup>1</sup> Original Charter, Granted in 1780. Article of Amendment added 1935.

enrolled among their members; **And whereas** the said Society, after having been long interrupted in their laudable pursuits by the calamities of war, and the distresses of our Country, have found means to revive their design, in hopes of being able to prosecute the same with their former success, and being further encouraged therein by the public, for which purpose they have prayed us, "the Representatives of the Freemen of the Commonwealth of Pennsylvania," that they may be created One Body Politic and Corporate forever, with such powers, privileges, and immunities, as may be necessary for answering the valuable purposes which the said Society had originally in view.

**Wherefore**, in order to encourage the said Society in the prosecution and advancement of all useful branches of knowledge, for the benefit of their country and mankind.

[SECTION I.] **Be it enacted, and it is hereby enacted by the Representatives of the Freemen of the Commonwealth of Pennsylvania, in General Assembly met, and by the authority of the same,** That the Members of the said American Philosophical Society heretofore voluntarily associated for promoting useful knowledge, and such other persons as have been duly elected Members and Officers of the same, agreeably to the fundamental laws and regulations of the said Society, comprized in twelve sections, prefixed to their first volume of transactions, published in Philadelphia by William and Thomas Bradford in the year of our Lord one thousand seven hundred and seventy-one, and who shall in all respects conform themselves to the said laws and regulations, and such other laws, regulations and ordinances, as shall hereafter be duly made and enacted by the said Society, according to the tenor hereof, be and forever hereafter shall be, One Body Corporate and Politic in Deed, by the name and style of "The American Philosophical Society held at Philadelphia, for promoting useful knowledge," and by the same name they are hereby constituted and confirmed One Body Corporate and Politic, to have perpetual succession, and by the same name they and their successors are hereby declared and made able and capable in law, to have, hold, receive, and enjoy lands, tenements, rents, franchises, hereditaments, gifts, and bequests of what nature so ever, in fee simple or for term of life, lives, years or otherwise, and also to give, grant, let, sell, alien, or assign the same lands, tenements, hereditaments, goods, chattels, and premises, according to the nature of the respective gifts, grants, and bequests, made to them the said Society, and of their estate therein. **Provided**, that the amount of the clear yearly value of

such real estate do not exceed the value of ten thousand bushels of good merchantable wheat.<sup>2</sup>

[SECTION II.] **And be it further enacted by the authority aforesaid,** That the said Society, be, and shall be for ever hereafter able and capable in law to sue, and be sued, plead and be impleaded, answer and be answered unto, defend and be defended in all or any of the courts or other places, and before any Judges, Justices, and other person or persons, in all manner of actions, suits, complaints, pleas, causes, and matters, of what nature or kind so ever within this Commonwealth; and that it shall and may be lawful to and for the said Society, for ever hereafter to have and use one common seal in their affairs, and the same at their will and pleasure to break, change, alter and renew.

[SECTION III.] **And be it further enacted by the authority aforesaid,** That for the well governing of the said Society, and ordering their affairs, they shall have the following officers, that is to say, one Patron, who shall be his Excellency the President of the Supreme Executive Council \* of this Commonwealth, for the time being, and likewise one President, three Vice Presidents, four Secretaries, three Curators, one Treasurer, together with a Council of twelve members; and that on the first Friday of January next, between the hours of two and five in the afternoon, as many of the members of the said Society as shall have paid up their arrears due to the Society, and shall declare their willingness to conform to the laws, regulations and ordinances of the Society then duly in force, according to the tenor hereof, by subscribing the same, and who shall attend in the Hall or place of meeting of the said Society, within the time aforesaid, shall chuse by ballot, agreeable to the fundamental laws and regulations herein before referred to, one President, three Vice Presidents, four Secretaries, three Curators, and one Treasurer, and at the same time and place, the members met and qualified as aforesaid shall in like manner chuse four members for the Council, to hold their offices for one year, four more members for the Council to hold their offices for two years, and four more members for the Council, to hold their offices for three years. And on the first Friday in January, which shall be in the year of our Lord one thousand seven hundred and eighty-two, and so likewise on the first Friday of January yearly and every year thereafter, between the hours of two and five in the afternoon, the

<sup>2</sup> See Amendment, ART. I, p. 20.

\* [Now His Excellency the Governor of this Commonwealth.]



Members of the said Society met and qualified as aforesaid, shall chuse one President, three Vice Presidents, four Secretaries, three Curators and one Treasurer, to hold their respective offices for one year, and four Council Men to hold their offices for three years, *Provided* that no person residing within the United States shall be capable of being President, Vice President, Secretary, Curator, Treasurer, or member of the Council, or of electing to any of the said offices, who is not capable of electing and being elected to civil offices within the State in which he resides. *Provided also*, that nothing herein contained shall be considered as intended to exclude any of the said Officers or Councillors, whose times shall be expired, from being re-elected, according to the pleasure of the said Society; and of the day, hours and place of all such elections, due notice shall be given by the Secretaries, or some one of them, in one or more of the public newspapers of this State, agreeable to the said fundamental laws and regulations before referred to.<sup>3</sup>

[SECTION IV.] **And be it further enacted by the authority aforesaid,** That the Officers and Council of the said Society shall be capable of exercising such power for the well governing and ordering the affairs of the Society, and of holding such occasional meetings for that purpose, as shall be described, fixed, and determined by the statutes, laws, regulations and ordinances of the said Society, hereafter to be made. *Provided always*, that no statute, law, regulation or ordinance shall ever be made or passed by the said Society, or be binding upon the members thereof, or any of them, unless the same hath been duly proposed, and fairly drawn up in writing, at one stated meeting of the Society, and enacted or passed at a subsequent meeting at least the space of fourteen days after the former meeting,<sup>3</sup> and upon due notice in some of the public newspapers, that the enacting of statutes and laws, or the making and passing ordinances and regulations, will be part of the business of such meeting; or shall any statute, law, regulation or ordinance be then or at any time enacted or passed, unless thirteen members of the said Society, or such greater number of members as may be afterwards fixed by the rules of the Society, be present, besides such quorum of the Officers and Council, as the

<sup>3</sup> See Amendment, ART. II, p. 20.