THE PHYSIOLOGIST is published bimonthly by the American Physiological Society at 9650 Rockville Pike, Bethesda, Maryland 20014. Address all correspondence to this address.

Subscriptions: Distributed with The Physiology Teacher to members as a part of their membership. Non-members and institutions, $15.00 per year in the United States; Canada, $16.00: Foreign and postal Union, $17.00. The American Physiological Society assumes no responsibility for the statements and opinions advanced by contributors to THE PHYSIOLOGIST.

The Physiologist

A Publication for Physiologists and Physiology
Orr E. Reynolds, Editor

Volume 24, No. 3, June 1981

TABLE OF CONTENTS

PROPOSED AMENDMENT TO THE BYLAWS
FOR
ELECTION OF OFFICERS

The following amendment to the Bylaws approved by Council will be offered for vote at the Society Business Meeting, Thursday, October 15, 1981. A two-thirds majority vote of the members present is required to amend the Bylaws.

ARTICLE IV. *Officers*

Current Bylaw

SECTION 4. *Election of Officers.* Nominations for President-Elect and for members of Council will be made by mail ballot, on forms provided by the Executive Secretary-Treasurer, before February 1 of each year. Each member may nominate no more than one candidate for each office. If a member wishes to nominate a certain person for President-Elect and for Council he must nominate that individual for each position. The ten candidates that receive the highest number of nominating votes will appear on the appropriate ballot for President-Elect or for Council.....

Proposed Bylaw

SECTION 4. *Election of Officers.* Nominations for President-Elect and for member of Council will be made by mail ballot, on forms provided by the Executive Secretary-Treasurer, before February 1, of each year. Each member may nominate no more than one candidate for each office. If a member wishes to nominate a certain person for President-Elect and for Council he must nominate that individual for each position. The four candidates that receive the highest number of nominating votes will appear on the ballot for President-Elect. The eight candidates that receive the highest number of nominating votes will appear on the ballot for Council....

PRESIDENT'S SUMMARY REPORT OF COUNCIL AND BUSINESS MEETING ACTIONS

April 10-15, 1981
Atlanta, Georgia
Earl H. Wood, President

During approximately 24 hours of discussions held over the 6-day, April 11-14 period before and during the FASEB meetings in Atlanta, Council listened to and discussed the reports from chairmen of 14 of the Society's standing committees and task forces. Since these reports were posted during the meetings and will be published in *The Physiologist,* only items of particular interest will be mentioned herein.

It is noteworthy that for the first time in several years, the Society operating fund is in the black for the present year. Consequently, no dues increase will be necessary for at least another year; however, the current high rate of inflation will make a dues increase necessary probably in 1982 unless President's Reagan's economic recovery program is phenomenally successful.

The sectionalization of the Society's journals continues to be very successful both scientifically and financially. The Society is indebted to the leadership of the Publications Committee, chaired by Dr. Alfred Fishman and the efforts of Mr. Stephen Geiger and his staff at Society headquarters for this excellent state of affairs in this predominantly important function of American Physiology.

In the area of Public Affairs, negotiations are being initiated with a legislative affairs consultant in Washington with the objective of seeking assistance in society relationships with pending legislative actions affecting physiology; initially with particular reference to animal experimentation. Society members are urged to read the discussion in the April/May 1981 issue of *The Physiologist* concerning pending legislation at both local and national levels which, if passed, would impose severe restrictions on the availability and use of laboratory animals.

In this regard, a motion was unanimously approved requesting the Committee on Animal Care and Experimentation, chaired by Helene Cecil, to organize a workshop on animal experimentation issues at the Fall Meeting in Cincinnati to be cosponsored by the Association of Chairman of Departments of Physiology.

The Centennial Celebration Committee is actively planning and promoting historical publications and other activities in preparation for the 1987 Centennial of the Society. Their recommendation that the Centennial Meeting be held in August 1987 in Bethesda, Maryland, hosted by the Uniformed Services University of the Health Sciences, was approved. Various agreements with the National Library of Medicine, NIH, and the Smithsonian Institutions to participate in exhibits and other contributions to this meeting are being formulated.

The critically important questions of the number and format of future meetings and associated reports of the future meetings task force and program committees and the related formation of additional specialty sections of the Society and their representation on the Program Committees were discussed at length. Subcommittees were set up to investigate these questions further and, along with the newly formed Long Range Planning Committee, formulate recommendations for consideration at future Council meetings.

The statement of Organization and Procedures of a new section on Cell and General Physiology was accepted by Council.

In relation to FASEB meetings, Council affirmed sponsorship of the Society of Mathematical Biology as a guest society for 1982 and the Society of General Physiologists for the 1984 Spring FASEB meeting in response to requests from these societies.

A proposal was received from the Biomedical Engineering Society for APS sponsorship of its application for membership in FASEB. An ad hoc committee was appointed to evaluate the apparent value of such action to APS and FASEB and formulate recommendations to Council. The Society for Experimental Biology and Medicine is polling its membership concerning the desirability of applying for membership in FASEB with APS sponsorship.

In this regard, APS representatives have been instructed by Council to sponsor a proposal at the June 1981 meeting of the FASEB Executive Committee that a method be found to eliminate duplicate assessments for individuals who are members of multiple FASEB societies.

Dr. Robert Krauss presented a proposal to Council that FASEB purchase an additional 1.6 acres of land in order to provide an additional buffer against ongoing condominium residential developments which will abut against the FASEB campus. Procurement of this land would improve the prospects of obtaining zoning permits for construction of additional office space for FASEB member societies. Despite the reservations voiced by APS Council that the depletion of reserve funds required for this purpose might interfere with early construction of badly needed new office space, this proposal was approved by the FASEB Board.

The two major provisions upon which this approval was based were 1) that initiation of the purchase be predicated on the receipt of a one million dollar grant currently under consideration by an extramural donor, and 2) that the balance of the approximately 1.5 million dollar purchase price be covered by a $500,000 mortgage on FASEB property for a period of five years at an interest rate of 12%. The interest and principal payments on the mortgage can be met from income (currently at 20%) from current FASEB reserve funds. Successful execution of these two provisions would allow purchase of this land without an increase in assessment to FASEB members.

Opinions were expressed by Council that the role of FASEB as an umbrella organization for the Biomedical Sciences is being clarified and that APS should continue to critically monitor FASEB activities. The progressive efforts of FASEB staff to achieve a high level of cost effectiveness and responsiveness to the needs of the constituent societies and the biomedical sciences in general justify APS support of continued actions towards these ends.

FASEB's initiation of a Summer Research Conference series starting in 1982 and patterned after the Gordon Research Conferences is a move toward support of the intimate scientific communication inherent in small meetings of this type, a format favored by many scientists over the large multidisciplinary usual FASEB type spring meeting.

Efforts to improve the large annual FASEB meeting by a thematic format are underway and continued improvements are being studied by the FASEB Meetings Committee.

The possibility of other societies such as the neurosciences and endocrinology who have their headquarters on the Beaumont Campus becoming full members of FASEB was discussed. If consummated, the resulting broader representation and increased membership would more fully justify FASEB's role as an umbrella organization for the biomedical sciences and could increase the cost effectiveness of FASEB services to constituent societies.

Given these circumstances perhaps a compromise between the advantages and disadvantages of the very large spring meeting could be achieved by supplementing the annual large spring FASEB meeting by a fall meeting. This meeting could accommodate the societies who routinely hold their major meeting during the fall season.

Membership comments relative to these possibilities concerning APS-FASEB relationships would be particularly welcomed by Council at this time because their expeditious consideration by FASEB Board and Executive Committees can be facilitated by the rotational FASEB presidential role which will be APS's responsibility during the 1981-82 term.

The 1981 Bowditch Lecturer will be Barry K. Gilbert, EE, Ph.D. (Physiology) whose subject will be "New Computer Technologies and their Potential for Expanded Vistas in Biomedicine."

Actions at the April 14 Society Business Meeting included approval of a recommendation that the voluntary travel assessment on the annual APS dues bill be increased from $2 to $5 to compensate for the higher costs for travel to Australia in connection with Travel Awards to attend the International Congress of Physiological Sciences in 1983.

Because of the sizable number of errors and complaints regarding the election ballot an amendment to the election plan was presented for discussion by the membership. The proposed new plan would specify that 4 candidates for President-Elect and 8 candidates for Council would be listed on the ballot rather than 10 candidates for each position as is the current practice.

Following discussion, a motion was passed that this amendment be formulated and presented for voting at the fall business meeting of the Society.

A suggestion was received from the floor that the biographical sketches of the candidates which are distributed to the membership along with the blank ballots include policy statements by each candidate concerning current and future society problems.

Following discussion, this suggestion was recommended for further consideration by Council.

In conclusion: In these rapidly changing times in science as in all aspects of human activities, it is important for the American Physiological Society to maintain its ability to adapt to these changes as they evolve in whatever manner that may be required to serve the best interests of physiology in particular and the biomedical sciences in general.

It seems certain that the various aspects of physiology will continue to grow and diversify so that new specialty groups will continue to develop. In this light, perhaps APS should progressively evolve into an umbrella organization made up to sections and subsections covering the various aspects of physiology. Quite probably the best interests of the multiple subdivisions of physiology are better served by forming semiautonomous sections and subsections in a parent society rather than splintering into separate organizations as has occurred often in the past. In any event, it is improbable that future developments can be foreseen with certainty; consequently, the task of your Council is not to foresee the future but rather to enable it.

AMERICAN PHYSIOLOGICAL SOCIETY
125th Business Meeting

Time: 4:30 p.m., Tuesday, April 14, 1981
Place: Atlanta Hilton Hotel, Ballroom West

I. Call To Order

Dr. Earl H. Wood, President, called the meeting to order and welcomed the members to the 125th Business Meeting of the Society. The Ballot for Election of New Members, the proposed Amendment to the Bylaws, Notes from Capitol Hill by Brian Curtis, and the agenda were distributed to the membership.

II. Report on Membership

Dr. Francis J. Haddy, President-Elect, reported on the current status of membership and deaths since the last meeting.

A. Summary of Membership Status

The Society continues to grow. Since reporting last, the membership has reached 5,792. It is distributed as follows: Regular — 4,320, Honorary — 8, Corresponding — 66, Emeritus — 510, Associate — 664, and Student — 224. The 24 Sustaining Associate members were individually identified (p. 16).

B. Deaths Reported Since the Last Meeting

Twelve deaths have been reported since the 1980 Fall Meeting. The names of the deceased members were read and the membership was asked to stand for a moment of silence in tribute to them (p. 16).

III. Election of Members

A. Appointment of Tellers

Dr. Wood appointed Drs. Peter Chevalier, Erik Ritman, and Kenneth Weber as Tellers and asked them to collect the Ballots for Election of New Members.

B. Election of New Members

It was announced by Dr. Orr E. Reynolds that all candidates were elected to membership. There were 120 votes cast with no candidates receiving more than one negative vote.

IV. Election of Officers

As a result of the Election of Officers by mail ballot, Dr. Reynolds informed the members that the new President-Elect is Dr. Walter C. Randall, and the new Councilor to serve a four-year term is Dr. John B. West. For President-Elect, the total number of ballots cast were 1,691 of which 63 were invalid. There were 1,557 for Councilor with 92 invalid ballots.

V. Ray G. Daggs Award

(See p. 15)

VI. Amendment to the Bylaws

Dr. Wood, in referring to the handout on the proposed amendment to the Bylaws dealing with Emeritus membership, announced that the proposed amendment appeared in the December issue of *The Physiologist.* The proposal is to eliminate the provision qualifying a Regular or Associate

member who is retired from regular employment to become an Emeritus member regardless of age. However, the proposed amendment permits the transfer to Emeritus membership regardless of age if the member is forced to retire because of illness.

Upon motion made and seconded, it was resolved that Article III, Section 6, be amended as presented. The motion passed with no opposition (p. 32).

VII. Actions of Council

Dr. Wood reported that Council began its meeting at noon on Friday, all day Saturday and Sunday, and Monday and Tuesday morning with completion of business, hopefully, on Wednesday. During these deliberations, Council took note of the sizable number of errors and complaints on the difficulty of using the ballot for the election of officers and decided to ask the opinion of the membership concerning an amendment of the election plan to provide for only four nominees for President-Elect and eight nominees for Council as opposed to the present system of ten nominees for each position. In addition, the ballot will be redesigned to eliminate the need to write in numbers which should reduce the number of invalid ballots. If the membership favors such a change, a proposed amendment will be published in *The Physiologist* and will be presented for voting at the Fall Business Meeting.

It was moved and seconded that an amendment be presented to the membership at the Fall Meeting to reduce the number of candidates for President-Elect to four and for Councilor reduce the number to eight. The motion was passed with no opposition.

Council received the report of the Finance Committee and noted with satisfaction that for the first time in several years, the Society Operating Fund is in the black for the present year, and for that reason, no dues increase will be necessary for at least another year. Every effort is being made to cut operating expenses in the Society, and there is continuing pressure on FASEB to reduce costs. However, with the increase in inflation, there may be a need to increase dues in another year or two.

The Publications Committee report was received, and Council expressed satisfaction at the way the publications have been growing and improving under the able leadership of the Publications Committee. A special vote of thanks was given to Dr. Alfred Fishman, who has completed a term of fourteen years. Dr. Howard Morgan will succeed him as Chairman of the Publications Committee.

In the area of Public Affairs, Council decided to enter into negotiations with a legislative affairs consultant in Washington with the objective of seeking assistance in Society relationships with pending legislation, particularly affecting physiology with reference to animal experimentation as an initial venture. The Animal Rights groups are very active now. Dr. John Shepherd, Dean of the Graduate School at Mayo and Past President of the American Heart Association, has agreed to chair the Public Affairs Commiteee.

Notes from Capitol Hill (April 1981 issue, p. 6) deal with the NIH extra mural program and training grants for FY 81-82. Dr. Brian Curtis, Chairman of the Public Affairs Committee, urges the membership to write their Congressmen and Senators expressing their views in these regards.

The report and recommendations of the Committee on Animal Care and Experimentation, chaired very ably by Dr. Helene Cecil, was received, and Council approved the development of a workshop on animal experimentation issues to be held at the 1981 Fall Meeting in Cincinnati. Representatives of the Humane Societies will be invited to participate in this workshop, which will be cosponsored with the Association of Chairmen of Departments of Physiology.

In planning for the Centennial Celebration year, 1987, Dr. Peter Chevalier has indicated that publication of the centennial history of the American Physiological Society is to be coauthored by Drs. John Brobeck and Orr Reynolds. Negotiations are underway with a professional historian to prepare a History of American Physiology. The recommendation that the Centennial Meeting in 1987 be held in Bethesda, Maryland, hosted by the Uniformed Services University of the Health Sciences was approved by Council. In addition, there have been various agreements with the National Library of Medicine, NIH, and the Smithsonian Institution to participate in exhibits, symposia, and other contributions to the meeting.

A statement of Organization and Procedures of a new Section on Cell and General Physiology was accepted by Council.

In relation to the FASEB meeting, Council decided to sponsor the Society of Mathematical Biology as a guest society for 1982 and the Society of General Physiologists for the 1984 Spring FASEB Meeting upon request of these societies.

Further, on the relationships with FASEB, the Council decided to propose to the Federation Board that a method be found to eliminate duplicate assessment of members who hold more than one membership in FASEB societies. This will be presented to the FASEB Executive Committee in June.

A proposal was received from the Biomedical Engineering Society to have the APS sponsor its membership in FASEB. An ad hoc committee of Council has been appointed to evaluate the qualifications of that society and recommend to Council the appropriateness of APS sponsorship. The Society for Experimental Biology and Medicine also may ask the APS to sponsor its membership in the Federation.

Council was presented with a proposal to purchase an additional 1.6 acres of land in order to provide additional buffer against an encroachment of residential development with the thought that this will improve the prospects for new construction of office space on the FASEB campus. The Council felt that the cost of purchase of the land might, in fact, interfere with early construction of the badly needed office space and, therefore, opposed the purchase. Subsequently, this came before the FASEB Board and was approved over the objection of APS. Approval was predicated on receipt of a million dollar grant. The Federation will withdraw $200,000 from its reserves and borrow $300,000 with a five-year pay back schedule. FASEB believes this can be achieved without an increase in the societies' assessments.

A suggestion from a member was received that the level of voluntary assessment for travel, which is currently $2 on the APS dues bill to members, be increased to $5 for the next two years since travel to Australia is more expensive than travel to Europe upon which the $2 assessment was based. As is customary with assessments, Council asked

that the membership express its desires in the assessment of voluntary travel awards.

Dr. Wood asked for discussion on the proposed increase in the voluntary assessment for travel to the IUPS Congress. There being no strong feeling expressed, Dr. Wood indicated that Council will consider the change from $2 to $5 in the voluntary assessment at its Fall meeting and probably will authorize the change.

In conclusion, Dr. Wood indicated that copies of complete Committee Reports are posted in the APS Office, State Room, for the perusal of members. Other reports of Committees and Task Forces, whose meetings were held in Atlanta, will be published in the June issue of *The Physiologist.* The affairs of the Society are progressing very well, and Council is hopeful this excellent position can be maintained.

VIII. New Business

There was a recommendation from the floor that the candidates for President-Elect be asked to respond in print to some provocative questions prepared by the Nominating Committee concerning the future of the Society so the membership has more information on which to base its voting than only the biographical paragraph currently supplied. Some questions that could be posed are how the candidates view the city vs the campus meeting, what their views are concerning the relationship of the Society with FASEB, etc. The membership, by and large, is not aware of the candidate's philosophy about issues related to the Society.

Dr. Wood said this appeared to be a worthwhile suggestion and that Council will consider it very seriously. Since the Society does not have a Nominating Committee, Dr. Reynolds indicated the questions would have to be framed by a special committee or Council.

It was pointed out that the AAAS asks its candidates to outline some of their views concerning the organization, and this might be a somewhat easier and fairer approach.

Another member asked about the current status of publishing regional meeting abstracts in *The Physiologist.* It might be very helpful, as far as travel budgets are concerned, to have an outlet for publication of such abstracts.

Dr. Reynolds replied that such abstracts have not been published in *The Physiologist,* but he could see no reason why they should not be published provided camera-ready copy is submitted. He suggested the individual write him concerning this matter. Dr. Wood mentioned that Council has been reviewing the publication costs of *The Physiologist,* which is approximately 20% of the membership dues. As the number of pages increase, it becomes more expensive to publish. This must be taken into consideration.

With no other business, the 125th Business Meeting was adjourned at 5:15 p.m., April 14, 1981.

Francis J. Haddy
President-Elect

COMMITTEE REPORTS

REPORT OF FINANCE COMMITTEE MEETING

April 2, 1981, 2:30 p.m.

Committee Meeting held via telephone conference call

Committee Members Participating: Arthur C. Guyton, Chairman; Jack Kostyo; Robert Forster; Francis Haddy, President-elect (ex officio); Alfred Fishman, Chairman of Publications Committee (ex officio); Orr Reynolds, Executive Officer (ex officio); Walter Sonnenberg, Financial Officer (ex officio).

General Statement:

A tentative budget was developed by the Finance Committee at its meeting on October 12, 1980, in Toronto, Canada. This budget was subsequently approved, still as a tentative budget, by Council at its meeting also in Toronto. Therefore, the purpose of the telephone conference meeting of the Finance Committee was not to establish a budget de novo, but instead to finalize the budget in light of subsequent experience between October 12, 1980, and the present time. The significant changes from the tentative budget are the following:

First, both the income and expenses of the Publications General Fund are now projected to be about $100,000 greater than in the tentative budget. In the tentative budget it was projected that the Publications General Fund would have a deficit for 1981 of about $194,000. The deficit in the proposed budget for 1981 will be approximately $4,000 greater, about $198,000. This deficit is more than counterbalanced by excess earnings by the publications for a period of several years prior to 1980. It is expected that the subscription rate will be increased measurably next year to bring the Publications General Fund out of a deficit posture.

Second, new accounting procedures and new formulae for allocating both income and expenses from FASEB to the constituent societies have increased the income from FASEB by $76,000 and increased the expenses charged the society by FASEB by $67,000. This is a net advantage of $9,000 per year to the society. These changes increase both the income and the expenses in the Society General Fund budget.

Third, other less important changes in the Society General Fund budget are: (a) Salary expense is increased approximately $21,000 because of lingering costs originally ascribed to the audio-visual production program. This program is planned for extinction in the middle of 1981 so that some savings can be effected in the following year in salary expense. (b) An additional expense of $15,000 is budgeted to the Society General Fund for THE PHYSIOLOGIST. This is based on present printing cost and present size of the THE PHYSIOLOGIST. To reduce this would require changing the coverage now afforded by this publication. And, (c) the expense for the Fall meeting that was previously budgeted at a level of $10,000 for 1981, is now projected to be zero, thus decreasing the expenses by this amount.

Another item now budgeted as a possible Society Operating Fund expense is a cost of $2,000 for publication of a pamphlet entitled "NASA Gravitation Proceedings I." Present evidence in-

dicates that this might not be a necessary expense and will be reviewed prior to the Council Meeting.

Overall, the proposed budget for the Society Operating Fund will have a net income over expenses of about $10,000 in 1981. This will be true even though we are not increasing the dues for this year.

Review Of Investment Portfolios:

The investment portfolios for four major investment accounts of the society were reviewed. These accounts are: (a) The Contingency Reserve Fund, (b) the IUPS Fund, (c) the Perkins Memorial Fund, and (d) the Operating Reserve Fund. A report had previously been prepared on each of these portfolios by Carnegie Capital Advisors, a division of the brokerage house of Prescott, Ball and Turben. These reports had been studied by the members of the Finance Committee prior to the telephone conference. It is noted that each of the funds increased between 27 and 37 per cent during the 1980 fiscal year. This compares with an increase in the Dow Jones Industrial Index of 14.9 per cent. Therefore, all of the funds appear to be doing well. There were no specific questions or comments regarding the performance of these investments.

Consideration Of The Auditor's Report For 1980:

The auditor's report had been submitted previously to all members of the Finance Committee and studied prior to the telephone conference. No questions of substance were raised in connection with the auditor's report. The members of the Finance Committee were asked to continue considering this report and to bring any questions that might be pertinent to the Fall meeting of the Finance Committee.

Summary:

The revised budget as prepared by the Finance Officer, Walter Sonnenberg, was accepted by all members of the Finance Committee with a single proviso. that prior to the Council Meeting further information be generated concerning the $2,000 item for publication of the pamphlet entitled "NASA Gravitation Proceedings I."

The overall financial status of the society is good. The Society Operating Fund is budgeted to be in the black for the first time in a number of years even without an increase in dues for 1981. If inflation continues as at present, however, an inflationary dues increase will probably be required in 1982. On the other hand, the Publications General Fund has slipped into a deficit posture of about $200,000 per annum. This will require remedial procedures as soon as possible, presumably an increase in subscription prices.

Arthur C. Guyton, Chairman

REPORT OF FINANCIAL DEVELOPMENT COMMITTEE

April 14, 1981

Dues for individual members

The policy of sending out dues notices early with the suggestion that members pay early was instituted this year and is working well. The Committee recommended that it be continued, with the dues notices coming out regularly by the end of January. The possibility of establishing several categories of dues was rejected, but in order to encourage members whose dues are paid by institutions or granting agencies to make voluntary contributions, the letter from the President sent with the dues notices should contain a statement to the effect that, "If your dues are paid by your institution, please send a voluntary contribution on your own." The Committee agreed that institution of a life membership had more disadvantages than advantages. There was also some question about the benefits of permitting payment of dues up to three years in advance, but the matter was referred to Mr. Walter Sonnenberg for further analysis before making a final decision. Mr. Sonnenberg will also conduct an analysis and let the Committee know the percentage of Regular, Associate, and Corresponding Members whose dues are paid by institutions and grants.

Sustaining Associates

Dr. Ganong reported that at the meeting of the officers of the Society with representatives of the Sustaining Associates on April 13, it was agreed to set up a standing liaison committee to handle any ongoing concerns and problems of the Sustaining Associates. It was also agreed to set up a committee to explore the possibility of a visiting scientist program to foster interchanges between scientists in academic institutions and industry. Common interests in current legislation related to animal use were also discussed.

After discussion, the Financial Development Committee agreed to set as a goal a minimum annual contribution of $500 from each of the Sustaining Associates. This figure will be mentioned when questions are asked about the expected size of the contribution, and next year, renewal letters sent to current Sustaining Associates will urge all of them to contribute at least this much to the Society.

Sustaining Associates who have continued their membership but failed to make a contribution this year will again be approached about contributing during the summer.

President Wood agreed to approach various instrument makers about Sustaining Associate Membership in the Society. He will emphasize the joint interest of the Society and the manufacturers in current national, state and local development in relation to animal care. Mr. Brownstein will develop a list of cosmetics manufacturers, and the possibility of approaching these companies about Sustaining Associate Membership will be discussed with Council. President Wood will also follow up through personal contacts on some of the companies which initially declined the offer of Sustaining Associate Membership.

Bequests and special contributions

The special affection many physicians have for physiology was again emphasized by various members of the committee. The advisability of a special mailing to senior or retired members of the Society who hold the M.D. degree was discussed, and the possibility of approaching physicians who are not members of the Society was also considered. It was decided to consult with Dr. Fishman and with others before making any final decision on this matter.

Foundation Support

The Education Committee of the Society is considering possible educational programs that would be attractive to foundations interested in supporting specific programs. The goal is to find innovative, worthwhile programs that incorporate some of the present expenses so that there is a net reduction in the expenses paid from the current sources of Society income.

The Kroc Foundation has expressed a willingness to consider proposals aimed at providing support for young people to attend meetings of the Society. Dr. Frank Knox, the new Chairman of the Program Committee, will work with the Foundation on this matter.

There was agreement that the Society would be especially well served if individual members would serve as development officers and help approach foundations with whom they have contacts.

Dr. Ed Blaine will provide a list of the pharmaceutical and other companies that he knows have set up foundations.

William F. Ganong, Chairman

REPORT OF THE EDUCATION COMMITTEE

April 1981

This report provides an update on selected activities sponsored by the Committee.

I. **The Audiovisual Project**

The moratorium on the production of new slide-tapes began, as scheduled, at the end of 1980. New tapes presently available are "Electrical Anatomy of the Heart, Parts I and II" and the first three programs in Peripheral Circulation ("Hemodynamics" and "Arterial and Venous Systems, Parts I and II"). The remaining five programs for Peripheral Circulation are in final form and should be forthcoming approximately one per month from April through August 1981. The total deficit at the end of 1980 was approximately $157,000, and this will be reduced during 1981 since income will exceed expenditures for the final manufacturing costs of the remaining Peripheral Circulation programs. We estimate that the total deficit should be paid off within 3-4 years, possibly sooner if sales to clinicians (described below) increase.

II. **Accreditation of APS Materials**

The Accreditation Council for Continuing Medical Education at its meeting on March 27 approved the provisional accreditation of the APS for two years to provide ACCME credit for CME activities (these include not only our slide-tapes but our scientific sessions, refresher courses, and books). Eric Feigl, Joseph Szurszewski, and James Houk will be actively seeking out means for increasing our contacts with clinical groups with regard to use of APS materials, and we would be grateful for any suggestions. Similar accreditation will be sought for use of our materials by osteopathic physicians.

III. **Programs on the Teaching of Physiology**

At FASEB, Barbara Horwitz organized a poster session on "Diverse Approaches to Teaching Environmental Physiology." These presentations of different approaches to the teaching of a particular area have proven quite popular, and the area to be done at the Fall Meeting is gastrointestinal physiology.

IV. **New Careers Brochure**

A new version of the physiology careers brochure is being undertaken by a committee consisting of David Ramsay, Paola Timiras, and Betty Twarog. This is to be available next year.

V. **National Examination Bank**

The Committee has strongly supported the concept of an on-line computerized test-item bank to assist physiology faculty in test construction. This would be built on the OCTL System presently housed at Michigan State University under the direction of Professor Sui-Wak Chan. At the Fall Meeting, Professor Chan will provide a demonstration of the system, and a detailed plan will be presented to the Association of Chairmen of Departments of Physiology, since the cost burden of such a system would be borne by the various participating departments, not the APS. A complete description will appear in the Physiologist.

VI. **Anthologies from the Physiologist**

The volume on the use of computers and simulation in the teaching of physiology, edited by Drs. Tidball and Shelesnyak, has now been completed and is available for purchase. Dr. Rothe is at work on a volume dealing with laboratory exercises.

A.J. Vander, Chairman;

MEMBERSHIP COMMITTEE

Summary of Meeting of April 12, 1981

Committee Meeting:

April 12, 1981, at 1:30 p.m., the Council Room at the Atlanta Hilton, Atlanta, Georgia.

1. The Committee approved all Regular Membership applications except two, recommending that these individuals be offered Associate status. All Corresponding and Student applications were approved. All applications for Associate Membership were approved with one exception, this being an individual who has not completed and received his degree. The Committee's actions were sent to Council as a motion for nomination with the exceptions noted above.

Council seconded and adopted the Committee's nominations. All were subsequently elected at the business meeting of the members on April 14, 1981.

Summary of Election:

One hundred thirty-four of 136 Regular members, 12 of 12 Corresponding members, 34 of 35 Associate members, and 30 of 30 Student members were elected.

2. Once again, the concern of the Membership Committee regarding the role of women in the American Physiological Society and particularly the relatively small number of women applying for Regular Memberships was discussed at the Committee Meeting. This concern was related to the Council who also expressed concern with the problem and continues to seek approaches to improve the representation and status of women in the Society.

R.E. Hyatt, Chairman

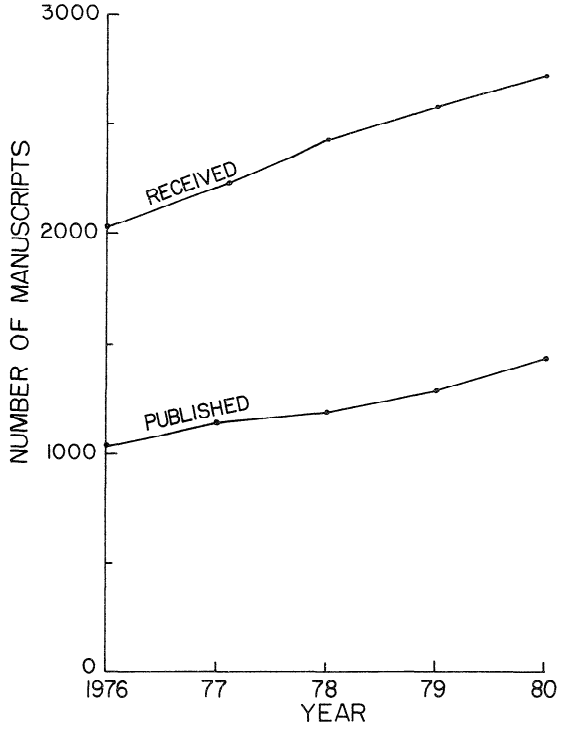
PUBLICATIONS COMMITTEE REPORT 1980

1980 was a year of evolution and growth for the publications of the American Physiological Society. The number of journal articles published increased by 11% and the number of pages by 21%. Despite inflation the member prices of journals have remained reasonable and stable.

1. **American Journal of Physiology**
   The new *AJP: Endocrinology and Metabolism* and *Gastrointestinal and Liver Physiology* each successfully completed its first year with excellence and with increases in the number of manuscripts received and in readership.
2. **Journal of Neurophysiology**
   In its first year as a monthly, this journal published 78% more text pages than in the previous year.
3. **Physiological Reviews**
   Twenty three diverse reviews were published in one of the largest volumes of this journal.
4. **Handbook of Physiology**
   Almost 2000 copies of *Vascular Smooth Muscle,* the newest *Handbook of Physiology,* were sold since the book was published in April.
5. **Clinical Physiology Series**
   More than 1800 copies of *Secretory Diarrhea,* the newest addition to the Clinical Physiology Series, were sold since it was published in May. The books in the series continue to have excellent sales and reviews.

Two important reports on publications appeared in *The Physiologist:* a summary of the *Handbook of Physiology* in the October issue, and a review of publications' accomplishments under my chairmanship in the December issue. The Publications Committee has enjoyed its exchange with members of the Society in *The Physiologist* and has benefited greatly from the responses to its questionnaire on the future of Handbooks, the article on data reporting, and from suggestions for improving the publications. The Committee also acknowledges the indebtedness of all to the editors, editorial boards, and reviewers for their role in maintaining the standards of the publications.

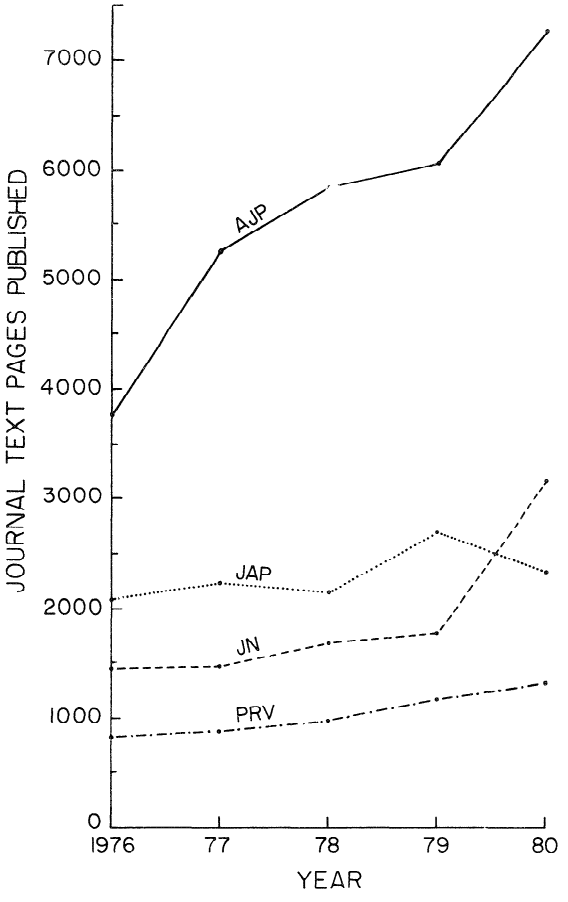
A.P. Fishman, Chairman



Journal Subscription Price
APS Members

	1976	1977	1978	1979	1980	1981
AJP-Cell		$15.00				$15.00
AJP-Endo A-Endo		22.50			$19.00*	22.50
AJP-Endo A-GI & L					17.50*	20.00
AJP-Heart		27.50				32.50
AJP-Regu		15.00				15.00
AJP-Fluid		20.00				25.00
AJP consolidated	$62.50				77.50	87.50
J. Appl. Physiol.	42.50					47.50
J. Neurophysiol.	25.00				35.00**	45.00
Physiol. Rev.	15.00					17.50

* Two journals formed from one
** Frequency changed to monthly



PUBLIC AFFAIRS COMMITTEE REPORT TO COUNCIL

March 1981

Reagan Budget. In the first round of cuts, NIH got off lightly; Secretary Schweiker appears to have exerted his influence there. For FY 81 (this FY) NIH should be able to fund 4800 new and competing renewal grants. The greatest cut is in the area of training—not numbers of trainees but in both departmental costs and institutional overhead. Currently, departments are allowed to apply for up to 25% of the direct student costs to pay for faculty and staff salaries, supplies and equipment: the institutions for 8%. These cuts could seriously alter a department's ability to mount a quality program. Before cuts in overhead can be made the basic law must be changed. Whether this will actually happen in 1981 is uncertain. FY 81 holds the same cutback in training and a slight increase in grant funding to 4900. The bad news is that further cuts may be on the way.

I am making some new contacts in the House Appropriation Subcommittee now that Mr. Michel has moved "upstairs". Cris Schatte spent some time talking to the all new Senate Appropriation Subcommittee.

The **National Research Service Award** legislation must be renewed before May 15. I think APS should testify on this and will work with the Physiology Department at Urbana on this. Mr. Madigan, their representative, is the ranking minority member of the committee.

Alternative Research Methods. I attended the conference briefly. The Animal Care and Experimentation Committee was splendidly represented. Arthur Guyton did a good job presenting the limitations of modeling. The individual committee members called on their members of congress and made some valuable contacts. I suggest that APS request to testify and that one of them do it—I'll be glad to help.

FASEB Public Affairs Committee 2/20

We reviewed the proposed cuts in training with Dr. Doris Merrett of Don Fredrickson's office. She hopes that the reauthorization will give NIH discretion on paying departmental costs and University overhead.

We chewed over some NIH peer review proposals but came to no conclusion. You will soon receive a request to pass judgment on the qualifications of physiology study section members. No conclusion, or even real discussion, was reached on the current NIH policy of "support only the very best—quite well".

Continuation of the Congressional Fellow Program was recommended to the FASEB Executive Committee—we feel that it has been quite reliable.

Independent Research & Development to be funded by an additional 1% overhead charge was discussed and a motion approved to oppose it. The proposal bastardizes the concept of overhead, weakens the case for the BRSG funds and raises the risk of congressional backlash to the concept or cost of overhead.

Henry Hirsch's presentation on a Congressional Contact Committee got a short hearing and promise of further staff work. He proposes a small group in the districts of influential members of congress who will keep their members "informed".

AAMC Interim Meeting 2/20-27

The topic was changes in the examinations leading to state licensure to practice medicine. The Federation of State Medical Bonds feels under great pressure to establish a single route (set of examinations). This pressure comes particularly from the U.S. natives returning from foreign medical schools. They propose to drop the familiar National Board Parts I, II & III and substitute two new exams; one before residency and one before independent practice. The first of these will certainly contain a good many "basic science" questions of new and improved format. I cannot detect that any Physiologists are getting involved in this process. Many turfs were being protected, not the least the "right" of basic science to have its own exam and dictate its contents. I am convinced that we have many supporters on the State Boards and should work with them to produce a high class exam.

Brian Curtis, Chairman

COMMITTEE ON PUBLIC INFORMATION MEETING

January 19, 1981
APS Headquarters

The Committee on Public Information of the American Physiological Society held its first meeting on January 19, 1981.

1. Dr. Kafka welcomed the committee members.
2. The members introduced themselves to one another by describing briefly their scientific, teaching, and administrative pursuits.
3. Dr. Reynolds described the considerations that promoted the APS Council to form the new committee, viz., the need to separate public information and public affairs.
4. Dr. Kafka described the composition of the APS in terms of the areas of research and teaching specialization of its members.
5. She went on to describe the two functions which the committee already has:
   A. Reading the abstracts submitted to APS for the Spring FASEB Meeting and the Fall APS Meeting to select work important for publication in the lay press or for use in broadcasting, on the other hand, and work of particular interest to the scientific community on the other.
   B. To find and suggest articles for FASEB Feature Service and to review the "lay translations" Stephanie Forbes (Feature Service Editor) does for the Feature Service.
6. Mr. Walter Ellis, Director of the Office of Public Affairs, FASEB, described the Feature Service, showed us copies, and described the Press Room functions at the Spring FASEB Meeting. Dr. Altura described the feedback he and colleagues had had after publication of articles in the Feature Service. Such reportage to Mr. Ellis is particularly useful in aiding the Societies to decide how wide and what kind of audience the Feature Service is reaching.
7. Dr. Kafka and members of the Committee suggested some functions the Committee should subserve. As time was running out, the suggestions were listed with full discussion of them postponed until a later meeting. Among the suggestions:

A. A copy of the Feature Service, accompanied by a description of the Feature Service written by Dr. Kafka, might appear in *The Physiologist.* Included should be a description of the members of our Committee.
B. Lay translations of APS members' work could be printed in *The Physiologist.*
C. Dr. Kafka suggested that symposia from meetings be included in the Feature Service in the form of a group of lay-language summaries by symposium participants. Members of the Committee thought the suggestion was not feasible, as participants would not deliver the lay summaries and the media would not be interested in scientific reportage that was more of a review than a presentation of new work.
D. Publicizing the Centennial of the APS (1986-1987) with the aim of publicizing the discipline of physiology. The details need to be discussed at the next meeting.
E. Try to get a science writer to do articles on physiology in conjunction with the Centennial celebration.
F. Investigate whether we can get TV programs and radio brief spots to publicize physiology.
   (1) Dr. Kafka is to investigate whether PBS might suggest a way we could afford financially.
   (2) Dr. Kafka suggested TV programs, such as on a specific disease:
      (a) A detailed presentation of the physiological systems involved in the disease;
      (b) Symptoms of the disease;
      (c) Connections between the symptoms and physiological systems;
      (d) Therapy for the disease;
      (e) Directions in which research might go to find cures and an explanation of why these directions might prove fruitful, i.e., show the scientific thinking involved in trying to solve the problem of how to design new therapies, e.g., which physiological functions should be altered, at which points, what might be undesirable side-effects and how they might be minimized.
         (1) One disease might be myasthenia gravis as an example of a receptor and auto-immune disease.
         (2) Other suggestions:
            (a) Ischemic heart disease
            (b) Circulatory shock
            (c) Environmental toxic lung diseases
         (3) Dr. Kafka suggested that a drug company whose products were aimed at the particular kind of disease might sponsor each show. Several Committee members suggested that the oil companies might underwrite the programs as good will advertising.
         (4) Try to get "English squid show" if there is a way to show it here.
G. Reword the directions for writing abstracts to accentuate the
   (1) Conclusions
   (2) Scientific significance of conclusions
H. Dr. Severs suggested the need for *"active participation of the lay public."* Investigate the feasibility of a lay press question and answer column on physiological questions.
   (1) Legal questions
   (2) A person (possibly retired physiologist) to write and coordinate column
   (3) Foundation funds
   (4) "Newsday" might want column—other papers?
   (5) One city's APS chapter and medical schools might handle questions and answers as a pilot program.
I. Invite Congressional Fellows to Committee meetings.
J. Dr. Cassidy suggested we have a symposium at the Spring or Fall meeting on why minorities are not influencing science more. Dr. Kafka requested that she draft a proposed symposium, including both speakers and topics, for consideration at the next meeting.
K. The need for, and possibility of, a "groundswell" in the recognition of physiology as a discipline was expressed by several Committee members (Dr. Altura in particular).
   (1) Dr. Cassidy suggested the need to teach physiology, not just biology, at the elementary and junior high as well as high school levels to develop the interest in ten-year olds that will encourage them to push for appropriation of money for basic research when at 18 years old, they vote for, and instruct, their legislators.
L. Discussed forming a Political Action Committee which could
   (1) Speak for science
   (2) Send lecturers to industrial companies
   (3) Have speakers/consultants bureau
M. Keep a series of informational materials for teachers in schools, and as a background to preparing "shows."
   (1) Reader's Digest: "I am Joe's (Organ)"—Dr. Moriarty was requested to get us a copy of the series unless at his request, the Digest will give us the articles as a good will or advertising gesture.
   (2) "Physiology in Medicine" series from New England Journal of Medicine might serve as a basis for show scripts.
N. It was suggested that Dr. Kafka write to "Scientists for Public Information" requesting that the Committee be put on its mailing list after Dr. Cassidy brought in information about that organization.
O. Send minutes to Committee members.

8. Decision as to frequency and location of Committee meetings was postponed until our next meeting which is scheduled for June 15, 1981, in Bethesda.
9. Reviewed abstracts were given to Mr. Ellis. Each member had finished reviewing abstracts before coming to the meeting.

Marian Kafka, Chairman

REPORT OF THE PERKINS MEMORIAL FUND COMMITTEE, 1980

The Perkins Memorial Fund provided partial support for two physiologists and their families during 1980. Dr. and Mrs. Walter M. St. John and their two children (Department of Physiology, Dartmouth Medical School) received an award to visit the laboratory of Dr. A.L. Bianchi, University of Marseille, from July 1980 to June 1981. Dr. and Mrs. Yehezkel Gottlieb and their two children (Habdassah Medical School, Israel) received support to visit Dr. G.D. Fischbach at the Department of Physiology, Harvard Medical School.

Applications of high standard have been received for the 1981-1982 academic year and there seems to be no reason at this time to alter either the goals or the mode of operation of the Perkins Committee.

John R. Pappenheimer, Chairman

CENTENNIAL CELEBRATION COMMITTEE

The Centennial Celebration Committee (CCC) meeting was held at the Atlanta Hilton at 12:00 noon on April 13, 1981, with the following members in attendance: Dr. Peter Chevalier, Chairman; Drs. Ralph Kellogg, Lee Langley, Sidney Ochs, Arthur Otis, M.C. Shelesnyak, Task Force Director (ex officio), Earl Wood (ex officio), and Al Fishman (ex officio). Absent with permission, Drs. Robert Joy, Marian Kafka, Jimmy Neill, and Orr Reynolds (ex officio).

1. **Centennial (1987) Meeting Site:** The CCC has unanimously recommended that Bethesda, Maryland be selected as the site of the 1987 Centennial Meeting of the APS. The Uniformed Services University of the Health Sciences has formally invited the APS to use its facilities in Bethesda, adjacent to the National Naval Medical Center, and across the street from the National Library of Medicine and the main campus of the National Institutes of Health, for this meeting. This recommendation was presented to Council as a motion (unanimous) from the CCC. Council, after some discussion, approved this recommendation unanimously.
2. **History of Physiology in America:** Dr. Gerald L. Geison, Director of the Program in History and Philosophy of Science at Princeton University has expressed his interest in writing a book on the History of Physiology in America during the past century. This book is to be similar in approach to that used in his book entitled "Michael Foster and the Cambridge School of Physiology" published in 1978. A meeting was held in March with Dr. Geison to discuss mutual interests and it is hoped that a mutually beneficial collaboration can be worked out so that a scholarly and perceptive treatise will be available by 1986-1987. Alternative sources of funding to support this endeavor are being explored.
3. **Biographical Directory of APS Members:** A listing of current APS members has been sent to Jacques Cattell Press, publishers of American Men and Women in Science, to begin searching their files for availability of biographical information of current APS members. The goal is to have a biographical directory of all APS members, living and deceased, available before the Centennial.
4. **History of the APS, 1887-1987:** The History of the Society is being prepared under the co-editorship of Drs. Brobeck and Reynolds. Final plans are being made regarding format, reproduction, associate contributors, and indexing.
5. **Smithsonian Institution:** A meeting was held in March with Dr. Audrey Davis and Dr. Wilton Dillon, Director of the Office of Symposia and Seminars of the Smithsonian Institution to begin making definitive plans for an Exhibit on Instrumentation used in American Physiology during the past 100 years. A tentative committment of space for organizing a 2 or 3 day symposium on "The Meaning of Physiology" (not the final title) or Physiology and the Arts and Humanities has been given. The Smithsonian collection of physiological instrumentation is not very extensive and an announcement requesting gifts to the Smithsonian will be published in the forthcoming issue of The Physiologist. In addition, the Bakken Library, formerly the Bakken Museum of Electricity in Life, located in Minneapolis, Minnesota, has extended its willingness to participate in this exhibit by providing a portion of its collection of various devices and instruments used in cardiology during the past century.
6. **Professionalization of Physiology in America:** Dr. W. Bruce Fye, Director of the Cardiographics Laboratory at the Marshfield Clinic in Marshfield, Wisconsin, has expressed his interest in writing a book on the Professionalization of Physiology in America in the 19th century. Dr. Fye has already undertaken extensive studies of the departments of physiology of five schools during the 19th century. A well-researched book on this subject would certainly be of interest to the Centennial Celebration and Dr. Fye was encouraged to proceed.
7. **National Library of Medicine:** A meeting was held in April with Dr. Ernest Allen, Associate Director for Extramural Programs and others of the staff of the National Library of Medicine (NLM) to explore the Library's interest in developing a special exhibit from their extensive collection for the Centennial meeting. Dr. Martin Cummings, Director of the NLM, has committed the Library to establishing an interesting and informative exhibit to be available at the time of the Centennial meeting.
8. **Historical Vignettes:** The Historical Section of The Physiologist has become the medium for publishing vignettes. Dr. Kellogg is spearheading this effort and would appreciate suggestions of physiologists to prepare historical vignettes. Properly written, these vignettes provide valuable insight and "serendipity" that will be lost forever, if not recorded and published.
9. **Department Histories:** Dr. Otis has sent a letter to all Department Chairmen inviting them to prepare a history of their department. These histories will be published in The Physiologist when appropriate. Replies from 87 departments have been received to date indicating an interest in pursuing this goal. Hopefully, these will begin to be submitted in the near future.
10. **APS Centennial Celebration Fund:** The Centennial Celebration Fund has been established to provide financial assistance for the various publications and activities planned for the Centennial Celebration. The December issue of The Physiologist presented the first opportunity for members to make a contribution and to receive special jewelry of their choice bearing the APS logo, in recognition of their contribution. The committee is pleased with the response to date, but broader support will be needed to provide the necessary funds to make the Centennial meeting a truly commemorative one.
11. **Historical Lecture Series:** The CCC is planning to sponsor an Historical Lecture Series that will begin, hopefully, with the Spring 1982 meeting of APS and continue at every meeting thereafter, up to, and including, the Centennial Meeting in 1987. Potential topics and speakers are currently under consideration. The CCC would appreciate your suggestions and recommendations.
12. **Canadian Physiological Society Participation in CCC:** As the APS Centennial year will begin with the International Union of Physiological Sciences (IUPS) meeting in 1986, to be held in Vancouver, British Columbia, the Canadian Physiological Society (CPS) has expressed its enthusiasm and interest in helping to "kick off" the Centennial year at the IUPS meeting. Thus, the CCC has moved unanimously to ask Council to invite a member of the CPS, who is also an APS member, to join the CCC and work closely with it in developing these plans. Council subsequently approved this proposal unanimously and the CPS representative will hopefully be able to attend the next meeting of the CCC in October.

Peter A. Chevalier, Chairman

ANIMAL CARE AND EXPERIMENTATION COMMITTEE

Report for October, 1980-March, 1981

I. **Symposium on "Legislative Issues of Animal Experimentation":** Because the Symposium will not be held at the Spring 1981 FASEB meeting, the Committee met on February 19th to discuss a symposium for the Fall 1981 APS meeting. The Committee selected the following topics for presentation:
   1. Historical Aspects of Regulation of Animal Use in Research and its Implications.
   2. Proposed Legislation to Limit the Use of Animals in Research and Teaching.
   3. Re-evaluating the Humane Objectives of Animal Welfare Societies.
   4. Alternative Methods to Animal Experimentation.
   5. The Importance of Animals as Models for Humans.

II. **Alternative Methods Conference:** On February 18-20, 1981, all the Committee members attended the alternative methods conference held in Washington, D.C. Formally entitled "Trends in Bioassay Methodology: In Vivo, In Vitro and Mathematical Approaches," the Conference was held primarily at the behest of Congressional leaders who will soon be reviewing legislation promoting alternative methods research. Congressman George Brown, ranking member (formerly chairman) of the Subcommittee on Science, Research and Technology gave the introductory speech at the Conference. It was Congressman Brown who, because of the volume of mail received by his Subcommittee on H.R. 4805 (now H.R. 556), the Research Modernization Act, requested NIH to conduct a conference dedicated to the state of the art of alternative method research.

   The Conference was well-attended by representatives of the scientific community, animal welfare groups, the federal government and the press. The meeting provided a forum for discussion of in vivo, in vitro and mathematical methods of research. During panel discussions, there was an opportunity for the exchange of views concerning the various subjects presented.

   Dr. William Raub, Associate Director for Extramural Research and Training at NIH was the moderator of the Conference. At the conclusion of the three-day meeting, Dr. Raub stated that he recognized a need for continued discussion in this subject area and would pursue the following:
   1. Establish a "national forum" for alternative methods within the White House of Science and Technology Policy. This forum would be comprised of members of federal agencies, research institutions, industry and animal rights groups.
   2. Establish an ethical review committee within NIH to review the use of Chimpanzees in research.
   3. Insure that the proceedings of the Conference are distributed to all federal agencies who did not attend the meeting.

III. **National Society for Medical Research:** Helene Cecil attended the board meeting of the NSMR on November 14, 1980. The treasurer's report contained the good news that after a deficit budget for 7 years the NSMR will have an operating surplus. This was accomplished by moving to smaller quarters and reducing the number of employees. Contributions from medical schools were down, those from corporations the same, while contributions from individuals were up. Dr. Dale Schwinderman, Senior Staff Veterinarian of the USDA Animal Welfare Office discussed the current state and the future of the Animal Welfare Act. There are indications the USDA will include more species of animals under the inspection procedures of the Act.

   Dr. W. Doyne Collings* assumed the position of Executive Director of NSMR on January 1, 1981. He succeeds Thurman Grafton who retired and is living in New Port Richey, Florida.

Helene Cecil, Chairman

*Dr. Collings died on March 23, 1981. See April 1981 issue *The Physiologist.*

COMMITTEE ON SENIOR PHYSIOLOGISTS

The incoming committee chairman is fortunate in having most of the committee's members experienced hands who have served loyally, some for many years. In lieu of a meeting, we held a conference call early in October to decide on procedures. The committee decided unanimously to continue the practice of mailing Beaumont House cards with a personal message on the 80th birthday. A greeting and optional personal message will be sent to all members on the 70th birthday and biennially thereafter if the recipient responds. If there is no response after the 72nd birthday greeting, the name will be dropped. Only in this manner can the energies of the committee be channeled where they are most useful.

The form letter was revised to not only convey the Society's greeting, but also to emphasize two goals of the Committee. The first is to solicit an autobiographical statement from senior physiologists for deposit in the Society's archives. The second goal is to encourage each older physiologist to make arrangements for deposition of personal papers with libraries or archives. This latter is one of the responsibilities of senior citizenship.

On a more personal level, Committee members are charged to help identify physiologists who can be asked to write a history about their own careers, subspecialties, or departments for possible publication as a part of the precentennial celebration. We also are aware of the Society's need for endowment funds.

There are 379 names on the printout of members born before 1910, 95 of them 80 years or older. To assign responsibility for sending the letters and cards, each member of the Committee selected those he or she knew best or only slightly, and an equitable distribution of names was made along those lines. We are searching for an appropriate logo to mark our section in *The Physiologist,* but find it difficult to combine humor and dignity in one design.

Louise H. Marshall, Chairman

REPORT OF THE PORTER DEVELOPMENT COMMITTEE

March 10, 1981

The Committee is pleased to report that a Native American Summer Research Participation Program supported by the American Physiological Society has been inaugurated at the Colorado State University at Fort Collins by Professors D. Robertshaw and E.L. Pautler. Four students worked in various research laboratories last summer, and a similar number will be selected for this year.

The Porter Development Committee has also continued its support of two predoctoral fellows, Mr. Claude Simon working in John Fray's laboratory at the University of Massachusetts School of Medicine, and Ms. Cynthia Jackon in Luis G. Navar's laboratory at the University of Alabama School of Medicine. The Committee has also continued its grant for the consortia in New Orleans and Altanta. The Atlanta Physiology Program is fortunate to have the participation of two former Porter Development Program Fellows as Visiting Professors: Dr. Pamela Gunter-Smith and Dr. John C.S. Fray.

Dr. A. Clifford Barger &
Dr. Edward W. Hawthorne, Co-Chairmen

REPORT OF THE TASK FORCE ON FUTURE MEETINGS OF THE AMERICAN PHYSIOLOGICAL SOCIETY

Our task force was charged by Council with a mission having two distinct components: First, based on the possibility that APS would eventually have only a single annual meeting, how to make such a meeting as attractive as possible to as many members as possible; second, to consider whether any attempt should be made to foster, as replacement for the second annual meeting, multiple regional or sectional meetings.

In fulfilling our task, we have sought the individual opinions of many physiologists, and also circulated the questionnaire which so many of you answered. We received 2,220 returns out of a total membership of approximately 5,000; this is the highest response rate of any previous polling of the membership.

The results of the questionnaire are printed below, and the following are brief highlights of the responses to the various items.

Single National Meeting

Item 2

FASEB is more consistently attended than the Fall APS Meeting. National specialty meetings taken as a group are extremely well attended. This is consistent with all previous data collected.

Item 3

The scientific sessions are by far the most attractive feature of our scientific meetings; scientific presentations (first choice of 49%), research-oriented symposia (26%), and informal discussions (11%) together comprise the most attractive feature for 86% of the membership. No other feature garnered more than 4% of the first-choice selections. The "teaching" features of the meeting were important to a much smaller fraction of the members, and of these features, the tutorial lectures were most popular. Surprisingly, exhibits of equipment was not a high-ranking feature.

Item 4

Desired changes in the distribution of activities at the meeting were quite consistent with the responses to Item 3. The most striking request (55%) was for more research symposia (only 3% wished fewer symposia). An increased number of research technique demonstrations was requested by 40%. Other features in which those wishing "more" considerably outweighed those wishing "less" included tutorial lectures, poster sessions, and equipment exhibits. In contrast, the opposite distribution was found for symposia on teaching methods and displays of audiovisual materials. Interestingly, there was considerable interest in reducing the number of simultaneous scientific sessions but not for reducing the number of oral presentations. This would be impossible to achieve given the desire (item 6) for only a 3-4 day meeting.

Item 5

The opinion concerning the distribution of poster sessions and oral presentations is normally distributed around "equal distribution". This generally is consistent with the views expressed in Item 4.

Item 6

The great majority (86%) favors a 3-4 day meeting.

Item 7

There was no clear-cut favoring of a campus location for meetings.

Item 8

A very large fraction (77%) felt that we should meet in conjunction with one or more other groups at least half the time; 39% favored always meeting with another group.

Item 9

Spring was the definite choice for the time of the meeting, with autumn clearly the second choice. There was little enthusiasm for a summer meeting and almost none for winter. These choices militate against holding meetings on campuses.

Regional Meetings

Approximately two-thirds of the members expressed some interest in attending a regional meeting, with two days being the overwhelming favorite. Unfortunately, an almost equal number felt that attendance at such a meeting would reduce the likelihood of attending the national meeting. Very importantly, the distribution of activities desired at a regional meeting is essentially the same as that for the National meeting, i.e., very heavy emphasis on scientific presentations and research symposia in one's own specialty. There was very little interest in scientific sessions outside one's specialty or in education-oriented activities.

Based on the results of this questionnaire and a variety of other considerations, we offer the following recommendations:

1. If APS decides to hold only a single national meeting, that meeting should be in the Spring with at least one other society as

LEARNING RESOURCE CENTER IN ATLANTA

Over one thousand people visited the Learning Resources Center exhibits at the Spring Meeting in Atlanta to operate computers, watch audiovisual programs, and discuss poster displays. Nine educational exhibits were presented by twelve FASEB members and five nonmembers. The exhibits, located in the World Congress Center, were on display for four days, with participants giving one-hour presentations each morning and afternoon.

Also located in the Learning Resources Center were the self-instructional slide/tape programs developed and produced by the American Physiological Society. Six recently developed programs from the "Electrophysiology of the Heart" and "Peripheral Circulation" series were featured for preview. Approximately one hundred scientists and students viewed the new slide/tapes and their comments and recommendations have assisted the APS Education Office in final production of the programs.

The educational displays presented in Atlanta marked the sixth exhibition of the Learning Resources Center at a society meeting. The Center has been sponsored by the APS Education Committee and was first presented in 1978 at the APS Fall Meeting in St. Louis as a forum for members to exchange information on the teaching of physiology. Since April 1980 The Center has expanded to include exhibits by FASEB members at the spring meetings. Participants in the Learning Resources Center submit abstracts in the "Teaching materials and methods" topic in the Call for Abstracts.

Dr. Daniel L. Traber, Monte A. Crawford, and J.R. Walker of the University of Texas Medical Branch at Galveston and the Shriners Burns Institute jointly presented two displays of laboratory courses for medical students. One represented an interdisciplinary lab course involving physiology, pharmacology, and biochemistry. Students evaluate the course to assist in upgrading or replacing the experiments. The second represented a laboratory study of cardiopulmonary function of sheep before and after endotoxin infusion and included a discussion of the observed responses in relation to the pathophysiology of sepsis, indentification of cardiopulmonary sequelae, and types of therapy.

Three exhibits at the Learning Resources Center demonstrated the use of computers in physiological simulation. The computers permit manipulation of parameters to determine the interactions between physiological systems and graph the changing parameters. Dr. David A. Miller and Wesley A. Granger, using block diagrams, graphs, and microcomputers, presented an examination of the factors influencing oxygen transport taught at the Medical College of Georgia. Drs. Harold G. Hempling and William C. Wise of the Medical University of South Carolina presented microprocessor programs used with laboratory experiments for student instruction of permeability and acid/base balance.

Dr. James E. Randall of Indiana University at Bloomington and Dr. Thomas G. Coleman of the University of Mississippi presented a computer model designed for instructing students and for providing researchers with a tool for testing postulated mechanisms. The program subjects range from calculations of endocrine responses, effects of exercise, and responses to drug therapy. The Atlanta presentation was the fourth for Randall, and both Granger and Hempling acknowledged his assistance with their computer programs after meeting him at previous exhibits.

Audiovisual resources were used in two self-paced study programs presented at the exhibits. An independent study course in immunochemistry taught at the University of Illinois at Urbana was presented by Dr. Edward Voss, Jr. and Michael Jarvis. The three-part course, emphasizing the chemistry of antigens and antibodies and their interactions, includes self-paced instructional materials and questions, references to texts and lab manuals, and audiotapes. Dr. Luean E. Anthony of the University of Texas Health Science Center exhibited self-instructional slide/tape programs on nutrition that were developed for medical, pharmacy, and dietetic students. The slide/tapes are part of a program designed to coordinate health care by physicians, pharmacists, and dieticians.

A course in endocrine physiology taught at the University of New Mexico Medical School was presented by Drs. William F. Woodside and Albert Ratner. Designed to aid medical students in applying basic endocrine physiology to clinical cases, the course begins with self-study on a particular endocrine-system. The students then meet with faculty members in small groups to develop clinical cases in a step-by-step learning process.

A multiple presentation comparing programs in environmental physiology at the University of California at Davis and at the University of Iowa was jointly presented by Drs. Barbara A. Horwitz, John M. Horowitz, and G. Edgar Folk, Jr. Poster presentations outlined courses in environmental physiology at graduate and undergraduate levels. This exhibit was the second organized by the APS Education Committee to bring together participants from different universities to discuss various approaches to teaching similar topics.

Participants in the Learning Resources Center reported the exhibits to be worthwhile. They feel that feedback from their peers helps them to improve their programs, and they enjoy the opportunity to exchange ideas with other instructors. Several participants have acknowledged that preparing an exhibit assists them in clarifying their objectives and organizing their presentations. A number of exhibitors noted that interest in the Learning Resources Center is increasing, and all expressed interest in participating at future meetings. The Learning Resources Center is next scheduled for the APS Fall Meeting in Cincinnati, Ohio in October 1981.

Marjorie R. Muench
APS Education Office

THE RAY G. DAGGS AWARD

The presentation of the Ray G. Daggs Award was made by Dr. Earl H. Wood, who announced, "it is the most prestigious award given by the American Physiological Society. The Award is given for distinguished service to the American Physiological Society and to the science of Physiology.

"The awardee is selected annually by a nominanting committee - composed this year of Drs. Ewald Selkurt, Norman Alpert, and Hermann Rahn - and their nominee has been verified by action of the APS Council. As the name implies, the Award is given in the name of Ray G. Daggs, who was our Executive Secretary-Treasurer from 1956 to 1972 and rendered great services to the American Physiological Society.

"The recipient this year is extraordinarily well qualified both on the basis of service to APS and just as strongly on the basis of contributions and service to the Science of Physiology.

"The recipient is Dr. Arthur C. Guyton.

"Certainly, Arthur needs no introduction to this audience. In fact, on the basis of his many textbooks and accomplishments in Physiology, I suspect the name of Guyton is more widely known at all levels of students and professionals in Physiology than any other single individual.

"Dr. Guyton is a shining example of the ability of the human character and mind to overcome adversity.

Arthur has not only overcome adversity, but he had become a super human achiever in a very broad range of the various aspects of human life and endeavor on this planet.

"In fact, he is such a super achiever that he has become a legendary character among biomedical scientists in his own life time, and I am certain he will remain a legendary character in Physiology in perpetuity.

"Time limitations prevent even a partial listing of Arthur's many honors, accomplishments and services to our Society and to our umbrella organization, FASEB.

"There have been many very deserving individuals who have received this Award prior to Arthur; in my opinion, however, Arthur is at the least as deserving as any of the prior receipients.

"Review of his extensive curriculum vitae and bibliography and more personal anecdotes furnished to me by his good friend and admirer, Aubrey Taylor, forced me to realize that no brief remarks of mine could be adequate to convey a reasonably complete picture of this really tremendous individual - who in spite of adversity has risen to the top as a biomedical scientist and educator, and at the same time, with his charming wife, Ruth, has raised a tremendously talented family of ten children.

"Consequently, I call upon the help of each of you in this audience to express our appreciation and admiration of Dr. Guyton as a great individual and a great scientist by a standing ovation. I am convinced that none amongst us deserves a standing ovation from his colleagues more than does Arthur Guyton.

"Arthur, as a spokesman for APS, it is a great privilege and honor for me to give you this Award."

There was a standing ovation for Dr. Guyton.

Dr. Guyton said, "Thank you very much Earl and all of you. When you receive an award like this, you want to reminisce. The fact of the matter is, the first Society meeting I attended was in 1949. Few of you will remember it was held in Augusta. There had just been the golf tournament, and it was a beautiful site to have a meeting.

"I could not really understand why I should receive the Daggs Award because the first thing I thought was there were so many contributions that so many of you have made to the American Physiological Society. Why me? If there is any one reason I deserve it, it is for the love I have for the American Physiological Society. If there ever has been any love affair, it has been with the Society. I do not think it hurt anyone as much as it has hurt me to see the splinter groups leave the Society. Every time it happened, I did what I could, at least, to try to prevent it. When I have an opportunity in the administration of the Society, Orr Reynolds and I worked together, along with other Presidents, to try to change the rules to get some sections going very strong in the Society and not out of the Society. We hope this has been of some value, but we are not sure.

"There is no group in the whole world that I would rather have to give me this plaque and award. I am honored. Earl talked about super achievements. I thought all he was really talking about were my ten children. Thank you very much."

HONORS AND AWARDS

The National Academy of Sciences announced the election of 60 new members in recognition of their distinguished and continuing achievements in original research.

The National Academy of Sciences is a private organization of scientists and engineers dedicated to the furtherance of science and its use for the general welfare. The Academy is called upon to act as an official adviser to the federal government, upon request, in any matter of science or technology.

Three APS members were chosen by the Academy for election:

Michael V.L. Bennett, Director, Division of Cellular Neurobiology, Albert Einstein College of Medicine.

Eugene P. Cronkite, Chairman, Medical Department, Medical Research Center, Brookhaven National Laboratory, Upton, N.Y.

Joseph F. Hoffman, Professor of Physiology, Yale University, School of Medicine.

MEMBERSHIP STATUS

Regular Members	4,320
Emeritus	510
Honorary	8
Corresponding	66
Associate	664
Student	224
TOTAL	5,792

DEATHS REPORTED SINCE THE 1980 FALL MEETING

Harold A. Abramson(E)	9-2-80	South Oaks Foundn., Inc. Amityville, NY
David L. Drabkin (E)	1-19-81	University of Pennsylvania Philadelphia, PA
Marie A. Hinrichs (R)	2-5-81	Huntington, NY
Frederic G. Hirsch (E)	1-4-81	Albuquerque, NM
Barry G. King (E)	12-18-80	Del Mar, CA
John S. Krebs (R)	2-18-81	SRI International Palo Alto, CA
Stephen W. Kuffler (R)	10-18-80	Harvard Medical School
Maurice S. Raben (R)	9-19-80	Waban, MA
John Rankin (R)	1-22-81	University of Wisconsin Madison, WI
Evelyn K. Rosenberg (R)	11-26-80	Jersey City State College
Owen H. Wangensteen (E)	1-13-81	Minneapolis, MN

FIFTY-YEAR MEMBERS AND YEAR OF ELECTION

Edward F. Adolph, 1921 (E)
Anna M. Baetjer, 1929 (E)
Richard J. Bing, 1922 (E)
Helen Bourquin, 1925 (R)
T.E. Boyd, 1925 (E)
Emmett B. Carmichael, 1931 (E)
McKeen Cattell, 1923 (E)
K.K. Chen, 1929 (R)
Lathan A. Crandall, Jr., 1930 (E)
Hallowell Davis, 1925 (E)
Carl A. Dragstedt, 1928 (E)
John Field II, 1931 (E)
Maurice H. Friedman, 1929 (R)
Chalmers L. Gemmill, 1928 (E)
Arthur S. Gilson, Jr., 1927 (E)
Paul O. Greeley, 1931 (E)
Esther M. Greisheimer, 1925 (E)
Arthur Grollman, 1925 (E)
Erwin G. Gross, 1927 (E)
H.K. Hartline, 1929 (E)
A. Baird Hastings, 1927 (E)
Joseph M. Hayman, Jr., 1928 (E)
Alrick B. Hertzman, 1925 (E)
Joseph C. Hinsey, 1929, (E)
Edmund Jacobson, 1929 (E)
Jane S. R. Johnson, 1925 (E)
Frederic T. Jung, 1930 (E)
Nathaniel Kleitman, 1923 (E)
Theodore Koppanyi, 1924 (E)
Eugene M. Landis, 1928 (E)
Arnold Lieberman, 1931 (E)
H.S. Mayerson, 1928 (R)
Samuel E. Pond, 1924 (E)
Alfred C. Redfield, 1919 (E)
Paul Reznikoff, 1927 (E)
Curt P. Richter, 1924 (E)
David M. Rioch, 1931 (E)
Carl F. Schmidt, 1929 (E)
Francis O. Schmitt, 1930 (E)
Samuel Soskin, 1930 (E)
Isaac Starr, 1929 (R)
Eugene U. Still, 1928 (E)
Maurice L. Tainter, 1929 (E)
Maurice B. Visscher, 1927 (E)
Joseph T. Wearn, 1921 (E)
Leland C. Wyman, 1927 (E)
Raymund L. Zwemer, 1930 (E

(R) Regular
(E) Emeritus

NEWLY ELECTED MEMBERS

The following, nominated by Council, were elected to membership in the Society at the Spring Meeting 1981.

REGULAR MEMBERS

ADAMS, James M.: Div. Biomed. Eng., Univ. of Virginia, Charlottesville
ANAND, Rajen S.: Dept. Biol., California State Univ., Long Beach
AUSIELLO, Dennis A.: Renal Res. Lab., Mass, Gen. Hosp., Boston
BAKER, John P., Jr.: Dept. Physiol. & Biophys., Univ. of Texas, Galveston
BALDWIN, David M.: Dept. Physiol., Univ. of Cincinnati Coll. Med.
BALDWIN, Geraldine F.: Dept. Pharmacol., Mt. Sinai Sch. Med., New York City
BARONE, Frank C.: Brain Res. Lab., Syracuse University
BAUMGARTEN, Clive M.: Dept. of Physiol., Med. Coll. of Virginia, Richmond
BELL, Donald R.: Dept. Physiol., Albany Med. Coll., Albany, NY
BELL, Phillip D.: Dept. Physiol. & Biophys., Univ. of Alabama, Birmingham
BELLAMY, Ronald F.: Div. Surg., Letterman Army Inst. Res., San Francisco
BERGMANN, Steven R.: Cardiovascular Div., Washington Univ., St. Louis
BEYENBACH, Klaus W.: Div. Biol. Sci., Cornell Univ., Ithaca, NY
BHATTACHARYA, Jahar: Res. Physiol., Univ. of California, San Francisco
BHATTACHARYYA, Mohit L.: Dept. Physiol., Texas Tech Univ., Lubbock
BIDANI, Akhil: Medical Student, Houston, TX
BIRKHAHN, Ronald H.: Dept. Surg., Med. Coll. of Ohio, Toledo
BITAR, Khalil N.: Med. Coll. of Virginia, Richmond
BLOCK, Edward R.: Pulmonary Med., Gainesville VA Md. Ctr.
BORER, Katarina T.: Dept. Phys. Ed., Univ. of Michigan, Ann Arbor
BRAUTBAR, Nachman; Dept. Med., Univ. of Southern California, Los Angeles
BREISCH, Eric A.: Dept. Surg., Univ. of California, San Diego
BROWNSON, Robert H.: Eastern Virginia Med. Sch., Norfolk
BRYANT, Howard J.: Dept. Physiol., Uniformed Services Univ., Bethesda, MD
BUDD, Geoffrey C.: Physiol. Dept., Med. Coll. of Ohio, Toledo
BUKOWIECKI, Ludwik J.: Dept. Physiol., Univ. of Laval, Quebec, Canada
CAREY, Cynthia: Dept. EPO Biol., Univ. Colorado, Boulder
CARLIN, Ronald D.: Dept. Human Physiol., Fairleigh Dickinson Univ., Hackensack, NJ
CHAN, Timothy M.: Dept. Physiol., Vanderbilt Univ., Nashville, TN
COGAN, Martin G.: Div. Nephrol., Univ. of California, San Francisco

COHEN, Margo P.: Dept. Med., Wayne State Univ., Detroit
CRONIN, Robert E.: VA Hosp., Dallas, TX
CRYSTAL, George J.: Cardiovasc. Res. Lab., Methodist Hosp., Dallas
CURRY, Fitz-Roy E.: Human Physiol., Univ. of California, Davis
DE BOER, Laurence W.: Res. Fellow, Cambridge, MA
DELAMERE, Nicholas A.: Univ. of Colorado Hlth. Sci. Ctr., Denver
DEMLING, Robert H.: Univ. of California, Davis Med. Ctr., Sacramento
DOUGLAS, James S.: John B. Pierce Fndn., New Haven, CT
DUBOIS, Andre T.: Dept. Med., Uniformed Services Univ., Bethesda, MD
DUJARDIN, Jean-Pierre L.: Dept. Physiol., Ohio State Univ., Columbus
EDELSTONE, Daniel I.: Dept. OB/GYN, Univ. of Pittsburgh
ERNST, Stephen A.: Dept. Anat., Univ. of Michigan, Ann Arbor
FRIEDMAN, Peter A.: Div. Nephrol., Univ. of Texas Med. Sch., Houston
GALLAGHER, Kim P.: Seaweed Canyon Lab., Univ. of California, San Diego
GAZIS, Diana C.: Dept. Physiol. & Biophys., Mt. Sinai Sch. Med., New York
GELLER, Herbert M.: Dept. Pharmacol., Rutgers Med. Sch., Piscataway, N.J.
GETTING, Peter A.: Dept. Physiol. & Biophys., Univ. of Iowa, Iowa City
GIBBONS, Ashton F.: Biol. Dept., Oakwood College, Huntsville, AL
GILMOUR, Robert, Jr.: Inst. Cardiol., Indiana Univ., Indianapolis
GOLDINGER, James M.: Dept. Physiol., SUNY, Buffalo
GOODWIN, Cleon W.: US Army Inst. Surg. Res., Brooke Army Med. Ctr., Ft. Sam Houston
GOULD, Kenneth L.: Div. Cardiol., Univ. Texas Med. Sch., Houston
GROSS, David R.: Dept. Vet. Physiol., Texas A & M Univ., College Station
GROSSMAN, Charles J.: Cincinnati, Ohio
GRUNSTEIN, Michael M.: Natl. Jewish Hosp. & Res. Ctr., Denver, CO
HAGBERG, James M.: Dept. Prev. Med., Washington Univ., St. Louis
HASTINGS, David F.: Div. Biochem., Physiol., Pharmacol., Univ. South Dakota, Vermillion
HEGLUND, Norman C.: Concord Field Sta., Bedford, MA
HENRICH, William L.: Dept. Med., Univ. of Texas Southwestern, Dallas
HICKSON, Robert C.: Dept. Phys. Ed., Univ. of Illinois, Chicago
HIRSHMAN, Carol A.: Dept. Anesthesiol, Univ. of Oregon, Portland
HOOP, Bernard: Pulmonary Unit., Mass. Gen. Hosp., Boston
HORWITZ, David L.: Dept. Med., Univ. of Illinois Med. Ctr., Chicago
HOUSER, Steven R.: Dept. Physiol., Temple Univ., Philadelphia
JANSSEN, Herbert F.: Dept. Physiol., Texas Tech Univ., Lubbock
KALIMI, Mohammed Y.: Dept. Physiol., Med. Coll. of Virginia, Richmond
KASTNER, Philip R.: Dept. Physiol. & Biophys., Univ., of Mississippi, Jackson
KLONER, Robert A.: Harvard Med.Sch., Boston
KOSTOPOULOS, George: Montreal Neurol. Inst., Montreal
KOURIDES, Ione A.: Memorial Sloan-Kettering Cancer Ctr., New York
KRAUSZ, Stephen: Dept. Physiol. & Biophys., Howard Univ., Washington, DC
KVIETYS, Peter R.: Dept. Physiol., Univ. of So. Alabama, Mobile
LAKSHMINARAYAN, Sambasiva: Pulmonary Sect., VA Hosp., Seattle, WA
LANGMAN, Vaughan A.: Concord Field Sta., Bedford, MA
LE WINTER, Martin M.: VA Med. Ctr., San Diego
LEE, Lu-Yuan: Dept. Physiol., Univ. of Kentucky, Lexington
LEUNG, Peter C.K.: Dept. Anat., Univ. of California, Los Angeles
LUCEY, Edgar C.: Res. Physiol., Roslindale, MA
MALONEY, Peter C.: Dept. Physiol., Johns Hopkins Univ., Baltimore
MARON, Michael B.: Northeastern Ohio Univ., Rootstown
MARVER, Diana: Dept. Int. Med., Univ. Texas Hlth. Sci. Ctr., Dallas
MARWAHA, Jwaharlal: Dept. Psychiat., Yale Univ., NewHaven
MCCAFFREY, Thomas V.: Otorhinolarynogology, Mayo Clinic, Rochester, MN
McDONAGH, Paul F.: Dept. Cardiothoracic Surg., Yale Univ., New Haven
MILLER, Virginia M.: Sch. of Life & Hlth. Sci., Univ. of Delaware, Newark
MIRCHEFF, Austin K.: Dept. Physiol. & Biophys., USC, Los Angeles
NAKAMOTO, Tetsuo: Dept. Physiol., LSU Med. Ctr., New Orleans
NELSON, Karl M.: Dept. Physiol., LSU Med. Ctr., New Orleans
NEWMAN, John H.: Vanderbilt Hosp., Nashville, TN
ONAL, Ergun: Dept. Med., Univ. of Illinois, Chicago
OU, Lo-Chang: Dept. Physiol., Dartmouth Med. Sch., Hanover,
PACKARD, Barbara B.K.: Natl. Heart, Lung & Blood Inst., NIH, Bethesda
PANG, Cho Yat: Div. Plastic Surg., Southwestern Med. Sch., Dallas
PEARCE, Frederick J.: Sch. Med. & Dent., Univ. of Rochester, Rochester, NY
PETERSON, John W.: Mass. Gen. Hosp., Boston
PEYTON, Marvin D.: Dept. Surg., Univ. of Oklahoma, Oklahoma City
POWANDA, Michael C.: Biochem. Br., US Army Inst. Surg. Res., Fort Sam Houston, TX
PRICE, Joel Mc.: Dept. Physiol., Univ. of South Florida, Tampa
PROPPE, Duane W.: Dept. Physiol., Univ. Texas Hlth Sci. Ctr., San Antonio
RAIZADA, Mohan K.: Dept. Physiol. & Biophys., Univ. of Iowa, Iowa City
REISER, Joseph: Hahnemann Med. Coll., Philadelphia
RILEY, David J.: Dept. Med., Rutgers Med. Sch., Piscataway, NJ
ROBERTS, Robert: Cardiovascular Div., Washington Univ., St. Louis
ROBERTSON, Howard T.; Div. Resp. Dis., Univ. of Washington, Seattle
ROBOTHAM, James L.: Dept. Pediat., Univ. of Texas, San Antonio
ROONEY, Seamus A.: Dept. Pediat., Yale Univ., New Haven
SCICLI, Alfonso G.: Hypertension Res. Lab., Henry Ford Hosp., Detroit
SENEKJIAN, Harry O.: VA Med. Ctr., Houston, TX

SEYMOUR, Andrea A.: Dept. Pharmacol., ICI Americas, Wilmington, DE
SHEARIN, Nancy L.: Dept. Physiol., Univ. of Utah, Salt Lake City
SIBBALD, William J.: Dept. Med., Victoria Hosp., London, Ont., Canada
SINGER, Joshua J.: Dept. Physiol., Univ. of Massachusetts, Worcester
SMITH, Carl H.; St. Louis Childrens Hosp., St. Louis
SMITH, Carolyn B.: NIH, Bethesda, MD
SMITH, Thomas L.: Dept. Physiol., Univ. Mississippi, Jackson
STREMEL, Richard W.; Dept. Physiol. & Biophys., Univ. of Louisville
SUNDELL, Hakan W.: Dept. Pediat., Vanderbilt Univ., Nashville, TN
SURPRENANT, Annmarie: Dept. Physiol., Univ. of Colorado, Denver
TALAMANTES, Frank J.: Thimann Labs., Univ. of California, Santa Cruz
THOMPSON, Floyd J.: Dept. Neurosci., Univ. of Florida, Gainesville
TOSELLI, Paul A.: Dept. Biochem & Physiol., Boston Univ. Sch. Med.
TRUBATCH, Janett R.: NINCDS/NDP, Bethesda, MD
TURNER, Roy J.: NIH, Bethesda, MD
VARGAS, Fernando F.: Dept. Physiol., Univ. of Puerto Rico, San Juan
VOELKEL, Norbert F.: CVP Res. Lab., Univ. of Colorado, Denver
WARD, Susan A.: Dept. Anesthesiol., Univ. of California, Los Angeles
WATSON, Philip D.: Dept. Physiol., Univ. of South Carolina, Columbia
WESTENFELDER, Christof: Univ. of Illinois Hosp., Chicago
WICKLER, Steven J.: Dept. Animal Physiol., Univ. of California, Davis
WONDERGEM, Robert: Physiol. Dept., East Tennessee State Univ., Johnson City
WONG, Robert K.S.: Dept. LSU Med. Ctr., Shreveport, LA
WRIGHT, Gary L.: Dept. Physiol., Marshall Univ., Huntington, WV
YEN, Rong T.: Res. Bioengineer, Univ. of California, San Diego
ZOGG, Carl A.: Dept. Physiol., Univ. of North Dakota, Grand Forks

CORRESPONDING MEMBERS

CHIANG, Shou-Teh: Dept. Physiol., Natl. Yang-Ming Med. Coll., Taiwan, Rep. of China
CRONE, Christian: Dept. Med. Physiol., Univ. of Copenhagen, Denmark
HAAB, Pierre E.: Inst. Physiol., Univ. de Fribourg, Switzerland
KENTERA, Dusan: Inst. Med. Res., Belgrade, Yugoslavia
MARUMO, Fumiaki: Dept. Med., Kitasato Univ., Sagamihara, Japan
MARUSIC, Elisa T.: Dept. Physiol., Univ. of Chile, Santiago
MOLINA, Enzo: Inst. Pharmacol., Univ. Degli Studi di Parm., Parma, Italy
PINSHOW, Berry P.: Inst. Desert Res., Ben-Gurion Univ., Israel
SCHMID, Edith R.: Universitaet Hosp., Zurich, Switzerland
SCHNERMANN, Jurgen: Physiol. Inst., Pettenkoferstr., West Germany
TUREK, Zdenek I.: Dept. Physiol., Univ. Nijmegen, The Nether-Netherlands
VEICSTEINAS, Arsenio: Inst. Fisiol. Umana, Milan, Italy

ASSOCIATE MEMBERS

BARRACO, Robin A.: Dept. Physiol., Wayne State Univ., Detroit
BENNETT, Tom D.: Dept. Physiol. & Biophys., Univ. of Washington, Seattle
BENYAJATI, Siribhinya: Dept. Physiol., Univ. of Arizona, Tucson
BILLMAN, George E.: Dept. Physiol. & Biophys., Univ. of Oklahoma, Oklahoma City
BURKE, Edmund R.: Postdoct. Fellow., Iowa City
BURT, Michael E.: 8702 Garfield St., Bethesda, MD
BUTLER, Bruce D.: Dept. Anesthesiol., Univ. of Texas, Houston
CHEN, Victor: Dept. Physiol., Louisiana State Univ., New Orleans
COX, Thomas C.; Dept. Physiol. & Biophys., Univ. of Illinois, Chicago
DE LUCIA, Anthony J.: East Tennessee State Univ., Johnson City
DIETZ, John R.: Dept. Med., Univ. of Missouri, Columbia
DILLON, Patrick F.: Dept. Physiol., Jefferson Med. Coll., Philadelphia
ECHTENKAMP, Stephen F.: Dept. Physiol., Univ. of Missouri, Columbia
FELL, Ronald D.: Exercise Physiol. Lab., Univ. of Louisville
HAGER, Steven R.: Washington, Blvd., Oak Park, IL
JAMES, Harold L.: Temple Univ. Med. Sch., Philadelphia
KOEPPEN, Bruce M.: Dept. Physiol., Yale Univ., New Haven, CT
KOLKA, Margaret A.: Res. Assoc., Bloomington, IN
LANG, Ivan M.: Dept. Physiol., Texas Tech Univ., Lubbock
LEFF, Alan R.: Dept. Med., Univ. of Chicago
McDONOUGH, Kathleen H.: Dept. Physiol., LSU Med. Ctr., New Orleans
MIHALKO, Paul J.: Biol. Dept., Battelle PNL, Richland, WA
MILSOM, William K.: Dept. Zool., Univ. of British Columbia, Vancouver
NELSON, Eldon La: Oklahoma Coll. Osteo. Med. & Surg., Tulsa
NICKERSON, Bruce G.: Childrens Hosp. of Los Angeles
OWEN, Alice K.: Physiol. Dept., Univ. of North Dakota, Grand Forks
REINKING, Larry N.: Mt. Desert Island Biol. Lab., Salsbury Cove, ME
SMITH, Philip L.: Dept. Physiol., Univ. of Texas Med. Sch., Houston
STEFFEN, Robert P.: Dept. Physiol., Uniformed Services Univ., Bethesda, MD
STOTHERT, Joseph C.: Postdoct. Res. Fellow, Seattle, WA
SULLIVAN, Sharon M.: Med. Coll. of Virginia, Richmond
TAXER, Marshall D.: Dept. Anesthesiol., UCLA
TRAVERSON, L. William: Letterman Army Inst. Res., Div. Surg., San Francisco
UBELS, John L.: Dept. Physiol., Med. Coll. of Wisconsin, Milwaukee
WALKER, Benjimen R.: Postdoct. Fellow, Univ. of Colorado, Denver
WALLACE, Kendall B.: Dept. of Pharmacol., Univ. of Iowa, Iowa City
WILLIAMS, Richard B.: Postdoct. Fellow, USC, Los Angeles
YOUNG, John C.: Dept. Prev. Med., Washington Univ., St. Louis

STUDENT MEMBERS

ALLEN, Deborah E.: Sch. Life & Hlth. Sci., Univ. of Delaware, Newark
DUEY, Marc E.: Student, Ottawa, Ont., Canada
FERGUSON, Alastair V.: Div. Med. Physiol., Univ. of Calgary
FOX, Susan R.: Dept. Physiol., Univ. of Pittsburgh
GRANGER, Joey P.: Dept. Physiol., Univ. of Mississippi, Jackson
GREGERSON, Karen A.: Dept. Physiol., Univ. of Nebraska, Omaha
HUOT, Stephen J.: Dept. Physiol., Uniformed Services Univ., Bethesda, MD
KAPIN, Michael A.: Dept. Physiol., & Biophys., Univ. of Illinois, Chicago
KEISER, Joan A.: Grad. Student, Univ. of Michigan, Ann Arbor
KEITH, James C., Jr.: Dept. Physiol. & Pharmacol., Univ. of Georgia, Athens
KILEY, James P.: Coll. Vet. Med., Kansas State Univ., Manhattan
KLINGER, Teaching Fellow, Brooklyn, NY
LOBAUGH, Bruce: Grad. Asst., State College, PA
LOUCKS, Anne B.: Inst. Environ. Stress, Univ. of California, Santa Barbara
MORALES, Pedro G.: Grad. Student, Univ. of Michigan, Ann Arbor
MORELAND, Robert S.: Dept. of Physiol., Med. Coll. of Virginia, Richmond
PAGANI, Edward D.: Dept. Physiol., Univ. of Cincinnati Med. Ctr.
PIERCE, Eric T.: Student, Univ. of Michigan, Ann Arbor
PLOUCHA, James M.: Dept. Poultry Sci., Michigan State Univ., East Lansing
PREMEN, Dept. Physiol., Uniformed Services Univ., Bethesda, MD
RATZ, Paul H.: Cardiol. Div., Hershey Med. Ctr., Hershey, PA
ROOKE, Thom W.: Student, Trenton, MI
SMITH, Shaler G. III: Grad. Student, Claymont, DE
STINGER, Robert B.: Med. Grad. Student, Washington, DC
STRAWN, William B.: Dept. Physiol., LSU Med. Ctr., New Orleans
TOD, Mary L.: Univ. of Florida, Gainesville
VAN DAM, Jacques: Med. Grad Student, Washington, DC
WILLFORD, David C.: Grad. Student, La Jolla, CA
WITZMANN, Frank A.: Dept. Biol., Marquette Univ., Milwaukee
YOUNG, Robert A.: Dept. Physiol., Southern Illinois Univ., Carbondale

CAREERS COMMITTEE 1981 FALL MEETING SYMPOSIUM

Interest in the Atlanta Spring Meeting Careers Symposium continues to reverberate and a number of excellent suggestions for follow-up sessions have been received by the Careers Committee, particularly from young physiologists who feel that the Spring program did not come to grips with their real problem: "How and where do we find a job?" A number of questions focused upon the Placement Services, and precisely what do Chairmen look for in seeking to fill faculty positions? How much do they rely upon FASEB placement and how much upon "Good Ol Boy" relationships with other Chairmen?

In light of the response to the earlier symposium, a second symposium has been scheduled for the meeting in Cincinnati this Fall. The Careers Committee symposium is tentatively scheduled for 4:30 PM on Wednesday, October 14, 1981 with the following agenda:

Manuscripts of the Careers Symposium held last Spring in Atlanta are being collected by the Chairman of the Careers Committee and will be submitted for publication in *The Physiologist.*

CRITERIA FOR EMPLOYMENT OF PHYSIOLOGISTS IN ACADEMIC DEPARTMENTS

Physiology Chairman's Objectives in Selecting Young Faculty Members for a Private Medical School ..... J. Filkins (Loyola)

Physiology Chairman's Objectives in Selecting Young Faculty Members for a Large, Multidisciplinary State U. Med. Sch. ..... H.V. Sparks (Mich. State)

Analysis of Appointment Opportunities as Reported in the Most Recent ACDP Questionnaire ..... D.J. Ramsay (U. Calif.)

Opportunities for Ph.D. Physiologists in Clinical Departments: A New Look ..... J.E. Blankenship (Galveston)

A Division of Research in an Academic Clinical Department ..... R.J. Traystman (John Hopkins)

STATISTICS OF APS MEMBERSHIP

(As of May 1981)

DISTRIBUTION BY EMPLOYMENT*

	#	%
MEDICAL SCHOOLS	3,354	65
Physiology Departments	(1,752)	(34)
Other Preclinical Departments	(441)	(09)
Clinical	(1,106)	(21)
Administration	(55)	(01)
HOSPITALS AND CLINICS	235	05
VETERINARY SCHOOLS	100	02
DENTAL SCHOOLS	47	01
PUBLIC HEALTH AND GRADUATE SCHOOLS	235	05
UNDERGRADUATE SCHOOLS	369	07
COMMERCIAL COMPANIES	101	02
GOVERNMENT	332	06
INSTITUTES AND FOUNDATIONS	216	04
PRIVATE PRACTICE	50	01
OTHER	127	02

* 5,166 Respondents

DISTRIBUTION BY EARNED DEGREE*

(Includes 632 individuals with multiple doctorate degrees)

	#
Ph.D.	3,375
M.D.	2,051
D.V.M.	138
D.D.S. and other	28

* 5,592 Respondents

PRINCIPAL TYPE OF WORK*

	%
Research	68
Teaching	17
Administration	08
Clinical	06
Other	01

* 5,156 Respondents

DISTRIBUTION BY PRIMARY SPECIALITY*

	%		%
Cardiovascular	20	Cellular and Tissue	04
Neurophysiology	14	Blood	03
Endocrines	10	Comparative	03
Respiration	09	Energy Metabolism and Temperature Regulation	02
Electrolyte and Water Balance	05	Pharmacology	02
Renal	05	Reproduction	02
Muscle and Exercise	05	All other Categories (None above 1%)	08
Gastrointestinal, Food and Nutrition	04		
Environmental	04		

* 5,045 Respondents

DISTRIBUTION BY AGE*

70+	464
60–69	721
50–59	1,599
40–49	1,689
30–39	1,133
20–29	139

DISTRIBUTION BY SEX*

Female	566
Male	5,030

* Optional Personal Data (Numbers represent total respondents)

STATES IN U.S. WITH MORE THAN 100 MEMBERS*

California	628	Florida	151
New York	607	North Carolina	138
Pennsylvania	325	Missouri	131
Maryland	318	New Jersey	128
Texas	315	Virginia	119
Massachusetts	285	Connecticut	108
Illinois	266	Minnesota	105
Ohio	199	Washington	105
Michigan	174		

* 50 States plus Puerto Rico & Virgin Islands

DISTRIBUTION BY RACIAL BACKGROUND AND HERITAGE*

American Indian or Alaskan	6
Asian or Pacific Islander	183
Black	29
White	3,750
Hispanic Heritage	82

* Optional Personal Data (Numbers represent total respondents)

APS NORTH AMERICAN MEMBERSHIP

United States	5,187
Canada	216
Mexico	11

CANADIAN PROVINCES WITH 5 OR MORE MEMBERS*

Ontario	97
Quebec	62
British Columbia	21
Alberta	16
Manitoba	18
Nova Scotia	6
Saskatchewan	7

Other Provinces represented:
New Brunswick
Yukon Territory

APS MEMBERSHIP OUTSIDE NORTH AMERICA

COUNTRIES WITH 5 OR MORE MEMBERS

Germany, Federal Republic	19
Japan	17
United Kingdom	17
Switzerland	15
France	12
Israel	9
Australia	7
Belgium	5
Norway	5
Spain & Canary Islands	5
Venezuela	6
Argentina	5
Italy	5
Sweden	6

Other countries represented:

Poland	Hong Kong
Greece	Iceland
Netherlands	Kuwait
Peru	Lebanon
South Africa	New Guinea
Hungary	Peoples Rep. of China
New Zealand	Portugal
Nigeria	Rhodesia
Austria	Saudi Arabia
Brazil	Taiwan Rep. of China
Guatemala	USSR
Panama	Denmark
Yugoslavia	Finland
Chile	

PROPOSED MODIFICATION OF THE ELECTION PLAN

The Problem

Several aspects of our system of electing officers of the Society seem to be in need of revision.

1. A fairly large number of ballots in the election, about 5%, are invalid because of:
   a. Errors in marking ballot
   b. Failure to follow instructions
   c. Protest against the systems, without voting
2. A widely expressed feeling among candidates that the system is unduly complicated.
3. No method for resolving ties or close outcomes is provided for in the election plan. Three out of seven of the elections conducted under this plan have resulted in a less than 2% majority margin for President-Elect.

Background

A questionnaire circulated in 1972 showed a sizeable preference of the respondents for election by mail rather than at the Society business meeting. A Bylaw amendment:

SECTION 4. *Election of Officers.* Nominations for President-Elect and Councilor(s) shall be by mail ballot of the entire membership conducted and concluded on or before February 1st of each year. Election of the President-Elect from the two nominees receiving the greatest number of nominations, and of the Councilors from the two nominees for each Councilor being elected receiving the greatest number of nominations, shall be by mail ballot of the entire membership conducted and concluded prior to April 1st of each year. Results of the elections shall be announced at the Spring meeting of the Society, and they shall assume office on July 1, following their election.

to provide this failed at the 1973 Spring business meeting. Modifications were discussed at the 1973 Fall business meeting:

Election of APS Officers: Since such a small percent is present at the business meetings to vote for President-Elect and Council member(s) and since the election consumes time and interrupts discussion at business meetings, the question of election by mail ballot was proposed and discussed by Council. It was decided that the membership be polled. The results of the poll indicated that 547 voted for a mail ballot and 118 voted to retain the present electoral system. A mail nominating ballot for officers was distributed to members and with it a notice that an agenda for the business meetings would be available at APS Headquarters and in future years would be mailed out to the membership prior to the Spring meeting. A vote on an amendment to the Bylaws changing the electoral system was planned for the first business meeting in April but as those present well know, a substitute motion was proposed with inadequate preparation and to terminate the confusion in the minds of the members, the issue of amendment of the bylaws was tabled. It will be carefully worked through by an ad hoc committee and be brought up for discussion and vote at the Spring meeting in 1974.

A substitute amendment was passed at the 1974 Spring business meeting:

SECTION 4. *Election of Officers.* Nominations for President-Elect and for members of Council will be made by mail ballot before February 1 of each year. Each member may nominate no more than one candidate for each office. If a member wishes to nominate a certain person for President-Elect *and* for Council he must nominate that individual for each position. The ten candidates that receive the highest number of nominating votes will appear on the appropriate ballot for President-Elect or for Council.

Election of the President-Elect and members of Council will be made by mail ballot prior to April 1 of each year. Each voting member must indicate on the ballot his rank preference for *all* of the candidates on each ballot. The ballots will be counted according to the Election Plan. Two ballots, one for President-Elect and one for Council will be mailed together. The results of the elections will be announced at the Spring meeting of the Society and the newly elected officers will take office on July 1 following their election.

This Bylaw is the one currently in effect and has been used in seven elections (1975-1981)

In the first year of this form of election, ballots were counted by hand by the Executive Secretary, with two observers. This process took approximately ten full days, and is suspected of producing a skin allergy to paper in the Executive Secretary. (Required counting about 30,000 sheets of paper). By the following year a computer program had been developed allowing only one sort by hand through the ballots (by a disinterested punch card operator). The Executive Secretary reviewed the computer print out in the presence of the "auditors."

The large number of errors in filling out ballots concerned the Council and the business meeting was asked for its sentiment on reducing the number of nominees from ten to five. This straw vote was overwhelmingly in favor on retaining the Bylaw unchanged with 10 candidates for each office.

The close elections for President-Elect have been handled by the Executive Secretary, on advice of Counsel, in the following way:

After the computer scores are returned, an examination is made of all ballots ruled invalid by the punch card operator. All ballots that can be deciphered and re-marked for the punch card operator are corrected and returned to the computer facility (most of these are due to numbers written carelessly – for example a European 7 often looks like a second 4. Two votes for the same number invalidates the ballot).

Then all punch cards are revalidated. This procedure is reported to reduce the possibility of error to less than 0.1%. In all cases this process has resulted in a widening of the margin, which Counsel advises is sufficient evidence of a valid election.

Proposed Changes

1. *Ballot format* – It is proposed that a system of blocks to be filled in be used, rather than the numerical characters written. This will require no change in Bylaw or Operational Guide.
2. *Specific rules for resolution of close outcome.*
   It is requested that the procedure used by the Executive Secretary in the past for resolving narrow majorities be approved for inclusion in the Operational Guide. The Executive Secretary should not be required to take this responsibility without specific authority.
3. *Specific provisions for breaking a tie vote.*
   Although no tie votes have occurred up to the present, in some cases it could easily have happened by a slight alteration in mail delivery or some other extraneous factor.

   It is recommended that in the event of a tie the business meeting be presented with the problem for resolution either by secret ballot at the meeting or a run-off mail ballot follow-

ing the meeting. (Cost of mail balloting of regular members is over $2000.00).

4. *Reduction in number of candidates*

The large number of candidates is responsible for most of the cases of invalid ballots. It may also be responsible for many members not participating in the election.

Experience has shown that the candidates normally fall into two categories. 1) Those receiving fifty to one hundred nominating ballots, and 2) those receiving 10 to 20 ballots. In some years it has been necessary to have more than 10 candidates because of a tie in the lowest ranking candidates. These have customarily received only 10 nominating ballots. It is recommended that an amendment to the Bylaws be proposed reducing the number of candidates for President-Elect to four and the number for Councilor to 8.

APS 32nd ANNUAL FALL MEETING

OCTOBER 11-16, 1981

The American Physiological Society will meet from October 11 to 16, 1981, in the Cincinnati Convention and Exposition Center and the Netherland Hilton Hotel, Cincinnati, Ohio. The APS Refresher Course is scheduled for Monday, October 12, and the Scientific Sessions are scheduled for Tuesday, October 13 through Friday, October 16. There will be a Satellite Symposium at Ohio State University, October 11-12, on "Comparative physiology of respiration with emphasis on avian respiratory control."

Tentative Schedule of Symposia, Tutorials, Special Sessions and Advance Requirements for Related Contributed Abstract Sessions

A.M. Monday, October 12

Refresher Course: Physiology of Aging
Organizer: Paola S. Timiras
No other sessions will be programmed.

P.M. Monday, October 12

Refresher course continued.

WORKSHOP ON ANIMAL CARE 2:00-4:00
Sponsored jointly by the Association of Chairmen of Departments of Physiology and the APS.

No other sessions will be programmed.

A.M. Tuesday, October 13

Symposium

Coordination of metabolism and contractility by phosphorylation in cardiac, skeletal and smooth muscle. (Organized by D.L. Kline) Session I, General Principals.
Chairman: R.J. Paul

Symposium

Measuring cellular transport *in vivo.*
Chairman: James B. Bassingthwaighte

Tutorial Lectures

Metabolic functions of the lung.
Sami I. Said

Control of breathing during exercise.
Karlman Wasserman

Oxygen Transport by fluorcarbon bloods.
Leland C. Clark, Jr.

P.M. Tuesday, October 13

Symposium

Blood oxygen affinity as a factor in tissue oxygen delivery.
Chairmen: Stephen M. Cain and C. Lenfant

Symposium

Structure and function of the Na, K-ATPase.
Chairman: Arnold Schwartz

Poster Discussion (or mini-symposium)

Neural control of coronary circulation.
Organizer: Ronald W. Millard

Tutorial Lectures

Investigations of cell-cell interactions: An in vitro approach.
William W. Wilfinger

Descending pathways of pain inhibition.
Michael M. Behbehani

Mesenteric vascular physiology.
Eugene D. Jacobson

Bowditch Lecture 4:30

New computer technologies and their potential for expanded vistas in biomedicine.
Speaker: Barry K. Gilbert

Evening

APS Banquet

A.M. Wednesday, October 14

Symposium

Coordination of metabolism and contractility by phosphorylation in cardiac, skeletal and smooth muscle. (Organized by D.L. Kline) Session II, Cardiac and skeletal muscle.
Chairman: R.J. Solaro

Tutorial Lectures

Salt and water transport by proximal tubule.
James A. Schafer

Regulation of the renal circulation by prostaglandin-dependent mechanisms.
John C. McGiff

The renin-angiotensin system and the brain.
Ian A. Reid

A.M. Wednesday, October 14

Contributed Abstract Session

Splanchnic Circulation

P.M. Wednesday, October 14

Symposium

Solute water and transport in invertebrate epithelia.
Chairman: G.A. Gerencser

Poster Discussion (or mini-symposium)

Coronary pressure - flow relationships.
Organizer: Ronald W. Millard

Tutorial Lectures

Ion selective microelectrodes and measurement of Na^+, K^+, and Ca^{++} in the heart.
Harry A. Fozzard

High density lipoproteins: Atherosclerosis from cradle to grave.
Charles J. Glueck

WORKSHOP 2:00 - 6:00

Circulatory regulation of oxygen delivery and uptake in the small intestine.
Organizers: Ching-chung Chou, D. Neil Granger and Eugene D. Jacobson (Splanchnic Circulation Subsection)

Special Session 4:30 - 6:00

Career Opportunities: Criteria for employment of physiologists in academic departments.
Chairman: Walter C. Randall (APS Career Opportunities Committee)

Open House (Evening)

University of Cincinnati Medical School
Speaker: Gustave Eckstein

A.M. Thursday, October 15

Symposium

Coordination of metabolism and contractility by phosphorylation in cardiac, skeletal and smooth muscle. (Organized by D.L. Kline) Session III, Coordination of metabolism and contractility in smooth muscle.
Chairman: J. DiSalvo

A.M. Thursday, October 15

Symposium

Cardiovascular adaptations to chronic exercise.
Chairman: J. Scheur

Symposium

Intrinsic regulation of renal hemodynamics.
Chairman: L.G. Navar

Tutorial Lectures

Thyroid hormones and membrane function and development.
Paola S. Timiras

Ovarian steroids and the regulation of LH secretion.
David M. Baldwin

Lysosomal mechanisms of blastocyst implantation.
Bruce C. Moulton

P.M. Thursday, October 15

Symposium

Maximal work tolerance in hyperbaric environment.
Chairman: Suk Ki Hong

Symposium

Hormonal control of liver protein synthesis.
Chairman: Leonard S. Jefferson

Poster Discussion:

Renal hemodynamics.
Participants include speakers at A.M. renal symposium.
Organizer: E.G. Schneider

Tutorial Lectures

Metabolic control of the coronary circulation.
Ray A. Olsson

Local blood flow control in exercising skeletal muscle.
Harvey V. Sparks, Jr.

Membrane mechanisms of myotonia.
Shirley H. Bryant

APS Business Meeting - 4:30

A.M. Friday, October 16

Symposium

Neural control of the circulation during exercise.
Chairman: Jere H. Mitchell

Symposium

Use of radioisotopes for quantitative studies of metabolism, especially in the lung.
Chairman: D. Eugene Rannels

Tutorial Lectures

Actions of the renin pressor system in hypertension.
Carlos M. Ferrario

Developmental renal physiology.
Leonard I. Kleinman

Tubular reabsorption of low molecular weight proteins.
Ernest C. Foulkes

Continuing Medical Education Category I Credit is available for registrants at the APS Fall Meeting. Certification forms may be obtained from the APS Headquarters Office, Convention Center, in Cincinnati.

FIFTY-FOURTH PRESIDENT OF APS

Dr. Francis J. Haddy of the Uniformed Services University of the Health Sciences (USUHS) has been named President of the American Physiological Society effective July 1, 1981.

Dr. Haddy is an internationally recognized authority on cardiovascular and cardiopulmonary systems. He is Professor and Chairman of the Department of Physiology and Professor of Medicine at USUHS. His appointment at the University, among the first announced in early 1976 when the faculty was organized, reflects his broadly-based interests in basic and clinical research, teaching, and administration.

Dr. Haddy's academic career is distinguished by two prior chairmanships in physiology: at the University of Oklahoma Medical Center (1961-1965) and at Michigan State University, East Lansing (1966-1976).

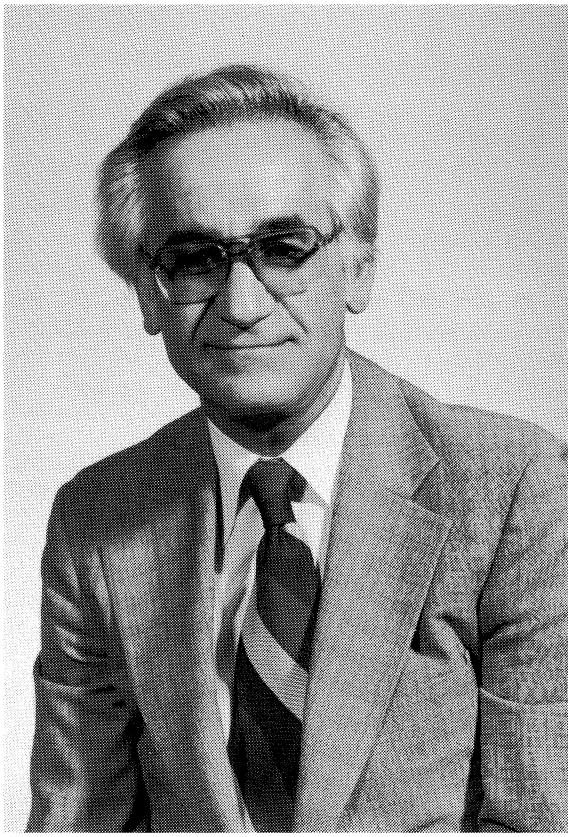
Dr. Haddy was born in Walters, Minnesota. He earned his Bachelor of Science Degree and Medical Degree from the University of Minnesota in 1943 and 1947, respectively, He then served in Panama with the U.S. Army for one year, returning to Minnesota to obtain a Master's Degree in Physiology in 1949. After two years at the Mayo Foundation as a Fellow in Internal Medicine, he earned a Ph.D. in Physiology from the University of Minnesota in 1953.

Dr. Haddy then moved to Chicago where he was associated with both Northwestern University Medical School and the Veterans Administration Research Hospital until 1961. During that time he re-entered the Army for two years (1955-57) as chief of the Circulation Section, Environmental Medicine Department, Army Medical Research Laboratory in Fort Knox, Kentucky.

He has been a member of the American Physiological Society since 1953. Board certified in Internal Medicine, he is a Fellow of the American College of Physicians as well as a member of numerous other scientific organizations. Dr. Haddy lives in Chevy Chase, Md.

Announcement of Dr. Haddy's election was made at the Spring Meeting of the American Physiological Society held in Anaheim, California, in conjunction with the 64th Annual Meeting of the Federation of American Societies for Experimental Biology.

The Society was founded in 1887. Now with over 5,000 members, it fosters scientific research and education in physiology. In addition to extensive journal and book publishing programs, the Society sponsors lectures and symposia, and encourages an active interchange between the scientific community and the public.



HAROLD D. GREEN SYMPOSIUM

A Symposium in honor of Dr. Harold D. Green on the occasion of his retirement will be held September 10 and 11, 1981.

The title of the Symposium is "Vasomotor Tone and Venous Return."

For further information please contact:

Dr. Phillip M. Hutchins
Dept. of Physiology and Pharmacology
Bowman Gray School of Medicine
Winston-Salem, NC 27103
(919) 748-4344

SURVEY OF DEPARTMENTS OF PHYSIOLOGY

Association of Chairmen of
Departments of Physiology

ANALYSIS OF ACDP QUESTIONNAIRE - 1980

Type of Institution:

Physiology Dept. in a *MEDICAL* (94) OR a *NON-MEDICAL** (4) school.

**Specify type of school:* _____

Affilitation: Public (65) OR Private (33).

[1]Faculty Statistics:

Bold numbers equal grand total

Numbers in light italic are the means per department

	Specify Doctoral Degree(s)				Tenure	Non-tenure	Total
	Ph.D.	*M.D.*	*Ph.D./M.D.*	*Other*			
Full-time paid individuals based in your dept.	1032 *10.53*	100 *1.02*	94 *.95*	28 *.28*	724 *7.38*	428 *4.36*	1267 *12.92*
Part-time paid individuals based in your dept.	81 *.82*	8 *.08*	12 *.12*	17 *.17*	38 *.38*	61 *.62*	114 *1.16*
Joint appointments, based in another basic science dept., receiving a portion of salary from your dept. ...	31 *.31*	6 *.06*	1 *.01*	1 *.01*	22 *.22*	9 *.09*	43 *.43*
Joint appointments, based in a clinical dept., receiving a portion of salary from your dept.	15 *.15*	13 *.13*	3 *.03*	4 *.04*	18 *.18*	8 *.08*	34 *.34*
Joint appointments, based in another basic science dept., receiving no salary from your dept.	107 *1.09*	10 *.10*	5 *.05*	7 *.07*	56 *.57*	31 *.31*	138 *1.40*
Joint appointments, based in a clinical dept., receiving no salary from your dept.	128 *1.30*	109 *1.11*	24 *.24*	6 *.06*	121 *1.23*	60 *.61*	263 *2.68*

[1]In a correctly completed questionnaire, the total of the first four columns (Ph.D., M.D., Ph.D./M.D., and Other) should equal the total of columns 5 and 6 (Tenure, Non-tenure). The total of the first 4 columns, and the total of columns 5 & 6 should be the same figure as recorded in column 7 (Total). On several questionnaires this was not the case, *i.e.* the total of the first 4 columns, columns 5 & 6, and the last column were all different figures. We had no choice but to record the statistics for each questionnaire exactly as stated. This did affect the accuracy of the means per department. The standard error averaged ±2.0, a statistically significant figure.

Unfilled Postions:

Please indicate the number of unfilled positions in each rank in your dept.:

Professor	9 *(.09)*	*Assistant Professor*	58 *(.59)*
Associate Professor	18 *(.18)*	*Instructor*	7 *(.07)*

How many of the unfilled positions are due to:

Retirement?	13 *(.13)*	*Failure to promote/tenure?*	5 *(.05)*
Death?	2 *(.02)*	*Creation of new FTE's?*	29 *(.29)*
Moving Away?	35 *(.35)*		

Project number of jr. postions expected to become vacant in the next 5 years due to retirement, new FTE's, etc.

	.34		*.39*		*.35*		*.22*		*.37*
yr. 1	34	*yr. 2*	39	*yr. 3*	35	*yr. 4*	22	*yr. 5*	37

Graduate Students and Postdoctoral Fellows:

Number of Ph.D. degrees granted in your dept. between 07/01/79-06/30/80	190 *1.93*
Number of grad. students currently enrolled in dept. Ph.D. program	1060 *10.81*
Number of Postdoc. Fellows currently in your dept.	472 *4.81*
Number of Fellows completing training between 07/01/79-6/30/80	160 *1.63*
Number of vacant Postdoctoral positions	75 *.76*

Do you expect the number of Ph.D. degrees granted in the next 5 years to:

Increase	(37)	*#/year* *2.39*
Decrease	(17)	*#/year* *1.35*
Not change	(39)	

Do you expect the number of Postdoctoral Fellows who complete their training training each year to change over the next 5 years to:

Increase	(36)	*#/year* *1.91*
Decrease	(7)	*#/year* *2.07*
Not change	(50)	

Do you have a training grant that supports predoctoral trainees? *Yes (38) No (58)*

Do you have a training grant that supports postdoctoral trainees? *Yes (41) No (55)*

What number of your predoctoral and postdoctoral trainees are supported by:

	Predoctoral	*Postdoctoral*
Training grants?	*1.81*	*1.14*
Individual federally funded awards?	*.14*	*1.00*
Research grants?	*2.42*	*1.58*
State Funds?	*2.76*	*.12*
Private foundations?	*.28*	*.34*
Institutional awards?	*1.30*	*.11*
Medical Scientist Training Programs?	*.30*	*.04*
Other? List _____	*.44*	*.16*

Please assess the degree of satisfaction of your graduates in regard to their opportunities in the job market:

Very Pleased (7) Pleased (36) Neutral (33) Disappointed (9)

Very Disappointed (0)

How many postdoctoral students are presently taking additional training because they are unable to find a satisfactory position? 35 *.35*

Laboratory Teaching:

How many *wet* laboratories do you hold for *medical* students each year? 497 *5.07*

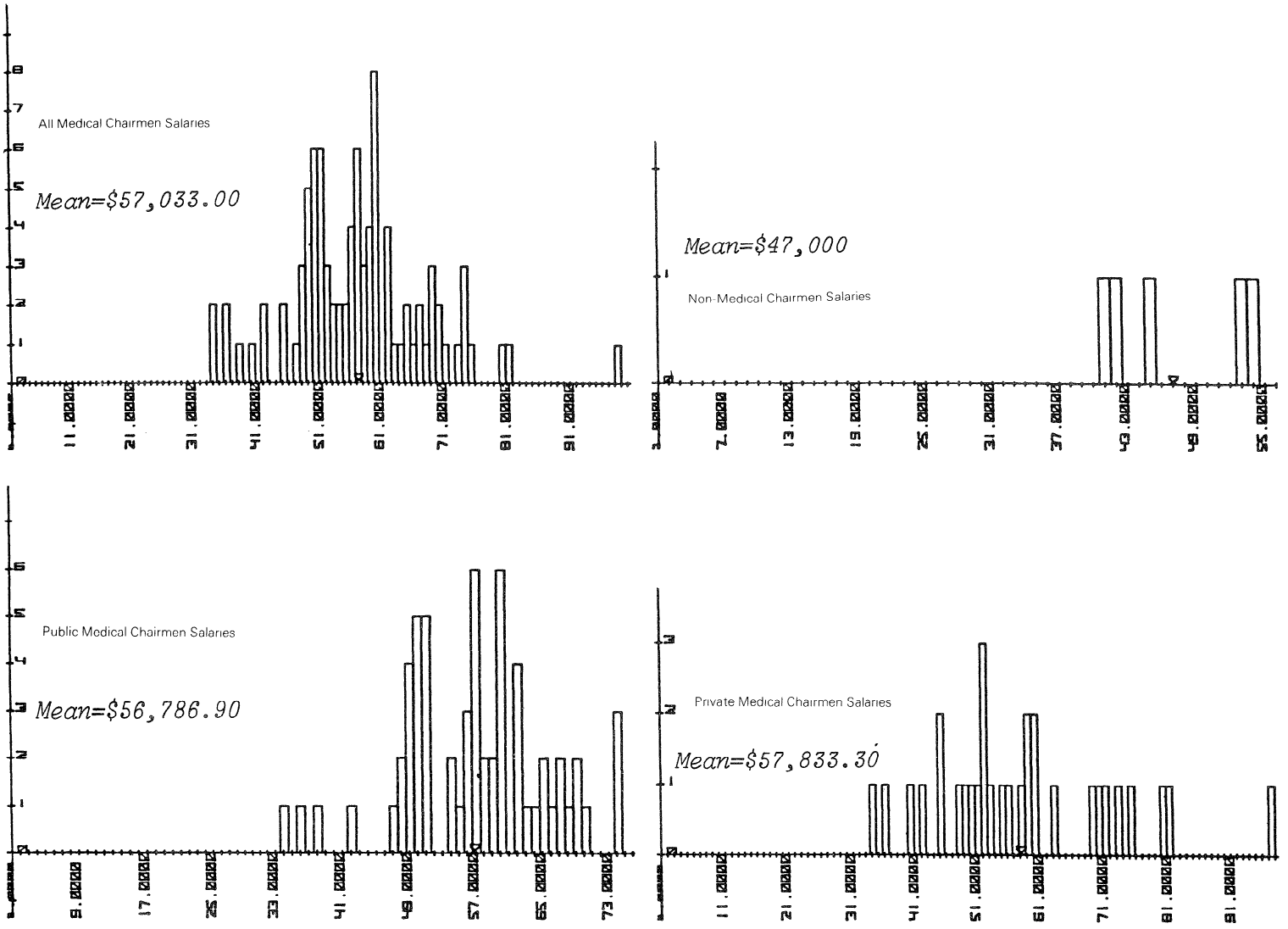
How many *dry* laboratories do you hold for *medical* students each year? 273 *2.78*

How many *wet* laboratories do you hold for *non-medical* students each year? 793 *8.09*

How many *dry* laboratories do you hold for *non-medical* students each year? 430 *4.38*

If a good laboratory manual was on the market, would you require your students to buy it? *Yes* (16) *No* (72)

Chairmen's Salaries



Chairmen's Salaries* (Means)

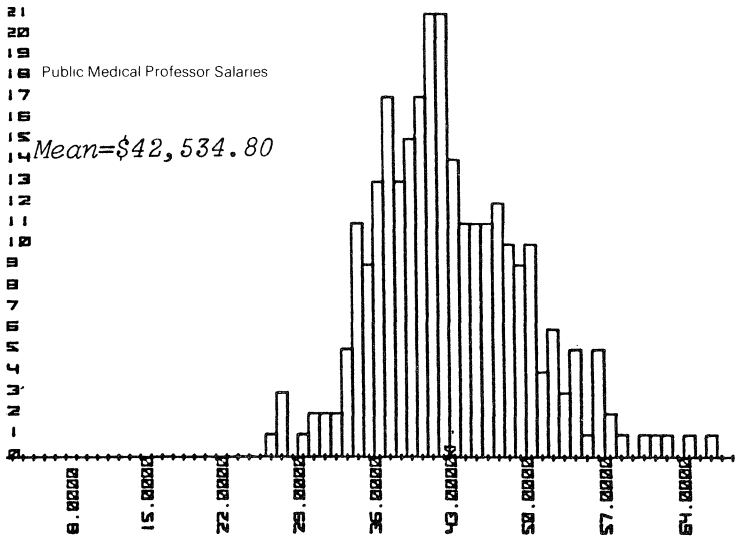
By Years of Service

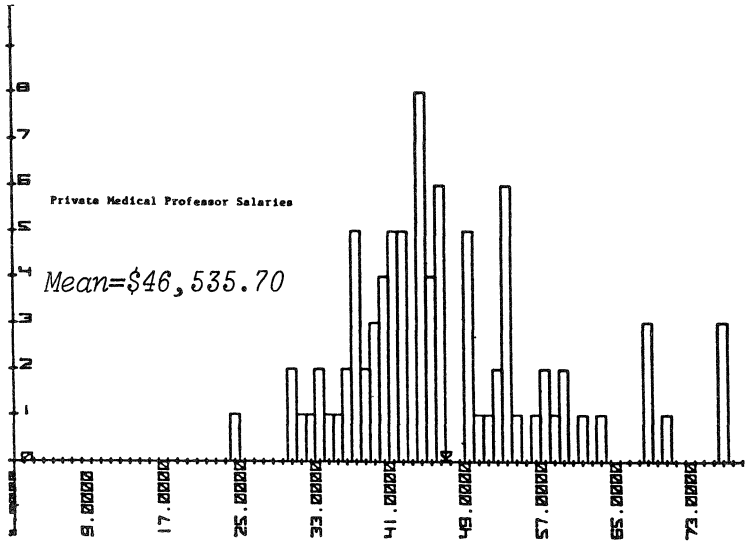
Years of Service	Medical Combined	Public Medical	Range[1] low/high	Private Medical	Range[1] low/high
0-1	55	53	38 60	57	51 63
2	52	60	36 74	44	36 49
3	50	53	42 60	48	34 52
4	57	57	47 62	—	-- --
5	56	56	49 67	56	40 80
6	58	52	49 57	65	50 81
7	59	58	51 62	60	59 60
8	56	59	-- --	52	-- --
9	66	34	-- --	97	-- --
10	58	60	48 74	56	-- --
11	50	--	-- --	50	42 59
12	62	60	-- --	64	52 75
13	59	56	51 60	61	53 69
14	60	60	50 69	--	-- --
15	53	60	-- --	45	-- --
+	67	63	56 69	71	70 73

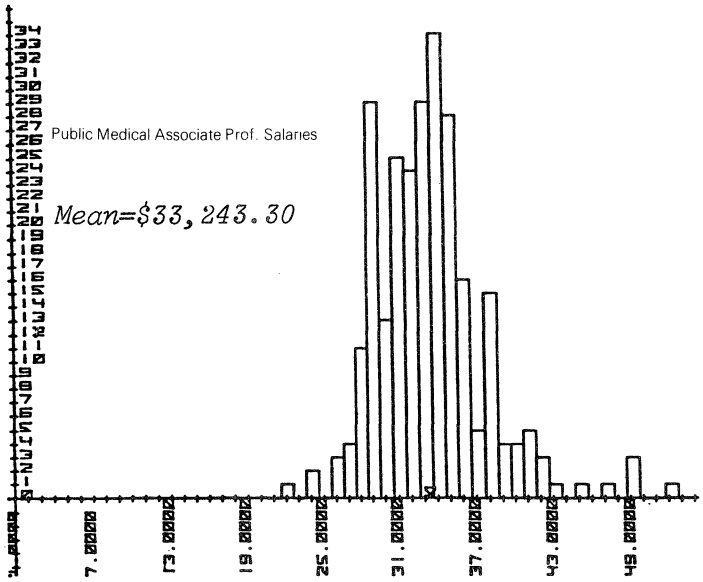
*in thousands of dollars.

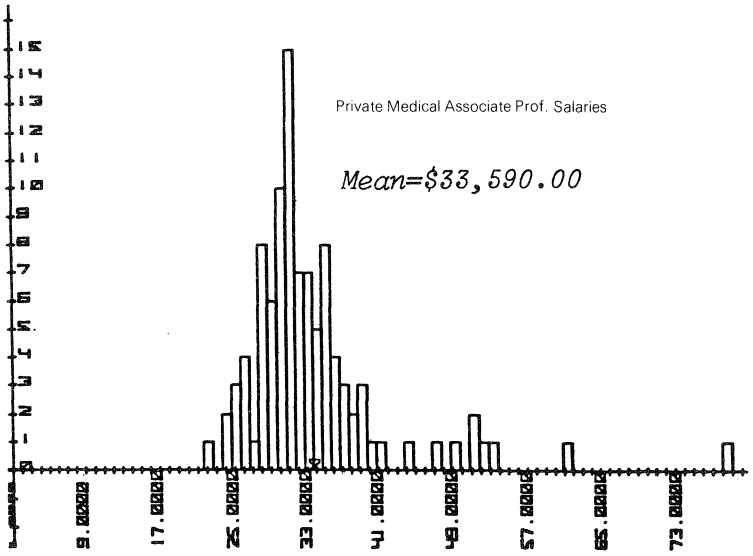
[1]Range is actual expenditure to the nearest thousand.

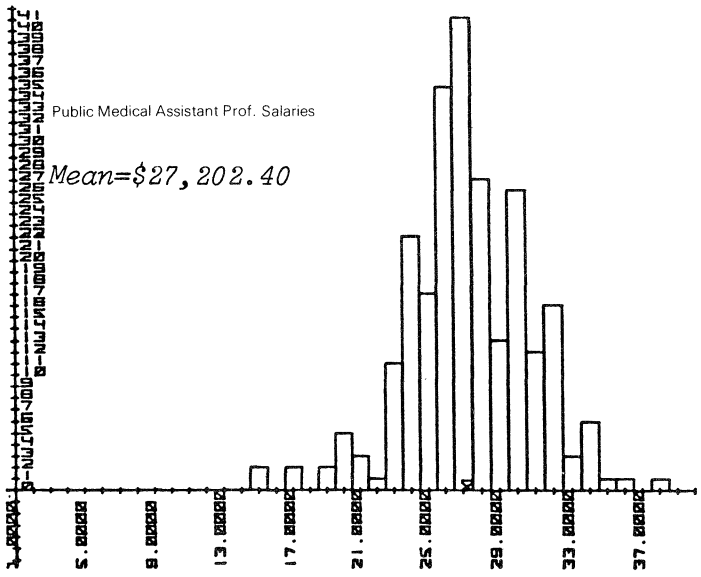
Teachers' Salaries

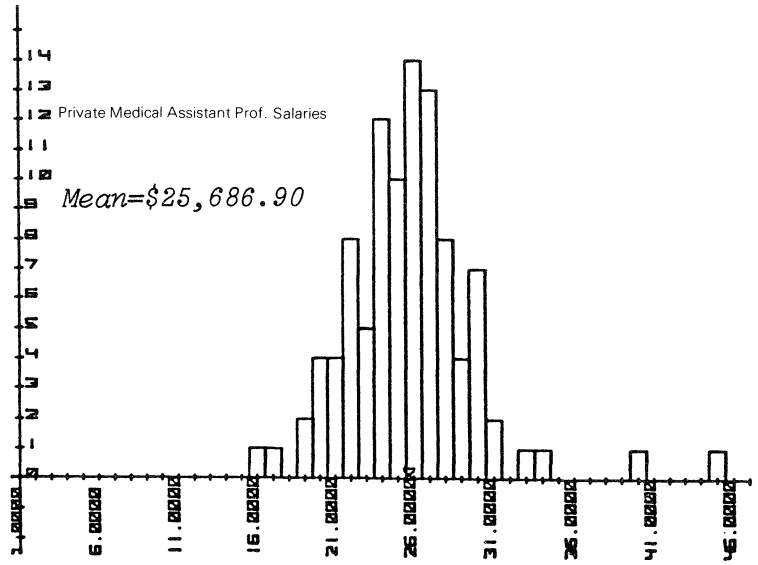


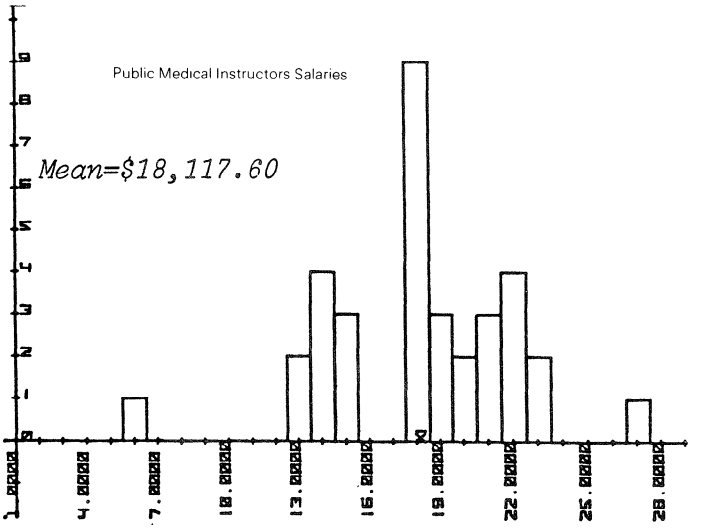


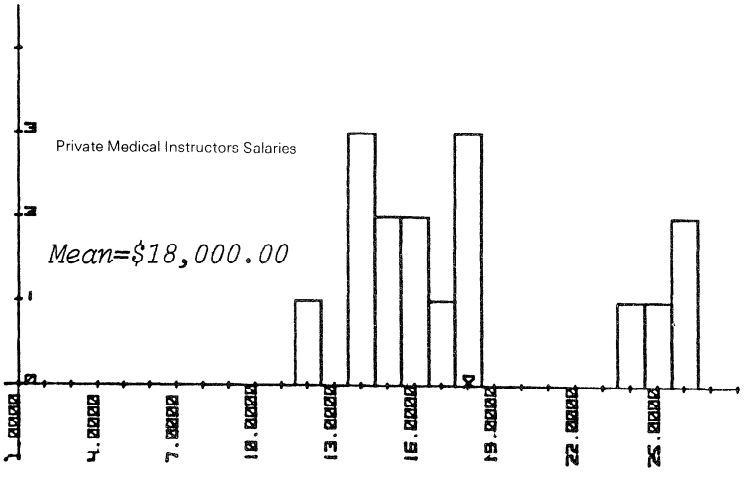












Beginning Salaries* (Means)

Rank	Salary	Range[1] low/high
Private Medical Schools		
Professor	37	25 53
Associcate	29	21 49
Assistant	23	16 29
Instructor	15	12 18
Public Medical Schools		
Professor	36	24 47
Associate	28	19 37
Assistant	23	14 30
Instructor	16	6 24
Non-Medical Schools		
Professor	29	27 32
Associate	23	22 24
Assistant	19	16 21
Instructor	--	-- --
Combined		
Professor	34	-- --
Associate	27	-- --
Assistant	22	-- --
Instructor	16	-- --

*In thousands of dollars

[1]Actual figures to nearest thousand

Budget[1] (Mean Expenditure)

	Institutional Sources	Outside Research Grants	Training Grants	Other Budget Support	Total
Private Medical	*511,681* (31)	*1,090,260* (29)	*195,621* (15)	*83,461* (15)	*1,596,091* (32)
low[2]	169,000	1,000	321,357	5,000	169,000
high[2]	1,361,000	2,794,000	500,000	374,004	4,330,000
Public Medical	*621,700* (60)	*674,965* (59)	*104,348* (24)	*82,914* (34)	*1,375,051* (60)
low[2]	146,817	39,830	18,380	3,000	247,062
high[2]	,366,774	2,607,967	337,735	503,258	4,355,673
Non-Medical	*645,973* (04)	*770,395* (04)	*55,913* (03)	*1,782,900* (02)	*2,349,755* (04)
low[2]	120,000	163,353	17,080	10,000	660,000
high[2]	1,132,868	1,424,036	120,658	3,555,800	5,823,448
Combined	*593,118* (95)	*845,207* (92)	*118,594* (42)	*649,758* (51)	*1,773,632* (96)

[1]Actual expenditures of schools reporting funding.

[2]Actual expenditures. "0" amounts were not included in computation of means or in setting of ranges.

The ..um' er in parenthesis is the total number of departments reporting expenditures in that area.

CONSTITUTION AND BYLAWS
(Adopted April 1953, as amended April 1980)

CONSTITUTION

ARTICLE I. *Name*

The name of this organization is THE AMERICAN PHYSIOLOGICAL SOCIETY.

ARTICLE II. *Purpose*

The purpose of the Society is to promote the increase of physiological knowledge and its utilization.

BYLAWS

ARTICLE I. *Principal Office*

SECTION 1. The Society shall have its principal place of business at 9650 Rockville Pike, Bethesda, Maryland 20014. The Central Office shall house all activites delegated to the employees of the Society.

ARTICLE II. *Corporate Seal*

SECTION 1. The corporate seal of the Society shall be a circle surrounded by the words, THE AMERICAN PHYSIOLOGICAL SOCIETY. The seal shall also show the founding date and the date and place of incorporation.

SECTION 2. The Executive Secretary-Treasurer shall have custody of the seal. It shall be used on all official documents requiring it, and shall be placed on the documents by the Executive Secretary-Treasurer upon approval by Council.

ARTICLE III. *Membership*

SECTION 1. The Society shall consist of regular members, corresponding members, honorary members, associate members, emeritus members, and sustaining associates.

SECTION 2. *Regular Members.* Any person who has conducted and published meritorious original research in physiology, who is presently engaged in physiological work, and who is a resident of North America shall be eligible for proposal for regular membership in the Society.

SECTION 3. *Corresponding Members.* Any person who has conducted and published meritorious research in physiology, who is presently engaged in physiological work and who resides outside of North America shall be eligible for proposal for corresponding membership in the Society.

SECTION 4. *Honorary Members.* Distinguished scientists of any country who have contributed to the advance of physiology shall be eligible for proposal as honorary members of the Society.

SECTION 5. *Associate Members.* Persons who are engaged in research in physiology or related fields and/or teaching physiology shall be eligible for proposal for associate membership in the Society provided they are residents of North America. Associate members may later be proposed for regular membership.

SECTION 6. *Emeritus Members.* A regular or associate member may apply to Council for transfer to emeritus membership if that person (1) has reached the age of 65 and is retired from regular employment or (2) has been forced to retire from regular employment because of illness or disability. An emeritus member may be restored to regular membership status on request to Council.

SECTION 7. *Student Members.* Any student who is actively engaged in physiological work as attested to by two regular members of the Society and who is a resident of North America. No individual may remain in this category for more than five years, without reapplying.

SECTION 8. *Sustaining Associates.* Individuals and organizations who have an interest in the advancement of biological investigation may be invited by the President, with approval of Council, to become sustaining associates.

SECTION 9. *Nominations for Membership.* Two regular members of the Society must join in proposing a person for regular membership, corresponding membership, honorary membership, associate membership, or student membership, in writing and on forms provided by the Executive Secretary-Treasurer. In the nomination of corresponding members, a corresponding or honorary member of the Society may substitute for one of the regular members in proposing a person for corresponding membership. The Membership Committee shall investigate their qualfications and recommend nominations to Council. Council shall nominate members for election at the Spring and Fall meetings of the Society. A list of nominees shall be posted for consideration by the members attending the meeting two days prior to the Business Meeting at which the election occurs.

SECTION 10. *Election of Members.* Election of regular members, corresponding members, honorary members, associate members, and student members shall be by secret ballot at Spring and Fall Business Meetings of the Society. A two-thirds majority vote of the members present and voting shall be necessary for election.

SECTION 11. *Voting.* Only regular members shall be voting members. Corresponding, honorary, associate, and emeritus members shall have the privilege of attending Business Meetings of the Society but shall have no vote.

ARTICLE IV. *Officers*

SECTION 1. *Council.* The management of the Society shall be vested in a Council consisting of the President, the President-Elect, the immediate Past-President, and four other regular members. The terms of the President and of President-Elect shall be one year. The terms of the four additional Councillors shall be four years each and they shall not be eligible for immediate reelection except those who have served for two years or less in filling interim vacancies.

A quorum for conducting official business of the Society shall be five of the seven elected members of Council.

The Chairman of the Publications Committee, the Chairman of the Finance Committee, and the Executive Secretary-Treasurer are ex officio members of the Council without vote. The Council may fill any interim vacancies in its membership. Council shall appoint members to all committees.

SECTION 2. *President.* A person shall serve only one term as President, except that if the President-Elect becomes President after September 30 he shall continue as President for the year beginning the next July 1. The President shall chair all sessions of the Council and Business Meetings of the Society and shall be an ex offico member of all Committees without vote.

SECTION 3. *President-Elect.* The President-Elect shall serve as Vice-President of the Society and as official secretary of the Council. Should he have to function as President prematurely, the Council shall select from among its own members an official secretary.

SECTION 4. *Election of Officers.* Nominations for President-Elect and for members of Council will be made by mail

ballot on forms provided by the Executive Secretary-Treasurer, before February 1 of each year. Each member may nominate no more than one candidate for each office. If a member wishes to nominate a certain person for President-Elect and for Council he must nominate that individual for each position. The ten candidates that receive the highest number of nominating votes will appear on the appropriate ballot for President-Elect or for Council.

Election of the President-Elect and members of Council will be made by mail ballot on forms provided by the Executive Secretary-Treasurer, prior to April 1 of each year. Each voting member must indicate on the ballot his rank preference for all of the candidates on each ballot. The ballots will be counted according to the Election Plan. Two ballots, one for President-Elect and one for Council will be mailed together. The results of the election will be announced at the Spring Meeting of the Society and the newly elected officers will take office on July 1 following their election.

SECTION 5. *Executive Secretary-Treasurer.* The Council shall be empowered to appoint and compensate an Executive Secretary-Treasurer who shall assist it in carrying on the functions of the Society including the receipt and disbursement of funds under the direction of the Council. He shall be responsible for management of the Central Office of the Society under general supervision of the Council.

ARTICLE V. *Standing Committees*

SECTION 1. *Publications Committe.* A Publications Committee composed of three regular members of the Society appointed by Council shall be responsible for the management of all of the publications of the Society. The term of each member on the Publications Committee shall be three years; a member may not serve more than two consecutive terms. The Council shall designate the Chairman of the Committee who shall be an ex officio member of the Council, without vote. Council is empowered to appoint and compensate a Publications Manager who shall assist in carrying out the functions of the Publications Committee under the supervision of the Executive Secretary-Treasurer. The President, Executive Secretary-Treasurer and the Publications Manager shall be ex officio members of the Publications Committee, without vote. The Committee shall have the power to appoint editorial boards for the Society's publications. The Committee shall present an annual report on publications and policies to the Council for approval and present an annual budget coordinated through the Executive Secretary-Treasurer, to the Finance Committee for its approval and recommendation to Council.

SECTION 2. *Finance Committee.* A Finance Committee, composed of three regular members of the Society appointed by Council, shall receive the total coordinated budget proposals annually from the Executive Secretary-Treasurer and shall determine the annual budgets, reserve funds and investments of the Society, subject to approval by Council. The term of each member of the Finance Committee shall be three years; a member may not serve more than two consecutive terms. The Council shall designate the Chairman of the Committee who shall be an ex offico member of the Council, without vote. Council is empowered to appoint and compensate a Business Manager who shall assist in carrying out the functions of the Finance Committee under the supervision of the Executive Secretary-Treasurer. The President-Elect, Executive Secretary-Treasurer, the Chairman of the Publications Committee, and the Business Manager shall be ex offico members of the Finance Committee, without vote.

SECTION 3. *Membership Committee.* A Membership Committee, composed of six or more regular members of the Society appointed by Council, shall receive and review processed applications for membership and make recommendations for nomination to the Council. The term of each member of the Membership Committee shall be three years; a member shall not be eligible for immediate reappointment. The Chairman of the Committee shall be designated by the Council.

SECTION 4. *Education Committee.* An Education Committee, composed of five or more regular members of the Society and representatives of such other societies as may be designated by the Council, appointed by council, shall conduct such educational, teaching and recruitment programs as may be required or deemed advisable. The term of each member of the Education Committee shall be three years. The Chairman of the Committee shall be designated by the Council. The Executive Secretary-Treasurer may act as Executive Director of the educational programs with approval of the Council. The Committee shall present an annual report to the Council and an annual budget through the Executive Secretary-Treasurer to the Finance Committee for its approval.

SECTION 5. The Council may appoint such special and other standing committees as it deems necessary or that are voted by the Society. The Council may name regular members of the Society as representatives to other organizations whenever it deems such action desirable.

SECTION 6. *Term of Office of Chairman.* The Chairman of a standing committee may serve one full term in that capacity in addition to any consecutive term as a committee member limited by other provisions of these Bylaws.

ARTICLE VI. *Dues*

SECTION 1. *Annual Dues.* The annual dues for regular members, corresponding members, associate members and student members shall be determined by the Council and shall be paid in advance of July 1. Honorary members and emeritus members shall pay no membership dues.

SECTION 2. *Non-payment of Dues.* A regular member, corresponding member, associate member or student member whose dues are two years in arrears shall cease to be a member of the Society, unless, after payment of his dues in arrears and application to the Council, he shall be reinstated at the next meeting by vote of the Council. It shall be the duty of the President-Elect to notify the delinquent of his right to request reinstatement.

SECTION 3. *Retirement.* A regular member, corresponding member, or associate member who has been granted emeritus membership status is relieved from the payment of dues but retains the other privileges of his former membership status, except voting privileges.

ARTICLE VII. *Financial*

SECTION 1. *Society Operating Fund.* The Society Operating Fund shall consist of all funds, other than Publication Operating Funds and Publication Contingency and Reserve Funds, restricted or unrestricted, uninvested or invested, short or long term. The Executive Secretary-Treasurer shall be the responsible agent to the Council with signatory powers. Signatory powers may be delegated to the Business Manager by the Executive Secretary-Treasurer.

SECTION 2. *Publications Operating Fund.* The Publications Operating Fund shall consist of all funds that involve receipts, expenses, short-term investments relating to the annual receipts, disbursements and continuing operation of the Society's publications. The Executive Secretary-Treasurer shall be the responsible

agent to the Council with signatory powers. Signatory powers may be delegated to the Publications Manager and/or the Business Manager by the Executive Secretary-Treasurer.

SECTION 3. *Publications Contingency and Reserve Fund.* The Publications Contingency and Reserve Fund shall consist of the long-term capital investments of publication earnings. The Executive Secretary-Treasurer, with advice from the Finance Committee, shall have discretionary and signatory powers, except for withdrawals. Authority for any withdrawal from this fund shall require the following five signatures: 1) The Chairman of the Publications Committee (Alternate, the senior member of the Commitee); 2) The President of the Society (Alternate, the President-Elect); 3) The Executive Secretary-Treasurer (Alternate, the Pulbications Manager); 4) and 5) Any two members of Council. The Finance Committee shall not recommend to Council the expenditure of any of this capital fund for non-publication purposes without the consent of the Publications Committee. The Finance Committee shall be responsible for the separate investment of the reserve fund for publications; any capital gains from such investment shall accrue to the fund (capital losses will, however, reduce its value). Any dividends, interest or income, other than capital gains, from this invested fund may be used for emergency support of any of the activities of the Society, including publications, as determined annually by the Council but the primary goal shall be to increase the investment capital.

SECTION 4. *Fiscal Year.* The official fiscal year shall be from January 1 through December 31.

SECTION 5. *Audit.* All statements of net assets and related statements of income, expenditures and fund capital shall be audited annually by an independent auditing frim.

SECTION 6. *Bonding.* All persons having signatory powers for the funds of the Society shall be bonded.

ARTICLE VIII. *Publications*

SECTION 1. The official organs of the Society shall be the American Journal of Physiology, the Journal of Applied Physiology, Physiological Reviews, the Journal of Neurophysiology, The Physiologist, and such other publications as the Society may own. All publications shall be under the jurisdiction and management of the Publications Committee unless otherwise designated by the Council. The names of the journals and publications may be changed by the Council on recommendation from the Publications Committee and any publication may be dropped by Council on recommendation from the Publications Committee.

ARTICLE IX. *Meetings*

SECTION 1. *Spring Meeting.* A meeting of the Society for transacting business, electing officers and members, presenting communications, and related activities, shall ordinarily be held in the Spring of each year.

SECTION 2. *Fall Meeting.* A Fall meeting of the Society shall be held at a time and place determined by the Council for presenting communications, electing members, and for transacting business. Under exceptional circumstances Council may cancel such a meeting.

SECTION 3. *Special Meetings.* Special meetings of the Society or of the Council may be held at such times and places as the Council may determine.

SECTION 4. *Quorum.* At all Business Meetings of the Society fifty regular members shall constitute a quorum.

SECTION 5. *Parliamentary Authority.* The rules contained in Roberts Rules of Order, Revised, shall govern the conduct of the Business Meetings of the Society in all cases to which they are applicable and in which they are not inconsistent with the Bylaws or special rules of order of the Society.

ARTICLE X. *Society Sections and Affiliations*

SECTION 1. *Society Sections.* Upon acceptance of a Statement of Organization and Procedures by Council, any group of members of the Society may form a section which encompasses an area of physiology. Such sections shall:

a. Advise the Society on matters of interest to the specialty group represented by the section.
b. Assist the Society in organization of scientific meetings.
c. Nominate individuals for membership on Society Committees.
d. Be open to all members of the Society expressing an interest in section membership.

The Executive Secretary-Treasurer shall provide assistance to sections in the carrying out of section business.

Nothing in a section's Statement of Organization and Procedures may be construed as contradictory to the Constitution and Bylaws or Operational Guide of the Soceity.

SECTION 2. *Society Affiliations.* The Society shall maintain membership in such organizations as determined by Council.

ARTICLE XI. *Regulations*

SECTION 1. *General Prohibitions.* Notwithstanding any provision of the Constitution or Bylaws which might be susceptible to contrary interpretation:

a. The Society is organized and operated exclusively for scientific and educational purposes.
b. No part of the net earnings of the Society shall or may under any circumstances inure to the benefit of any member or individuals.
c. No substantial part of the activities of the Society shall consist of carrying on propaganda, or otherwise attempt to influence local, state or national legislation. (All activities of the Society shall be determined by Council). The Society shall not participate in, or intervene in (including the publishing or distributing of statements) any campaign on behalf of any candidate for public office.
d. The Society shall not be organized or operated for profit.

SECTION 2. *Distribution on Dissolution.* Upon lawful dissolution of the Society and after payment of all just debts and obligations of the Society, Council shall distribute all remaining assets of the Society to one or more organizations selected by Council which have been approved by the United States Internal Revenue Service as organizations formed and dedicated to exempt purposes.

ARTICLE XII. *General*

SECTION 1. *Records.* All official records, archives and historical material shall be held in the Central Office in the custody of the Executive Secretary-Treasurer.

SECTION 2. *Procedures and Customs.* The Society shall maintain a current Operational Guide detailing the procedures and current customs of the Society operations as well as the duties and responsibilities of officers, committees, and major employees. The Operational Guide shall be maintained current by the Executive Secretary-Treasurer as determined by the Council.

ARTICLE XIII. *Amendments*

SECTION 1. *Presentation.* Amendments to these Bylaws may be proposed in writing, by any regular member, to Council at any

time up to three months in advance of any Business Meeting of the Society. Such proposed amendments must be presented in writing at the following Business Meeting for action by the Society.

SECTION 2. *Adoption.* These Bylaws may be amended at any Business Meeting of the Society by a two-thirds majority vote of the regular members present and voting.

APS SECTIONS

FORMATION OF THE CELL AND GENERAL PHYSIOLOGY SECTION OF THE AMERICAN PHYSIOLOGICAL SOCIETY

Printed below is the State of Organization and Procedures for the Cell and General Physiology Section. The "Statement" was approved by the Council of APS during its 1981 Spring Meeting in Atlanta.

In January of 1981 members of the Society were invited to request affiliation with the new Section. To date, more than 450 members have responded by asking that they be enrolled as Section members. At the same time, interested individuals were asked to attend the organizational meeting held in Atlanta during the Spring Meeting.

At the organizational meeting, the "Statement of Organization and Procedures" was reviewed, amended and subsequently submitted to Council. A slate of two nominees for each of the officers was presented and approved by the attendees. Members of the Section will soon be receiving a ballot so that they may vote for the officers from the list of nominated candidates.

Membership in the Section is open to all persons with interests in cellular or general physiology, and is not precluded by membership in other Sections or informal "clubs" that meet with the Society. The Section can be a forum for concerted action in the nomination of councillors or president of the Society. In the event of topical meetings of the Society or FASEB in the future, the Section will be a focus for such topical organization. It is anticipated that the Section will meet at least once a year, most probably at the Federation Meetings.

CELL AND GENERAL PHYSIOLOGY SECTION

Statement of Organization and Procedures

ARTICLE I. *Name*

The name of this organization is the *CELL AND GENERAL PHYSIOLOGY SECTION* of the *AMERICAN PHYSIOLOGICAL SOCIETY.*

ARTICLE II. *Purpose*

The purpose of this organization is: (1) to foster interest and promote excellence in cell and general physiological research and education; (2) to advise the American Physiological Society on matters of interest to cell and general physiologists; (3) to assist the Program Committee of the American Physiological Society in organizing and presenting scientific sessions, symposia, sessions on teaching materials and methods, and other programs of interest to the members of the Section; (4) to advise the Publications Committee and the Editor of the *American Journal of Physiology: Cell Physiology* on the selection of editors and members of the editorial board as vacancies occur, and on other matters of interest to the Section.

ARTICLE III. *Membership*

Regular Membership is open to any member (student, associate, regular, emeritus, corresponding, or honorary) of the American Physiological Society who wishes to be a member. Membership in the Section is automatic upon application to the Executive Secretary-Treasurer of the American Physiological Society.

Intersociety Membership is open to those members of FASEB with an interest in cell and general physiology but who are not members of the American Physiological Society. Candidates for Intersociety Membership are nominated by two Regular Members of the Section who send their written nomination and the candidate's curriculum vitae to the Secretary of the Section. The Steering Committee will approve membership. If disapproved, letters will be sent to the nominators telling of the disapproval and citing the reasons. Intersociety Members share all the rights and responsibilities of Regular Members.

ARTICLE IV. *Officers*

Section 1. *Steering Committee.* The responsibility for the management and supervision of the affairs of the Section shall be vested in a Steering Committee. The members of the Steering Committee shall be the Chairperson, the Secretary-Treasurer, two Councillors, and the Representative of the Section to the Program Committee of the American Physiological Society.

Section 2. *Chairperson.* The Chair shall be held for one year by that person who has served the two previous years as Councillor.

Section 3. *Councillors.* One person shall be elected each year as Councillor to the Steering Committee and shall serve thereafter for two years as Councillor and hold the Chair of the Steering Committee for the third year.

Section 4. *Secretary-Treasurer.* There shall be a Secretary-Treasurer elected for a term of three years.

Section 5. *Program Committee Representative.* There shall be a Program Committee Representative elected for a term of three years. Election of the Program Committee Representative shall take place the year following the election of Secretary-Treasurer.

Section 6. *Election of Officers.* Nominations shall be made annually, as appropriate, by the Nominating Committee to fill forthcoming vacancies. The names of the nominees shall be announced by mail to the members two months in advance of the annual meeting. Additional nominations may be made by three or more members submitting the name of a candidate who has agreed in writing to serve if elected. Nominations must be submitted by February 1 of the election year.

Election of officers shall be by mail ballot sent to all members concurrently with the announcement of the annual meeting.

Section 7. *Term of Office.* The term of office shall commence on July 1 following the election.

ARTICLE V. *Duties of Officers.*

Section 1. *Steering Committee.* The Steering Committee, through its Program Committee Representative, shall choose annually topics to be submitted to the American Physiological Society Program Committee for symposia or other scientific sessions at the meetings of the Society. Recommendations for such topics may be made by any member of the Section to any member of the Steering Committee. The Steering Committee will also advise the Program Committee on persons suitable for the organization of such sessions when approved. The Steering Committee will advise the Publications Committee of the Society and the Editor of the *American Journal of Physiology: Cell Physiology* on the selection of editors and members of the editorial board as vacancies occur. The Steering Committee may also advise and assist the Editor in identifying or attracting manuscripts of interest to the Section and further advise the Editor on appropriate publication policies in relation to the Section's interests. The Steering Committee may appoint additional ad hoc committees that from time to time may be necessary for the proper conduct of the affairs of the Section. The Steering Committee shall meet at least once a year prior to the annual meeting, either at a time and place agreed to by at least 4 members of the Committee, or the meeting may be conducted by mail, or by telephone.

Section 2. *Secretary-Treasurer.* The Secretary-Treasurer shall maintain the records of the Section and, when considered necessary by the Steering Committee, shall communicate with the members of the section at large.

Section 3. *Program Committee Representative.* The Program Comittee Representative is responsible for performing the functions defined by the Society's Operational Guide for members of the Program Advisory Committee.

ARTICLE VI. *Standing Committees.*

Nominating Committee. The Chairperson, after consultation with other members of the Steering Committee, shall appoint annually two at-large members of the Section to serve with the senior Councillor as the Nominating Committee. The Committee shall nominate two members for each office that is to become vacant, and obtain in writing the agreement of each candidate to serve if elected.

ARTICLE VII. *Dues.*

Dues may be assessed if the Steering Committee deems it necessary.

ARTICLE VIII. *Meetings.*

The Section will meet at least once annually in conjunction with the spring meeting of the American Physiological Society. Notification of the time and place of the meeting will be published in the program of the meetings of the American Physiological Society. A quorum for the transaction of any official business of the Section at the annual meeting shall consist of fewer than 3 members of the Steering Committee.

ARTICLE IX. *Amendments*

Amendments to these procedures must be proposed in writing to the Steering Committee by five members at least two months before the annual meeting. The proposal must then be sent to the members at least one month before the annual meeting. An amendment requires the approval of two-thirds of the members present and voting at the annual meeting.

ARTICLE X. *Relation of the Section to the American Physiological Society*

Nothing in this statement of Organization and Procedures shall be construed as contradictory to the Constitution and Bylaws or Operational Guidelines of the American Physiological Society.

In the event that the Section fails to hold a meeting for three consecutive years, it shall thereby be dissolved and all assets shall revert to the American Physiological Society without restriction.

ENDOCRINOLOGY AND METABOLISM SECTION ELECTION RESULTS

Samuel M. McCann, Chairman of the Section Organizing Committee announced the results of the recently held election at the Section's Spring meeting in Atlanta.

The following were installed as officers for the indicated terms:

Chairman (3 yrs.) Edward J. Masoro

Councillor (2 yrs.) Mary F. Dallman

Councillor (1 yr.) Howard E. Morgan

Secretary/Treasurer (3 yrs.) Jimmy D. Neill

Representative to the APS Program Advisory Committee (3 yrs.) M. Susan Smith

AMENDED "CHARTER" FOR CARDIOVASCULAR SECTION

At its April 1981 Meeting, Council approved an amendment to the Statement of Organization and Procedures providing for the establishment of subsections to the Cardiovascular Section. Article VI of the "Statement" also establishes governance procedures for subsections formed to represent specialized interests within cardiovascular physiology.

The amended "Statement of Organization and Procedures" follows:

STATEMENT OF ORGANIZATION AND PROCEDURES
(Adopted April 15, 1980 - Anaheim, Calif. Amended April, 1981 Atlanta, GA)

ARTICLE I. *Name*

The name of this organization is THE CARDIOVASCULAR SECTION of the AMERICAN PHYSIOLOGICAL SOCIETY.

ARTICLE II. *Purpose*

The purpose of this organization is: (1) to advise the American Physiological Society on matters of interest to cardiovascular physiologists, and (2) to assist the American Physiological Society in organizing and presenting scientific sessions, symposia and other programs of interest to cardiovascular physiologists. These activities include sponsoring an annual meeting of the Section.

ARTICLE III. *Membership*

Membership is open to any member (student, associate, regular, emeritus, corresponding) of the American Physiological Society who wishes to be a member. Membership in the Cardiovascular Section is automatic upon application to the executive secretary of the American Physiological Society.

ARTICLE IV. *Fellows*

Section 1. *Purpose*. The purpose of fellows in the Cardiovascular Section is: a) to recognize meritorious research in cardiovascular physiology, b) to serve as a candidate pool for officers of the Cardiovascular Section, c) to serve as a candidate pool for the Wiggers Award.

Section 2. *Election of Fellows*. A prospective fellow shall: a) be a *regular* member of the American Physiological Society, b) have published meritorious physiological research in the cardiovascular field. Nomination for fellows will be made by two Cardiovascular Section fellows submitting letters of nomination to the secretary of the Cardio vascular Section Steering Committee. Once elected an individual remains a fellow of the Cardiovascular Section so long as he/she is a *regular* member of the American Physiological Society. When a fellow becomes a retired member of A.P.S., he/she relinquishes his/her fellowship and becomes an emeritus member of the Cardiovascular Section.

Section 3. *Limited Number of Fellows*. The total number of Cardiovascular Section fellows shall not exceed 5% (1/20) of the total number of *regular* A.P.S. members.

Section 4. *Initial Fellows*. Upon formation of a Cardiovascular Section, all Members and Distinguished Members previously elected to the Circulation Group of the A.P.S. (founded in 1933) shall become *Fellows* of the Cardiovascular Section of the American Physiological Society.

ARTICLE V. *Officers*

Section 1. *Steering Committee*. The responsibility for management and supervision of the affairs of the Cardiovascular Section shall be vested in the Steering Committee. The members of the Steering Committee shall be the Chairman, Treasurer, Secretary, plus one chairman from each subsection committee.

A quorum for conducting official business of the Cardiovascular Section shall be two of the officers (Chairman, Treasurer, Secretary) of the Steering Committee. Such business may be conducted at meetings of the Society or by conference or telephone call, or by mail.

Section 2. *Term and Sequence of Office*. The term of office for the Chairman, Treasurer, and Secretary shall be for one year, beginning July 1. The Secretary newly elected at the annual spring meeting will begin to serve on July 1, when the previous Secretary becomes Treasurer, and the previous Treasurer advances to Chairman. Thus an officer serves three years, one year each as Secretary, Treasurer, and Chairman. In the event that the annual Cardiovascular Section meeting is in the fall, the terms of office will begin Jan. 1.

Section 3. *Election of Officers*. A Secretary shall be elected each year at the annual spring meeting. Officers must have been a fellow of the Cardiovascular Section for at least one year. Nominations shall come from the floor.

ARTICLE VI. *Subsections*

Section 1. *Formation*. Members of the Cardiovascular Section may form Subsections representing specialized interests within cardiovascular physiology. A Subsection will be formed by the interested group petitioning the Cardiovascular Section Steering Committee. If the Steering Committee approves, the matter will be presented to the Cardiovascular Section membership for approval.

Section 2. *Purpose*. The purpose of the Subsection will be to advise the Cardiovascular Section on matters pertaining to the Subsection's special interests, and to organize meetings and symposia through the Cardiovascular Section.

Section 3. *Members*. Membership is open to any member (student, associate, regular, emeritus, corresponding) of the Cardiovascular Section of the American Physiological Society who wishes to be a member. Membership in the Subsection is automatic upon application to the executive secretary of the American Physiological Society.

Section 4. *Subsection Committee*. The responsibility for management and supervision of the affairs of the subsection shall be vested in the Subsection Committee. There shall be three Subsection Committee members.

A quorum for conducting official business of the Subsection shall be two of the members of the Subsection Committee. Such business may be conducted at meetings of the Society or by conference or telephone call, or by mail.

Term and Sequence of Office. The term of office for a Subsection Committee member shall be for three years, beginning July 1. The newly elected Subsection Committee member will replace the member who has served three years. Thus each Subsection Committee member will serve three years. The Subsection Committee member who is serving his/her third

year shall be the Committee Chairman, and therefore a member of the parent Cardiovascular Section Steering Committee.

Election of Subsection Committee Members. A new Subsection Committee member shall be elected at the annual meeting of the Subsection, according to the bylaws of the Subsection. The Subsection Committee member must have been a fellow of the parent Cardiovascular Section and a member of the Subsection for at least one year.

Upon the formation of a new Subsection, the Subsection members shall elect three fellows to serve terms of one, two, and three years. The individual serving one year shall be the chairman, followed by the two- and three-year term committee members, respectively.

ARTICLE VII. *Treasury*

The Cardiovascular Section shall have one treasury and one Treasurer to serve the Section and all Subsections. The Steering Committee may earmark funds for the special use of a particular Subsection.

ARTICLE VIII. *Committees*

Section 1. *Committees*. The Chairman may appoint committees that are necessary for the proper conduct of the affairs of the Section.

Section 2. *Program Committee Representative*. The Program Committee Representative to the American Physiological Society will be appointed by the executive committee to serve a 2-year term.

ARTICLE IX. *A.P.S. Relationship*

Nothing in this Statement of Organizational Procedures shall be construed as contradictory to the Constitution and Bylaws or Operational Guidelines of the American Physiological Society.

LETTERS TO THE EDITOR

The following letter was received from Dr. Leonard I. Malis who is presently at the Mount Sinai Medical Center in New York City.

Dear Dr. Reynolds:

Your biographical tribute to Professor Gene Landis in the February, 1981, issue was indeed an excellent review of a most remarkable man. It omitted, however, a very special facet of Dr. Landis's abilities. He was indeed the best teacher of medicine it has ever been my pleasure to encounter.

When it was announced at the University of Virginia in 1942 that he would be leaving to go to take the Chair at Harvard, my class realized that we would not be able to receive his 4th year lecture series in internal medicine. As a result, the entire 3rd year class altered their other schedules and as a group, without credit, overflowed the auditorium to audit his course with the then senior class.

It was an experience few of us who participated in it will ever forget and one which I doubt has very often happened to any other professor.

Sincerely,
Leonard I. Malis, M.D.
(M.D., University of Virginia, 1943)

INSTRUCTIONS FOR APPLYING FOR APS MEMBERSHIP

CURRENT APPLICATION FORMS

Most issues of The Physiologist routinely carry one copy of the current application form (following). This form will serve for all categories of membership. Any member desiring to sponsor more than one applicant may use a Xerox copy of this form. Any application submitted on an out-dated form will be redone on the acceptable form.

One application form serves all membership categories. There are, however, specific sets of instructions for each category. Therefore it is essential that sponsors and applicants carefully attend to those instructions specific to their desired category.

GENERAL INSTRUCTIONS

FOR ALL CATEGORIES:

Use only the current application form. Check the box indicating the category of membership for which you are applying. Use the SPECIAL INSTRUCTIONS for that category when filling out the form. Type the Application. Fill out all applicable spaces. Only completed applications will be reviewed.

Alien Residents. Canadian residents should furnish a copy of "Landed Immigrant Status" form. Mexican residents should furnish a copy of their form FM-2.

The Bibliography must be submitted in the form found in the Society's journals. An example of the correct form is:

JONES, A.B., and C.D. Smith. Effect of organic ions on the neuromuscular junction in the frog. Am. J. Physiol. 220:110-115, 1974.

DO NOT INCLUDE A CURRICULUM VITAE

Send no reprints.

Deadline Dates: Completed applications received between February 1 and July 1 are considered for nomination by the Council at the Fall Meeting. Applications received between July 1 and February 1 are considered for nomination by the Council at the Spring Meeting. Applications are not complete until all materials, including sponsor's letters, are received.

QUALIFICATIONS (Except Students):

The Membership Advisory Committee uses the following 5 categories in evaluating an application:

1. Educational History. Academic degree and postdoctoral training are evaluated and assessed with regard to how closely the applicant's training has been tied to physiology.
2. Occupational History. Particular emphasis is given to those applicants who have a full time position in a department of physiology, or are responsible for physiology in another department. Relatively high ratings are given to people with positions in clinical departments and to people functioning as independent investigators in commercial or government laboratories.
3. Contributions to the Physiological Literature. This category is of major importance. The applicant's bibliography is evaluated on the basis of publications in major, refereed journals which are concerned with problems judged to be primarily physiological in nature. Emphasis is given to papers published as the result of independent research. Special note is taken of publications on which the applicant is sole author or first author.
4. Interest in and Commitment to Teaching Physiology. This evaluation is based on: (1) the fraction of the applicant's time devoted to teaching, (2) publications related to activities as a teacher including production of educational materials, and (3) special awards or other recognition the applicant has received for outstanding teaching effectiveness.
5. Special Considerations. This category permits the Membership Advisory Committee to acknowledge unique accomplishments of an applicant. These might be excellence in a specific area, or unusual contributions to Physiology resulting from talents, interest or a background substantially different from the average.

SPONSORS:

Primary responsibility for membership rests with the two sponsors who must be regular members of the Society. Sponsors should discuss the appropriateness of the selected category of membership in this Society with prospective applicants.

Each sponsor should write an independent confidential letter about the candidate using the five categories listed above to evaluate the candidate. Furnish an original and 7 copies to the Membership Secretary.

CHECK LIST:

1. Original copy of application signed by both sponsors.
2. Application on a current form, including the bibliography (1 original and 7 copies).
3. Mail the original, which has been signed by the two sponsors, plus 7 copies to:

Membership Secretary
American Physiological Society
9650 Rockville Pike
Bethesda, Maryland 20014

SPECIAL INFORMATION AND INSTRUCTIONS

FOR REGULAR MEMBERSHIP

Bylaws of the Society:

Article III, Section 2 - Regular Members. Any person who had conducted and published meritorious original research in physiology, who is presently engaged in physiological work, and who is a resident of North America shall be eligible for proposal for regular membership in the Society.

Duties and Privileges:

1. Hold Elective Office.
2. Vote at Society Meetings.
3. Serve on Committees, Boards and task forces.
4. Serve on Federation Boards and Committees.
5. Sponsor New Members.
6. Orally present or co-author a contributed paper and sponsor a non-member authored paper at the Fall scientific meeting.
7. Orally present or co-author one contributed scientific paper at the annual Federation meeting or sponsor one paper.
8. Receive The Physiologist.
9. Receive Federation Proceedings, Public Affairs Newsletters and annual Membership Directory.
10. Subscribe to handbooks and periodicals published by the Society at membership rates.
11. Register to attend scientific meetings of the Federation and the APS Fall meeting at membership rates.
12. Participate in FASEB Member's Life Insurance Program, Disability Program and in Hospital Protection Plan. (For Residents of the United States, its territories or possessions).
13. Eligible to receive the Daggs Award.
14. Eligible to be selected as Bowditch Lecturer (members under 40 years of age).

FOR CORRESPONDING MEMBERSHIP

Bylaws of the Society:

Article III, Section 3 - Corresponding Members. Any person who has conducted and published meritorious research in physiology, who is presently engaged in physiological work and who resides outside of North America shall be eligible for proposal for corresponding membership in the Society.

Duties and Privileges:

1. Serve on Society Committees, Boards and Task Forces.
2. Serve as one sponsor of new Corresponding Members (One regular member must be sponsor of a new Corresponding Member).
3. Orally present or co-author a contributed paper and sponsor a non-member authored paper at the Fall scientific meeting.
4. Orally present or co-author one contributed scientific paper at the annual Federation meeting or sponsor one paper.
5. Receive The Physiologist.
6. Receive Federation Proceedings, Public Affairs Newsletters and annual Membership Directory.
7. Subscribe to handbooks and periodicals published by the Society at membership rates.
8. Register to attend scientific meetings of the Federation and the APS Fall meeting at member rates.

FOR ASSOCIATE MEMBERSHIP

Bylaws of the Society:

Article III, Section 5 - Associate Members. Persons who are engaged in research in physiology or related fields and/or teaching physiology shall be eligible for proposal for associate membership in the Society provided they are residents of North America. Associate members may later be proposed for regular membership.

Duties and Privileges:

Same as for Regular Members except for the privilege of:

1. Holding Executive Office, or membership on certain committees.
2. Voting at Society Meetings.
3. Sponsoring New Members.
4. Receiving the Daggs Award.
5. Selection as Bowditch Lecturer.

FOR STUDENT MEMBERSHIP

Not all questions on the application form may be appropriate — Please place NA next to any such question.

Bylaws of the Society:

Article III, Section 7 - Student Members. Any student who is actively engaged in physiological work as attested to by two regular members of the Society and who is a resident of North America. No individual may remain in this category for more than five years, without reapplying.

Duties and Privileges:

1. Present one contributed paper at the Fall Scientific meeting with the endorsement of the student's advisor.
2. Receive The Physiologist.
3. Subscribe to Handbooks and Periodicals at member rates.
4. Register to attend scientific meetings of the Federation and the APS Fall meeting at student rates.

Submit original and 7 copies of application and supporting documents.

APPLICANT'S LAST NAME _____

Date _____

THE AMERICAN PHYSIOLOGICAL SOCIETY
9650 Rockville Pike, Bethesda, MD 20014

MEMBERSHIP APPLICATION FOR:

REGULAR ☐
CORRESPONDING ☐
ASSOCIATE ☐
STUDENT ☐

CURRENT MEMBERSHIP
CATEGORY; YEAR ELECTED _____

See Instructions

Name of Applicant: _____
First Middle Last

Mailing _____ Birth Date: _____

Address _____ Citizenship: _____

_____ Country of Permanent Residence:* _____

_____ Telephone No.: _____

* Alien residents of Canada and Mexico see General Instructions. Alien residents of U.S. enter Alien Registration Receipt Card number _____.

1. **EDUCATIONAL HISTORY**

Dates	Degree	Institution	Major Field	Advisor

Doctoral Dissertation Title:
(if any)

Postdoctoral Research Topic:

2. **OCCUPATIONAL HISTORY**

Present Position:

Prior Positions:

Dates	Title	Institution	Department	Supervisor

SPONSORS

#1. Name: _____ #2. Name: _____

Mailing Address: _____ Mailing Address: _____

_____ _____

_____ _____

_____ _____

Telephone No. Zip Code Telephone No. Zip Code

I have read the guidelines for applicants and sponsors and this application and attest that the applicant is qualified for membership.

#1 Signature _____ #2 Signature _____

Each sponsor must submit an original and 7 copies of a confidential letter of recommendation to the Society, under separate cover.

APPLICANT'S LAST NAME _____

3. **DESCRIBE YOUR PHYSIOLOGICAL TEACHING** – What percent of your time/effort is spent in teaching Physiology?_____

Describe in the space provided your teaching of physiology including course descriptions (content, format); supervision of pre-doctoral and post-doctoral students; special contributions (films, textbooks, etc.).

4. **INTEREST IN THE SOCIETY** – List any APS Meetings attended by date and check the appropriate box for any papers.

SPRING (FASEB)

Date	Presented	Coauthor
_____	☐	☐
_____	☐	☐
_____	☐	☐
_____	☐	☐
_____	☐	☐

FALL (APS)

Date	Presented	Coauthor
_____	☐	☐
_____	☐	☐
_____	☐	☐
_____	☐	☐
_____	☐	☐

List other scientific societies of which candidate is a member:

In the space provided state your interest in wanting to join the Society:

5. **SPECIAL CONSIDERATION** – Include any other contributions (Administrative, university, national service, awards and honors) that may be important to physiology.

6. **DESCRIBE YOUR RESEARCH** – What percent of your time/effort is spent in research?_____

Describe the fundamental physiologic questions in your research and how you have answered these questions. Limit the paragraph to the space provided.

7. **BIBLIOGRAPHY** – Attach a list of your publications under the following categories:
   1. Complete physiological papers, published or accepted for publication.
   2. Physiological abstracts (limit to ½ page).
   3. Other papers not primarily physiological (limit to ½ page).

The entire bibliography should not exceed 2 pages. Give complete titles and journal references with inclusive pagination. Use the bibliographic form found in the Society's journals. List authors in the order in which they appear in the publication.

DO NOT INCLUDE A CURRICULUM VITAE

From the Publications Desk

TWO NEW JOURNAL EDITORS

The Publications Committee wishes to welcome two new journal editors. Ernest Page succeeded Matthew N. Levy as the Editor of the *American Journal of Physiology: Heart and Circulatory Physiology* in January and Howard E. Morgan will succeed Paul Horowicz as the Editor of the *American Journal of Physiology: Cell Physiology* in July. Each is committed to continuing the excellence established by their predecessor, but each also brings fresh ideas and a largely new group of Associate Editors and editorial board members to the two journals.

The *American Journal of Physiology: Heart and Circulatory Physiology* publishes articles describing the results of original investigations on the function and control of the heart, blood vessels, and lymphatics. The scope of the Journal includes experimental studies on cardiovascular function at all levels of organization ranging from the intact animal to the cellular, subcellular, and molecular levels. It embraces new descriptions of these functions as well as of their control and their bases in biochemistry, biophysics, and ultrastructure. The Journal gives preference to completed research that provides significant new insights into the mechanism underlying the normal and abnormal function of the heart and circulation. Invited, refereed reviews of topics intended for a broad audience provide perspectives on developing, controversial, or particularly active areas of research.

AJP—HEART AND CIRCULATORY EDITORIAL BOARD

The *American Journal of Physiology: Cell Physiology* is dedicated to the promotion of contemporary and innovative approaches to the study of cell and general physiology. The Journal publishes original papers dealing with normal and abnormal cell function. Authors are encouraged to submit manuscripts dealing with the structure and function of cell membranes, contractile systems and cellular organelles as well as mechanisms of development, cell:cell interaction, gene expression, and neural, endocrine and metabolic control. Reports of research utilizing approaches including biochemistry, biophysics, molecular biology, morphology, and immunology and contributing to the knowledge of cell physiology are especially welcome.

Regular papers should be concise, but may be of any length. Theoretical as well as experimental studies are sought. Rapid communications should contain results of unusual interest. These communications must not exceed four journal pages in length, including figures, tables and references. Review of rapid communications will be accelerated and such papers will appear in the next available issue after acceptance. In general, one printed page is equivalent to four double-spaced typewritten pages, or to three figures or tables. Authors should indicate whether papers are submitted as regular papers or rapid communications.

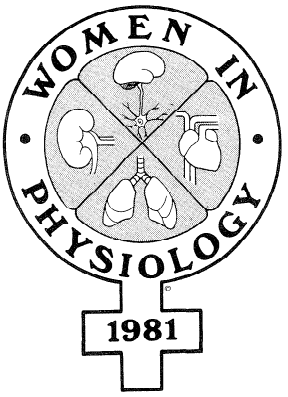
AJP—CELL EDITORIAL BOARD

ANOTHER NEW BOOK

Disturbances in Neurogenic Control of the Circulation
Edited by F.M. Abboud, H.A. Fozzard, J.P. Gilmore, and D.J. Reis

Publication of books in basic science and clinical aspects of physiology is one of the major ways in which the American Physiological Society serves the diverse groups that compose physiology. The Society is especially pleased to publish *Disturbances in Neurogenic Control of the Circulation* (Clinical Physiology Series) at the same time that it is in the midst of publishing the revision of the circulation section of the *Handbook of Physiology.*

This book presents some of the most recent hypotheses and experimental observations, with emphasis on integrative aspects



Caucus on Women in Physiology

Marie M. Cassidy
Dept. Physiol.
George Washington Univ. Med. Ctr

Paula T. Beall
Dept. Physiol. & Pediat.
Baylor Coll. Med.

Allahverdi Farmanfarmaian
Dept. Physiol.
Rutgers University

Rita Guttman
Brooklyn College

Margaret C. Neville
Dept. Physiol.
Univ. Colorado Med. Ctr.

Janett Trubatch
NINCDS, NIH

WOMEN IN PHYSIOLOGY

Women in the American Physiological Society

The current membership of the American Physiological Society includes about 9% women. Although 12% of the entire society are Associate Members, 20% of the female members but only 11% of the male members are in this category. However, the proportion of women applicants for regular membership has been slowly increasing from about 9% in 1976 to 13% in 1980. Currently about 16% of the applicants for associate membership are women as are 25% of the student applicants. These figures, taken from the lists of new members of the APS published in *The Physiologist* suggest a small but promising trend toward a larger representation of women in our society.

Despite this trend, however, comparison of these figures with a number of other indicators gives a less hopeful picture. Over the years 1973-1977, women received 18% of the doctoral degrees awarded in Physiology* and 19% of the academic fellowships and traineeships awarded by NIH in the field.** Now, three to seven years later, these women should have achieved equal professional status with their male counterparts and we would expect 18-19% of the applicants for regular membership in the APS to be women, rather than 13%. The 5% discrepancy between the proportion of women applying for regular membership in 1980, and the proportion of women previously trained, suggests that 25 - 30% of qualified women do not apply for membership in the APS. It is not clear whether this is because professional women physiologists are choosing not to join societies, to join societies other than the APS, or whether trained women are entering academic posts in the field more slowly than their male colleagues. Statistics showing that only 14% of research physiologists with academic appointments are women (1977) suggest the latter. More information about the numbers of women currently entering physiology departments would help to determine whether professional opportunities are the limiting factor.

On the other hand, it is revealing to compare the proportion of women physiologists with the proportion of women in other areas of biological science. From 1920 to 1972, 15% of doctorates awarded in physiology went to women. This was similar to the proportion awarded in biological sciences overall. From 1972-1978 women received 25% of the degrees awarded in biological sciences but only 18% of the degrees in physiology. Physiology does not appear to be attracting women trainees to the same extent as other biological disciplines. Furthermore, in 1979, 15% of all applicants to the APS were women while 18% of the applicants to the Biophysical Society and 27% of the applicants to the Society for Cell Biology were women. It is perhaps significant that the councils and standing committees of these two younger societies are about one-third women. Both have active Women's Caucuses which have encouraged the membership of young women scientists. The APS Council currently has no female members. Standing committees of the APS are comprised of only about 10% women and the Women's Caucus has gone through a relatively lengthy period of inactivity.

The data presented here indicate that women are not joining the American Physiological Society in the proportion that might be expected from the numbers being trained. Furthermore, proportionally fewer are being trained in physiology than in other biological disciplines. These observations raise the quetions: Are the professional opportunities for women in physiology limited? Are young women finding the atmosphere in other biological disciplines and societies more congenial? These are important questions which must be answered if we are to design programs to increase the number of women in the APS.

Margaret C. Neville

*Vetter, B.M., Badco, E.L. and McIntire, J.E. *Professional Women and Minorities*. 2nd Edition. Scientific Manpower Commission, Washington, 1978.

**Don McCannon: Research Training and Development Branch, Division of Heart and Vascular Disease, Heart, Lung and Blood Institute.

Women Scientists' Lounge and Women's Caucus Meeting

APS Annual Meeting 1981

This year at the annual FASEB meeting in Atlanta, Georgia, April 13-17, 1981, the American Physiological Society, for the first time, sponsored a Women Scientists' Lounge. In the Vienna Room of the Atlanta Hilton, coffee, conversation and companionship were available during the entire week of the conference. The lounge was open to all FASEB members and their guests, and was designed to serve as an informal meeting area with a relaxed atmosphere to encourage spontaneous interaction between women scientists. The guest list included over one hundred women (and a few men) who used the facility for informal

research discussions as well as just socializing over a cup of coffee. A bulletin board was provided to acquaint the visitors with activities for women, to poll their opinions on roommate matching and child care facilities, and to arrange group dinners. Suggestions were solicited for activities for the newly reactivated APS Women's Caucus. All the participants felt that the Women Scientists' Lounge was an important addition to the FASEB Meeting, and with the continuing support of the APS as well as the other member societies, it will become a permanent feature of the Federation Meeting.

At noon on April 15, the Women's Caucus of APS met in the Women Scientists' Lounge to review what had already been accomplished and to make plans for the coming year. We decided that it was time to form a more offical group than the Caucus. Therefore, we will petition the Society to form a standing committee or a section for Women in Physiology. In order to increase the number of participants, next year the activities of the Caucus and the availability of the Lounge will be more thoroughly publicized. We plan to have a scientific lecture on the physiology of women followed by a cocktail party for women scientists and their guests. In addition, we decided to petition the Society to initiate a scientific symposium in honor of Caroline tum Suden, Ph.D., a physiologist who left a bequest to the APS that now funds the Bowditch Lecture (*The Physiologist*-December 1980). The symposium is to deal with issues and areas of research of interest to women in which women have made significant contributions. Another project is to develop support for a program to provide travel funds for graduate students and postdoctoral fellows to attend the spring meeting, deliver a paper and utilize the placement service. Finally, members of the Caucus agreed to work with the Education Committee to insure that sexism is absent and women are represented in the new pamphlet being prepared on Careers in Physiology.

The results of this meeting were presented to the APS staff, and the fruitful outcome of those discussions is described below.

Future Plans for Women in Physiology

On June 3rd, 1981, Drs. Janett Trubatch and Marie M. Cassidy met with Dr. Orr Reynolds and Mr. Herbert Brownstein at the APS Headquarters at Beaumont House in Bethesda, Maryland. The purpose was to discuss the plans and suggestions that resulted from the Women's Caucus meeting in Atlanta (see above). We had a far-ranging, lengthy and most of all, a productive discussion concerning past efforts and future directions with respect to women physiologists.

As a first and major step we plan to solicit the Council of the Physiological Society to create a Section on Women and Physiology. In addition to encouraging the professional advancement of women physiologists, the section is for those interested in the physiological sciences with important implications for women. Examples of the latter naturally include reproductive physiology, but should eventually also include the cardiovascular system, metabolism, the immune system and related disciplines where there are obvious gender differences. In preparation for our presentation to the APS Council in October 1981, the Society has agreed to prepare a mailing to see if there is sufficient interest to form the section. A mail response will be solicited from all women members of the Society as well as those members who have, on the membership questionnaire, identified themselves as working in reproductive physiology. It is imperative that at least 100 members of the Society reply affirmatively for the formation of a section on Women and Physiology.

One of the main responsibilities of a section is to develop symposia for the annual meetings of the Society. In accordance with the suggestions resulting from the Caucus meeting in Atlanta, we presently have both organizers and speakers for symposia on mammary gland physiology and lactation mechanisms, physiology of aging and, of course, reproductive physiology.

In addition to the usual business, the Section on Women and Physiology will propose that the bequest left to the Society by Caroline tum Suden be used to inaugurate a program of Professional Opportunity Awards. These are to consist of an award of $500 to graduate students (and for Postdoctoral Fellows) who wish to present a paper at the spring FASEB meeting and to utilize the placement servce. This award, if approved, will be open to both male and female students. The Section will be responsible both for the selection process and for encouraging the submission of applications. After much discussion and the evaluation of several other suggestions, we agreed that this Professional Development Award for Graduate students is the most appropriate way to honor Caroline tum Suden, the donor of the largest single bequest to the Society. It should also benefit the APS both in terms of meeting attendance and society membership.

One additional objective of the section will be to encourage research as well as to increase governmental support for areas in female physiology which have hitherto been neglected. These include cardiovascular stress, metabolism, aging processes and the physiology of immune responses. As scientists committed to complete and objective evaluation of any problem, it is no longer appropriate to accept that studies on male rats or male volunteers can be assumed to apply to the other 51.2% of the human population. Plans are also underway to establish a FASEB wide Adivisory Committee on Women Scientists. This group would undertake responsibility for a Women Scientists' Lounge and the provision of child-care services.

Finally, we wish to emphasize that we would like to have the interest and commitment of our male colleagues and students in these new endeavors. We thank you for your many letters in response to the previous column and will welcome an avalanche of such on this occasion.

Marie M. Cassidy, Ph.D.
Janett Trubatch, Ph.D.

CURRENT ATTEMPTS TO PREVENT THE USE OF ANIMALS IN MEDICAL RESEARCH

Reprinted with permission from JAMA: Vol. 245, No. 12, p. 1223, March 1981.

THE CURRENT strategy of the animal welfare and antivivisection groups in the United States is to assert that the use of living vertebrate animals in research is not essential to progress in medical science. Their lobbying activities have induced some 50 members of Congress to introduce or cosponsor one of four bills in the House of Representative, to promote so-called alternative methods to the use of living animals in medical research and toxicity testing. The most strongly supported bill is HR 4805, called the Research Modernization Act. Another measure that has very strong animal humane society support is HR 6847, "to amend the Animal Welfare Act to insure the humane treatment of laboratory animals." Both bills would impede scientific research. These bills, which did not pass in the 96th Congress, will probably be introduced in the 97th Congress with new numbers.

The scientific and medical communities should be alerted to the fact that a high-pressure lobby attempted to persuade the Congress to pass both HR 4805 and HR 6847. They should be informed about the character of both of these measures so that they can understand the issues that are at stake. Both bills have deceptive features that make them appear not to be antivivisectionist or antiscience in intent.

HR 4805, introduced by Congressman Richmond of New York with numerous cosponsors, is written with many mistaken assumptions. Some of these are (1) that biomedical researchers are not now using as many so-called alternative methods as they effectively can, (2) that toxicity testing for such properties as carcinogenicity can be done adequately with tissue or cell cultures, enzyme studies, or mathematical approaches, and (3) that there be mandated a diversion of a minimum of 30% and up to 50% of the funds appropriated by Congress to agencies such as the National Institutes of Health (NIH), for studies involving the use of living animals, to "alternative methods" for research and teaching. It is assumed that such diversion will not hurt the biomedical research program of the country. HR 4805 sets up a new National Center for Alternative Research, within the NIH, with a director to be appointed by the director of the NIH. "The head of each (Federal) agency which conducts or sponsors research or testing involving the use of live animals shall appoint one employee of each agency to serve as a member of the Center. The Center shall ensure that each agency shall use methods of research and testing which conforms to this Act."

The bill goes on to elaborate the details of operation of the center and instructs the secretary to publish in the *Federal Register* descriptions of "alternative methods of testing which do not involve the use of live animals," and which meet the regulatory needs of the agencies. The use of any federal funds to carry on research or testing involving living animals, if an alternative method has been published in the *Federal Register,* is prohibited. Another long-time aim of the antivivisectionists is inserted into HR 4805, namely, the prohibition of use of federal funds for any project that duplicates "work performed by an agency." Thus, confirmatory or contradictory studies in connection with scientifically inconclusive results are made at least questionably proper and certainly subject to challenge by the animal humane societies who were responsible for writing much or all of HR 4805. It is encouraging to scientists to know that Health and Human Services Secretary Patricia Harris wrote to the chairman of the house committee to which HR 4805 was referred, expressing the disapproval of the bill by her department. Nevertheless, the scientific community should not underestimate the power of the animal welfare lobby to influence the Congress.

HR 6847 also is extremely deceptive. It accomplishes its main objective without actually stating it, by inserting a new section, reading "Sec. 6. Section 13(a) of the Animal Welfare Act (7 U.S.C. 2143[a]) is amended by striking out the last sentence thereof." That sentence read: "Nothing in this chapter shall be construed as authorizing the Secretary to promulgate rules, regulations, or orders with regard to design, outlines, guidelines, or performance of actual research or experimentation by a research facility as determined by such research facility." It happens that this is the sole protection in the Animal Welfare Act that prevents the federal bureaucracy from adopting rules requiring licensure of every person involved in the use of animals in scientific teaching, research, or testing, and requiring approval of every protocol involving the use of any animal in teaching, research, or testing. As a matter of fact, HR 6847 would put many detailed regulations into law.

These bills, HR 4805 and 6847, were not the only ones before the 96th Congress, but they are the ones with the greatest support, both in the Congress itself and by animal humane and antivivisection societies.

New constituencies that are rallying around the animal humane movement give this matter new urgency. One new thrust is coming from a philosophically oriented "animal rights" movement. A book bearing the title *Animal Liberation,* written by Peter Singer, a young Australian philosopher, has popularized a new term "speciesism," saying that it is as unjustifiable as racism and sexism. He argues that members of the genus *Homo* are arrogant when they ignore the obvious ability of many animals to perceive pain, and the ability of some higher mammals, including the chimpanzee, to perform tasks of a relatively high order. He castigates bioscientists who persist in speaking of "lower animals" and justify killing them for human good. His logic, as he admits in a backhanded way, would force one to abstain from eating any meat, fish, fowl, seafood, or, to be totally consistent, dairy products or eggs. However, the animal rights partisans "soft pedal" the issue of killing animals for meat, because they know that most Americans are not about to accept a vegetarian diet. Antivivisectionists frequently quote Albert Schweitzer, who spent a lifetime developing the religiophilisophical thesis of

From the Department of Physiology, the University of Minnesota Medical School, Minneapolis.

Reprint requests to Department of Physiology, University of Minnesota Medical School, 6-255 Millard Hall, 435 Delaware St SE, Minneapolis, MN 55455 (Dr. Visscher)

"Reverence for All Life," plant as well as animal, but fail to mention that Schweitzer stated clearly that all subhuman life in nature behaved very differently and that man was justified in taking any subhuman life, plant or animal, if he did it thoughtfully and regretfully for human good. Despite what some animal welfarists imply, Schweitzer said specifically that he approved of lower animal sacrifice in scientific research if it served an important human purpose.

Progress in the biomedical sciences would be severely impeded by the passage of any legislation like HR 4805 or 6847, because it would greatly increase the cost of research and impose unnecessary impediments on innovative work. Adequate mechanisms already exist to protect experimental animals, in NIH guidelines and institutional monitoring committees. The assertion that biomedical scientists are not using cell and tissue culture methods where they are useful is totally false. The motivation for these proposed laws is to satisfy the long-term objectives of ill-informed animal welfarists. One can sympathize with pet lovers in their concern over any pain or distress to which animals like their own pets might be exposed. But to ignore the very real protections that already exist is not only illogical, but is intellectually dishonest, especially when the real aim is concealed by the trick of using a phrase, such as is used in HR 6847, repealing an important portion of the current Animal Welfare Act, described only by numbers in the US Code.

Many members of Congress who have put their names behind these and other bills of similar nature are really not aware of the fact that they are being misled. Zealots within the animal rights movement are very persuasive. Therefore, it is important that the logical impropriety of equating speciesism with racism and sexism be vigorously attacked and that inferences drawn from such illogical premises also be opposed with logic developed from real facts.

Maurice B. Visscher, Ph.D., M.D.

CAREERS FOR PHYSIOLOGISTS IN GOVERNMENT

The Committee on Careers in Physiology in its report "Graduate Training in Physiology and its Relationship to Career Opportunities" (1) identified by descriptive locus and function seven general areas in which individuals training in the discipline of physiology usually develop a career. The Committee also noted that employment by the Federal Government has presented a career opportunity for 278 members (6%) of the American Physiological Society.

Most (213, 83%) of these Government positions fall under category 3 of the earlier report: "Full time research responsibilities within a research institution setting which may or may not be affiliated with an academic organization". Generally, they are found in research laboratories of the National Institutes of Health (NIH), Veterans Administration, Armed Forces Hospitals or other Governmental Agencies. Examples would be the U.S. Army Medical Research Laboratories at Natick, Massachusetts and Letterman Research Institute in San Francisco, California. The major responsibility for such positions is basic as well as applied research with very little teaching, patient care, or institutional committee activity as a requirement. Historically, such full-time positions have proved highly rewarding for physiologists. The high altitude research efforts at Wright-Patterson Air Force base during the second world war, and the multiple applications of nearly every aspect of human physiology to the space efforts of NASA, The Manned Spacecraft Center, or Oak Ridge National Laboratories serve as dramatic illustrations. These posts are usually held by individuals with the Ph.D. and/or M.D. who devote the vast majority of their time to investigative pursuits. While teaching responsibilities are not a position requirement, the availability of an adjunct appointment in a nearby academic institution often provides an opportunity for involvement in teaching. Also, there is the possibility of engaging in some aspect of graduate (Ph.D.) research training. Many of these posts include support for potential postdoctoral staff fellowship positions and most can accept sponsored postdoctoral fellows. Many of these laboratories have organized their own journal clubs, seminars and structured research training programs. Individuals holding such positions are also active on national society committees, editorial boards, such as the American Physiological Society and American Journal of Physiology, respectively, etc.

The Committee in its earlier report identified another career opportunity in Government that has expanded with the increase in Federal support of biomedical research. For example, NIH support was 140 grants totalling less than half a million dollars in 1938 compared with 15,531 grants and nearly 1.6 billion dollars in 1978 (2). The need for qualified full-time health scientist administrators has reflected this growth in Federal support. In fiscal year 1977, an estimated 6,093 physiologists contributed their efforts to research grants and contracts awarded by NIH. Of these, 1,677 (1,074 predoctorals, 603 postdoctorals) were reported as still being in training; 464 of the postdoctorals still in training were Ph.D.'s and 139 had clinical degrees (practically all M.D.'s). Thus, physiologists, as health scientist administrators, with a broad base of research training and teaching and research experience find the opportunity to serve as important communication links between different disciplines, program areas, government and the research community. Such individuals participate in an effective and important manner in the stability and quality of many aspects of basic and clinical biomedical research as well as in the long-term continuity of training programs at the graduate and postgraduate levels. In 1979, 53 members of The American Physiological Society were serving as health scientist administrators. These positions are with organizations such as the National Science Foundation, the National Institutes of Health or the Office of Naval Research. Ideally, such individuals have had prior teaching and research experience in an academic setting before choosing health science administration so that they are sensitive and oriented to academic operations and problems. They are most often scientifically trained with well-known credentials in biomedical science and training.

Overall, health science administration can be divided into two broad functional categories, namely, review and program administration. Administrators engaged in the review process must be adequately oriented to match reviewer expertise to the scientific contents of proposals and to accurately summarize reviewers' analyses and concerns. Some other aspects of review responsibilitiy are the scheduling of meetings (including site visits) and assemblage and distribution of adequate information to permit definitive evaluation of the proposals. At present, there are approximately 100 regular initial review groups at NIH. Another 20-30 are usually required for "special" review (contracts, special announcements and programs, unique proposals) each year. Each group requires an executive secretary capable of identifying and securing appropriate review expertise and conveying the results to others for funding decisions. Personal satisfaction is derived from reviewer interchange and keeping informed about activities and challenges in research areas. Thus, such positions have numerous opportunities for continued personal career growth and development.

The responsibilities of program administration involve funding decisions; matching available funds against applications recommended for approval by the review groups; identification of problems for special consideration by the secondary review group; counseling grantees regarding rebudgeting requests or unexpected complications arising during the work. Program administrators may also organize workshops or symposia to stimulate thinking in a given program area. They, in addition, frequently counsel applicants regarding review evaluation.

A third function, that of program evaluation and planning, is usually a responsibility of the program administrator but may also involve review personnel. Within regular program activity, this process may be an almost continuous tracking of projects in given areas; their publications and accomplishments. More sharply focussed evaluation may require the use of expert consultants to characterize the state of knowledge in given areas and suggest future activities. The process requires the identification, selection and appointment of consultants; arranging and coordinating meetings; compiling the findings and recommendations for communication, dissemination, and possible action. One example of program planning would be deciding how many physiologists should receive research training support from NIH. It is estimated that 4,416 fully trained physiology investigators contributed to the NIH research effort in 1977. An age tabulation of these investigators suggests that they must be replaced at the rate of 7 percent per year (309) to maintain the 1977 level of research activity. The 309 times 2.5 as the average number of years for postdoctoral training gives 773 as the total number in postdoctoral training status to maintain the 1977 level of research activity. This sort of analysis suggests that the 1,034 physiologists currently in postdoctoral training might reflect a degree of market saturation which may or may not be applicable or relevant to a given program area depending on the status of the area, e.g. atherosclerosis, hypertension. Involvement in program evaluation generally parallels increases in supervisory program responsibility. In rare instances program administrators have managed to retain a research appointment. Such arrangements, however, require great agility to overcome conflicts of interest and the usual delineation of job descriptions.

Appointment to any of the described positions is achieved by filing an application (Personal Qualification Statement, Form 171) and selection for employment after competitive review. Position openings and hiring authorizations change frequently making communications with personnel offices or individuals in an agency highly advantageous. Many agencies also have training experience programs, such as the NIH Grants Associate Program (3), which selects one or two applicants each month. Grants Associates enter a developmental program of assignments and training aggregating one year of service in the major aspects, functions, and activities of extramural programs such as research grants, training grants, fellowships and contracts. At the end of that year they generally are able to choose from several preferred positions.

There is also the possibility of gaining orientation or experience in Government under the Intergovernmental Personnel Act (4). This act permits personnel of Government agencies and state and local governments and institutions of higher learning to be detailed to Federal agencies. The Federal agency reimburses the local instituion for the employee's salary and the individual remains in the employ of his agency or university.

In summary, multiple opportunities exist within government-sponsored settings such as the NIH or NSF for active, productive, and challenging careers. Such positions can be scientific or administrative in nature or a combination of both aspects.

References

1. Graduate Training in Physiology and its Relationship to Career Opportunities, A Report by the Committee on Careers in Physiology, *The Physiologist,* 23:6, p. 9-12, Dec. 1980. T.M. Saba, W.C. Randall, D.M. Bohr, D.M. MacCanon, O.E. Reynolds, J.E. Blankenship, R.T. Ridley, and D.J. Ramsey.
2. 1979 NIH almanac, p.133.
3. Professional Careers for Health Scientist Administrators and Grants Associates, Board of U.S. Civil Service Examiners, NIH, Announcement No. 397B, May 10, 1966.
4. Title IV of the Intergovernmental Personnel Act (IPA) of 1970.

Donald M. MacCanon, Ph.D.
Walter C. Randall, Ph.D., Chairman
David Bohr, M.D.
Orr E. Reynolds, Ph.D.
James E. Blankenship, Ph.D.
Peter T. Ridley, Ph.D.
David J. Ramsay, B.M., D.Phil.
Thomas M. Saba, Ph.D.

Broda O. Barnes to Louise Marshall:

I have retired to confine my time to writing and research. I am now at Rush Medical College doing some writing but hope to get some research started on diabetes. Preliminary work has indicated that the complications of diabetes are due to an accompanying thyroid deficiency. I must run this down. My only advice to young colleagues is "It is better to wear out than rust out."

700 S. Paulina
BOX 1024
Chicago, IL 60612

L. Joe Berry to Sid Robinson:

The University of Texas at Austin permits faculty who have reached the age of 70 to continue teaching on a part-time basis if there is need within the department. This I have been doing during the current academic year and have been reappointed for next year. The appointments are on an annual basis. Fortunately, my NIH research grant was renewed for three years beginning September 1st, last, so this will allow me to keep an active research program going. I have even had the audacity to submit a new grant application for work in an area that is new for me but is, nevertheless, of great current interest.

The only words of wisdom I have for younger colleagues is to remain active as long as there is reward. I can hardly imagine myself totally inactive and as long as I can teach and contnue with reserch, I will do so. They are the things from which I derive personal satisfaction.

Eugene Robillard to Sid Robinson:

The American Physiological Society's letter to its Senior Members as well as its invitation to participate in the financing on the Society give us a feeling of constant affiliation.

I put an end to the research works around 1965 shortly after undertaking administrative responsibilities in the capacity of Vice-Dean, and then Dean of the Faculty of medicine of the University of Montreal and I held this position until 1970. From then on, I organized the Division of Medical Education of the Corporation professionnelle des médecins du Québec of which I was the Director until 1975. In 1980, I transferred from the Division of Medical Education to that of Administrative Services to work on special projects (projects requesting elaborate studies). My experience in the academic fields and a certain gift for writing French especially serve me well. I must say however that my name seldom appears on papers. What really counts is not the signature but what the population can benefit from.

Some of my time is dedicated to the reading of scientific literature and I must keep myself from feelings of nostalgia at the thought of academic life.

Some of my leisure hours are also spent with my eleven grandchildren all very close to their grand-parents but it still leaves me some sparetime for reading, gardening, wood-carving and ironworks.

Finally part of the benefits I get at the Corporation are provisions for continuing medical education and I am firmly convinced that whatever your age, you ought to benefit from that.

Two years ago, my wife and I toured Italia. On that occasion, I learned Italian which I since forgot.

Clara Torda to Sid:

I have been retired (for reason of age) on July 1, 1980. I have published end of December a book entitled: TORDA: Memory and Dreams, A Modern Physics Approach. pp. 453 (dealing with the current status of the Mind Body problem.

I also submitted for publication 5 scientific papers and they were accepted (galley-proof stage).

I am now a visitng professor at Stanford University where I am learning everything I can about Artificial Intelligence and other computer techniques in order to be able to continue my research on the correlations between submolecular processes and the function of mind (or at least the CNS).

I would be interested to participate in your visiting professor program you did offer 1-2 years ago to retired physiologists.

Benjamin DeBoer to Sid:

Since retiring four years ago, I have taught one year at University of Benin City, Benin, Nigeria; and one semester each at two colleges in this country and have been a "consultant" for three months in 1980 at the School of Medicine in Tulsa. I have decided that beginning in 1981 I would return to the University of North Dakota to my office and do some summarizing and other writing.

312 Alpha Ave. Grand Forks, ND 58201

Leah M. Staling to Sid:

After retirement I was reappointed as visiting research assistant professor in physiology, where I volunteered two days a week in the Myo-Oral Facial Pain Clinic. Now that our grant is ended, another proposal is "before the jury" at NIDR. My own intentions are to stay with it as long as physically and economically feasible.

My husband and I have a tree farm, a rehabilitated old house in Western Maryland on 27 acres, and practice land, pond, tree and garden husbandry with avidity and energy. We heat entirely with wood all from our own property and eat largely from our own gardens. Meat, tea, coffee, grains (both flour and distilled spirits) must be bought but we are mostly self-sufficient. Our son and two granddaughters live in Oregon. I look forward to news of others from *The Physiologist*.

Univ. of Maryland Dental Sch.,
Baltimore, MD 21201

George F. Koepf to Sid:

In answer to your request regarding my whereabouts and interests, for the past 4 years I have not participated in "hands on" scientific activities. Thus I guess I must be considered a "retired" physiologist. My present contributions to science (if they deserve to be so designated) are made via the administrative route as president of the Medical Foundation of Buffalo, Inc., a non-profit independent research institute with a staff of 60 (25 Ph.D.'s). The main thrust of the research, which is all basic, is in the field of endocrinology. The foundations staff is concerned with the molecular structure of hormones and with specific problems in endocrine biochemistry. I take pride in working with the staff even though I am not in the mainstream.

My wife, Kathryn, and I live in the center of Buffalo, N.Y., near the laboratories and have no commuting problems. Aside from the convenience offered by its proximity to the foundation, we derive much happiness from Buffalo's cultural activities as well as the great climate of Western N.Y.

Med. Fndn. of Buffalo,
73 High St.,
Buffalo, NY 14203

Arthur W. Martin to Sid:

Thank you for your inquiry about the welfare of old physiologists. I have responded twice before, and hope not to bore colleagues with too many responses; but, finally, I am to retire from active teaching in the Department of Zoology in June, 1981. I must give up my regular laboratory space, but have been invited by collaborators to share in their space and facilities, and expect to go right on with investigation and writing.

In fact research has never gone better due to good fortune in the choice of collaborators and not so much to my own acumen. Modern methods have made it so illuminating to work with invertebrate metallo-proteins other than those old standbys hemoglobin and hemocyanin. It is great to be early in a field and see the innumerable pathways down which the work can move. But, at the same time, an approach to the regulation of permeability of slug skin opened up. These lowly animals, apparently so simple, have developed some marvelous mechanisms which I would not have dreamed of as recently as two years ago. We can turn a slug on in the twinkling of an eye, and he will turn himself off, but we still don't know how. By the time you next inquire there should be a paper out about turning him on, and perhaps by then I shall know how to turn him off, or at least understand how he does it. (Now some of your sophisticated friends will take umbrage at my calling the slug a he, when they know perfectly well that they are hermaphrodites; but at the stage at which we are working only the male gonad is active so I have taken this little liberty.)

Writing goes right on: a chapter on myogenic hearts has appeared and I am working on a chapter for the 2nd Edition of Molluscan Physiology, a work which will be more than twice the length of the 1st. The literature is a growing problem and I only wish there were words of wisdom for the coming generation. I will publish no more on muscle physiology because the literature is too big for me now. I rely on my collaborators to keep up with the transferrin-ferritin-metalloprotein literature. I never caught up with the literature in reproductive physiology, counting on my friend Thaddeus Mann to know everything that was going on. Perhaps the lesson is that now we must team up not only to handle the variety of specialized techniques but also to cover the literature adequately.

Univ. of Washington, Seattle, WA 98105

Frederic A. Gibbs to Hal Davis:

Erna and I are as busy as ever with EEGs, reading them for several large hospitals and for 25 small ones that transmit to us by telephone. Our Data Bank at our farm in Valparaiso now contains over 200,000 electroencephalograms, all classified for age, diagnosis, clinical symptoms and EEG findings, indexed and cross indexed and all on punch cards that can be sorted with a system that gives 10,000 bits of information in 3 seconds. We know what we are talking abut but there are still a lot of people who prefer not to listen.

We just got back from a trip to Germany where we visited Erna's family and I gave a lecture at the Neuropsychiatric Institute in Munich. The Director of the EEG Department, a very fine man named Johann Kugler, asked me to ask you why the K Complex was given that name. He is writing an article on Early Sleep Studies. Our children and grand-children are flourishing. Erich is still here in Wilmette running his freelance biochemical lab with the help of his hard working wife. They do mainly blood levels of anti-epilepsy drugs. Ted and his wife are still in Salt Lake City doing cancer research mainly on the therapeutic effect of microwave hyperthermia.

720 N. Michigan Ave., Chicago, IL 60611

Robert S. Dow to Hal:

I am continuing practicing neurology, as I have for over forty years. I no longer have administrative or teaching responsibilities. Willeta and I are enjoying our second home in Central Oregon, and do some travelling. Our next trip will include Japan and China, after our fifth annual float fishing trip down the beautiful Rogue River. I expect to continue these kind of activities for a long time.

The Neurological Clinic,
2222 N.W. Lovejoy St.,
Portland, OR 97210

Mary A.B. Brazier to Hal:

Dr. Brazier, recalled as Professor of Anatomy and Physiology at UCLA, continues her interest in developing computer aids to the analysis of the electrical activity of the brain especially in epilepsy. Her long standing involvement with international science is reflected in her editorship of an international journal (Electroencephalography and Clinical Neurophysiology) and in her position as Secretary-General of the International Brain Research Organization which now numbers 1700 members drawn from 52 countries.

Herbert H. Jasper to Hal:

Thank you for your good and friendly letter of March 13th. It brings fond souvenirs of our exciting and friendly association when you were at Harvard.

I'm glad to hear you are still working part time. I am also engaged as research consultant in neurophysiology at the University of Montreal (Centre de recherche en sciences neurologiques) and also at the Montreal Neurological Institute of McGill University. I continue to enjoy many graduate seminars and meetings in the burgeoning field of neuroscience. Our field is growing so fast that I can no longer follow all the new developments - but I find them still more exciting than detective stories. I enjoy seeing old friends at meetings and symposia. Frank Schmitt's group are doing a great job, it seems to me, with their Neurosciences Research Program. I took part in their colloquium on the Organization of the Cerebral Cortex which has just appeared (MIT Press). Last July, we had a most interesting and enjoyable symposium in Pisa, Italy, in honor of Giuseppe Moruzzi's 70th birthday. The papers will be published as an IBRO Monograph in his honor (Raven Press). I am writing a few other things, but I have not made much progress with my autobiography. The Society for Neuroscience and its new Journal are one of my princpal interests these days, but I may get around to some serious writing on a 50 year perspective of neuroscience before long. I may ask your help in recalling accurately some of our experiences in the early days.

Fred A. Mettler to Hal:

As Professor of Anatomy at the Uniformed Services University of the Health Sciences in Bethesda, my principal interest is (for what I suppose, are obvious reasons) blood substitutes.

USU is a part of the Department of Defense and its purpose is to produce physicians for the three Armed Services and the U.S. Public Health Science. It is located a stone's throw from the National Library of Medicine, the National Institutes of Health, and the Naval Medical Complex.

During its development, before full staffing had been achieved, several of the 250+ members of the American Physiological Society, (Professor Francis J. Haddy, Chairman of Physiology, told me) offered to help out in his department and part-time appointments are still being made in conjunction with the surrounding institutions. Professor Haddy follows a traditional medical school curriculum and has an active graduate program. Says he, "It is at the graduate level where I visualize the greatest interaction with the surrounding institutions. Our research programs are well established and include all subspecialties."

State and Federal Services formerly had stated retirement age limits and I did retire. However I am, from time to time reactivated for certain special purposes and projects which, at present, involve chairmanship of the Medical Society of New Jersey's committee to review the health care services of the penal systems of the State of New Jersey, a function very similar to one in which I was engaged many years ago for the New York Academy of Medicine. It is no "pink tea" but someone has to do these things.

For many years I have also been involved in forensic medicine, especially as an expert witness, a role which has expanded enormously in recent years and currently, in my case, encompasses product liability, as well as the conventional civil and criminal areas, and, issues of environmental protection and mandatory regulations as they involve toxicology and/or impinge upon the insurance industry. Such changes have added an entirely new dimension to the significance of physiology. Recognizing and meeting complex needs, such as those of business and industry, for combatting occupational health hazards is an area begging for greater attention on the part of academic physiologists.

In my spare time I occupy myself with a tree farm and raise border terriers (an outgrowth of my Laboratory of Animal Hearing days in Illinois) which have done very well in Canadian as well as U.S. shows, including the Westminster -want one? That is a terrier, not a tree farm or dog show.

Robert S. Morison to Hal:

Yes it has been a long time since we have seen each other but I don't really feel out of touch, because I see your name in print certainly as often as you see mine. I am not quite fully retired because I am still carried as a Visiting Professor on the roster of MIT. Indeed I took part in a jointly taught course in the Science, Technology and Society Program last fall and attend seminars and even committee meetings in a desultory way at other times. Right now I am debating whether or not to continue through next fall when, it says here, I will be seventy five. Actually it is becoming easier to believe it, especially when it comes to late nights, a sixty mile commute, or red eye plane travel.

In point of fact, I now fly very little since I have reached the retire ment age or have worn out my welcome on all but one committee. I do continue writing, and bought this computer cum word processor last year, against the day that I would have no access to a secretary. What I write cannot be classed as scientific and could not have been since 1944. I continue to be interested, however, in the interplay between science and society. Perhaps the simplest way of getting my views on such matters is to look at the Spring '78 issue of DAEDALUS, where I have both an article and an introduction. It was sometime ago; but I haven't had many new thoughts since then, although like other old men I continue to repeat myself in other contexts.

Regarding archives, I left a lot of junk at Cornell, and there are about twenty file drawers here. Most of them also contain junk like agenda and minutes of long forgotten panel meetings. I have just begun to weed them out and plan to pick up speed as I become more and more housebound and complete other more pressing tasks like cataloguing my record collection and perhaps even my books. As my limbs and eyes deteriorate it becomes harder and harder to locate the books I want.

You speak of significant correspondence. Our ancestors certainly produced a lot of that, but most of us do not. The telephone and the airplanes have made communication too easy, too continuous - and too ephemeral. Sometimes when I hope I have written a "significant" letter, it turns out rather differently when the recipient doesn't bother to answer. This happens more frequently now that I have a little extra time and my young correspondents become more and more pressed. (Maybe also I have less to say and more words to say it in as in the stream of consciousness you are now witnessing).

This brings us to the possibility mentioned in your letter about words of wisdom for younger colleagues. I enjoy being with younger colleagues. Indeed that is why I was glad to accept the invitation to MIT after retiring from Cornell, and I am still glad to be there. Some of them seem glad to have me around. If I ask myself why, I am not sure of the answer. Perhaps on some rare occasions it has something to do with wisdom. Mostly it seems to reflect amazement that before them stands a person who actually knew Walter Cannon or LJ Henderson or even President Eliot.

As for an autobiography, I must confess to having thought about it but not in the way you have in mind. There is just the need to get my thoughts a little clearer on some obviously insoluble matters. One thing that has bothered me for some time is whether the world has gotten better or worse than it was when I was born. For me personally, it seems to have gotten worse, except for the hard fact that I would have died long ago from osteomyelitis of the spine, had it not been for modern surgery and antibiotics. But this is really another story, and I have already rambled on much too long, largely to gain practice with the word processor.

Peterborough, NH 03458

Herbert Pollack to Hal:

Firstly Florida or at least West Palm Beach is a rather stultifying atmosphere. The weather is good, but there are few people with common interests, however there is a symphony orchestra and a few museums where exhibits are held. I commute to Wasington, D.C. a few times a month for reasons which I will tell you. In the summer I spend several months in Washington.

I continue to work and serve as Consultant to the Dept. of State, the Dept. of Commerce, and as a member of ERMAC (Electromagnetic Radiation Management Advisory Council). I also serve as expert to the Dept. of Labor (OSHA). My field is Health Effects of Microwave Radiation, a departure from nutrition. I shifted over slowly without really being aware of the change. I was asked to help design the food requirements for the astronauts in 1962. This lead to the total life support systems which brought me into close contact with the engineers and physicists. I was the only Bio-medical man in the entire Institute

for Defense Analyses (IDA), this after I had retired from the practice of medicine and started full time research. The microwave irradiation of the Moscow embassy was brought to the attention of IDA at that time. As the medical man on the staff I was given the responsibility of determining the health hazards of this radiation. I have been in this field ever since. Four trips to Moscow to review the situation on the spot. Last September the Dept. of State presented me with a "tribute of appreciation". My appointment was extended in October for another year, both in State and Commerce. I do consulting for the communication industry who are using microwaves extensively. I attend hearings of zoning boards and planning commissions to answer questions about health hazards of microwave towers.

I served on the review committee of the NAS-NRC For the Solar Satellite Power Station.

When I moved to Florida I gave up fox hunting and I miss the excitement of the chase. Now I ride a bicycle and play golf when I have the time.

On a rainy day when I have caught up with my work I play chess with a computer. I find it fascinating. Thus you can see I keep busy and interested in science, both theoretical and applied.

I look forward to my 76th birthday in June. I see no reason to slow down and hope to continue active for many more years.

Excuse the typing. My secretary is in Washington, and I am new at this technique. Just took a course at the local business school to fill in some time.

1200 S. Flagler Drive
West Palm Beach, FL 33401

Walter H. Seegers to Horace Davenport:

I'm responding to your questions sent to retired or retiring members. I finished 34 years as Department Chairman June 30, 1980. I still had a Fogarty International Fellow programed through September 1, 1981. With him much experimental work is being completed. This, of course, is the best that has come forth in my lifetime.

Meanwhile, I have a full-time secretary to help me write a review of my 43 years of work in the field of blood coagulation. I have roughed out twelve short chapters. I am amazed at the energy it is taking, but enormously satisfied to see how all correlates into a unified story. When I'm finished with that, if ever, I plan to write a revision of my book published 23 years ago under the title "Living Consciously: The Science of Self". Unfortunately, my coauthor is no longer living.

Our archivist has been to my laboratory to point at desirable material. For an autobiographical statement I can xerox an entry from Who's Who in the World. I have no words of wisdom to pass on to younger colleagues, since they probably have either no time to listen and/or have greater wisdom than I. We get too soon old and too late smart. Best regards

Wayne State University,
Detroit, MI 48201

Piero P. Foa to Horace:

Your inquiry about my activities and whereabouts reaches me as I am getting ready to retire again, this time from the faculty of Wayne State University (I retired from the Chair of the Department of Research, Sinai Hospital of Detroit, about 5 years ago). Even this second retirement will not be a cold-turkey withdrawal from academe, for I have been offered the opportunity to serve as part-time "contract professor" at Wayne and at the University of Parma. Thus, perhaps as a dividend of my hobby of fostering scientific relationships between my native and my adoptive Country, I may end my formal teaching career in Italy, where it began 45 years ago. Over the years, this hobby of mine led me to welcome many young Italian scientists in my laboratory and more recently, to transfer valuable historic material, inherited from my father Carlo, to appropriate institutions: a film on the Functions of the Brain produced by Pavlov, to the Archives of the History of American Psychology at the University of Akron; group photographs and an almost complete series of the Proceedings of the International Congresses of Physiology (since 1923) to the library of our Department of Physiology; photographs, memorabilia, collected papers and books describing the work of high altitute physiology done, under the direction of Angelo Mosso, in the laboratory of the Col d'Olen on Mount Rosa, to the Historical Library of the Department of Physiology at the University of California, San Francisco and early material on the physiology of the pineal to Prof. Gian Paolo Trentini of the University of Modena, Italy, for his work as historian of the European Pineal Study Group (my father published his first observations on pinealectomy in chicks in 1912).

My last year of official academic life has been busy: I have coauthored two papers on the role of glucagon deficiency in reactive hypoglycemia and on the secretion of glucagon by isolated pancreatic islets; I have written four book chapters; I have continued to serve as co-editor of a series on Special Topics in *Endocrinology and Metabolism* (Allan Liss, New York); I have coordinated the sophomore medical curriculum (our school has adopted a highly successful, in my opinion, "system" approach) and I have served as interim chairman of the Department of Physiology and as president of the Michigan Affiliate of the American Diabetes Association during particularly difficult times (as the auto industry goes, so go the State of Michigan and its institutions).

As I examine my modest contributions to physiology, I like to think that they include the first solid experimental evidence that "a rise in blood sugar concentration stimulates the secretion of insulin" (A.J.P., 1948), an observation for which I received credit in at least one early edition of Best and Taylor and that hypoglycemia stimulates the secretion of glucagon (A.J.P., 1952). I have also contributed to the establishment of glucagon as a "second pancreatic hormone", a statement strongly contested at the 1956 Laurentian Hormone Conference, but amply vindicated, since then.

I will miss the bench and the "good old days" when $5000 was a big grant, when the overhead was 8 percent and when more often than not it was plowed back into research. I will miss the Chair because I had the good fortune of being surrounded by a faculty and staff of high academic and ethical standards, but, at least for a while, I will have no opportunity to miss other activities for, as long as my electrocardiogram will continue to be normal (mine was the first ECG recorded in utero by a proud father) and as long as my legs and labyrinth will hold and my brain will not turn to sweetbreads, I plan to continue to teach, to write, to travel and to ski the slopes of the Alps and of the Rockies. Next Sunday I plan to give my next lesson in a series on the wonders of nature to two or our four grandsons (ages 3 and 5) and to show them how big frogs release eggs and sperm and how eggs develop into little frogs: it's my way of starting a new teach ing career.

Do I have words of wisdom? No: Not for lack of words, but for lack of wisdom.

Wayne State University, Detroit, MI 48201.

THE PHYSIOLOGY TEACHER

SODIUM TRANSPORT IN FROG SKIN: A STUDENT LABORATORY EXPERIMENT IN EPITHELIAL PHYSIOLOGY

Thomas J. Sernka
Department of Physiology
Wright State University
Dayton, Ohio 45435

Frog skin is a representative epithelial tissue that Ussing and Zerahn used in their now classic experiments to demonstrate and to measure active ion transport (2). The tissue is placed in a chamber so that both sides are bathed by Ringer solution of the same composition (no concentration or osmotic gradient). The voltage across the tissue is short-circuited as well, eliminating the electrical gradient. In this condition, there are no external forces leading to the preferential movement of ions in one direction or another across the tissue. Directional movement, or unidirectional flux, of ions is measured by tracing the movement of a radioactive isotope of sodium ion (^{22}Na) from one side of the tissue to the other. In another identical chamber containing paired tissue, the ^{22}Na movement is traced in the opposite direction. Any difference in the magnitude of these unidirectional fluxes, the net flux, is ascribed to active sodium ion transport. Certain agents, such as vasopressin, increase and others, such as ouabain, decrease this transport.

OBJECTIVES

1. To measure an electrical potential difference (PD) and short-circuit current (I_{SC}) and calculate the electrical resistance (R) across the frog skin.
2. To measure unidirectional and net sodium fluxes across this epithelial tissue.
3. To relate active transport of sodium to I_{SC} and PD.
4. To alter the transport and electrical characteristics by adding a stimulant (vasopressin) and an inhibitor (ouabain).
5. To introduce medical and graduate students to the concepts involved in handling radioactivity.

MATERIALS

1. Bullfrogs (*Rana catesbeiana*)
2. Flux chambers (Fig. 1)
3. Multimeters (Data Precision 1350)
4. Calomel electrodes (Radiometer K401)
5. Batteries (6 V)
6. Variable-resistance boxes
7. Carbon electrodes (Fullam 1244)
8. Electrical wires
9. Alligator clips
10. Oxygen tank
11. Polyethylene tubing
12. Gas washing bottle
13. Syringes (Varipets)
14. Vials (20 ml, capped)
15. ^{22}Na radioisotope
16. Micropipetting system
17. Gamma counter
18. Vasopressin (Sigma)
19. Ouabain (Sigma)
20. Frog Ringer solution:

NaCl	84.6 mM
KCl	3.2 mM
$CaCl_2$	1.8 mM
KH_2PO_4	0.8 mM
$MgSO_4$	0.8 mM
Dextrose	15.6 mM
Mannitol	10.0 mM
TES buffer (Sigma)	10.0 mM

pH = 7.0

PROCEDURE

1. Each table setup is provided with a bullfrog that has been preanesthetized in a 10% alcohol solution (1), rinsed, and double-pithed to destroy the brain and spinal cord. Place the insensate frog on its back and cut through the ventral skin

along the midline the length of the abdomen. Cut out circles of skin about 2 cm in diameter on each side of midline incision. Note the appearance of the outside (mucosal) and the inside (serosal) of the skin.

2. Each of two groups, one studying mucosal-to-serosal flux and the other, serosal-to-mucosal, is provided with a flux chamber. Each chamber has been disassembled into its component half-chambers, labeled M (mucosal) and S (serosal). Mount the frog skin as a flat sheet by sewing four threads to the periphery of the skin and securing the ends of thread with transparent tape to the sides of the chamber. Make sure that the outside faces the M half-chamber and the inside the S half-chamber. **It is important in mounting not to get the sides confused.**

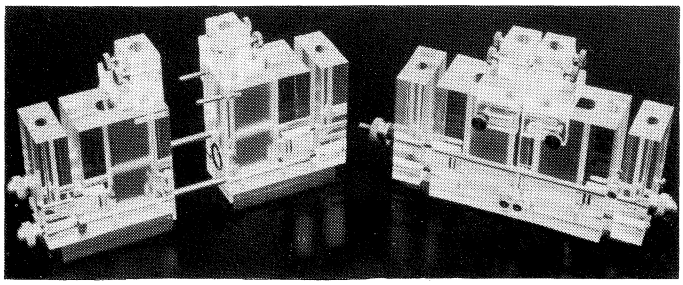


Fig. 1. Flux chambers. *Left:* partially disassembled chamber showing aperture for placement of frog skin. *Right:* closed chamber in operating position.

3. Reassemble the chamber by placing the two rubber O rings along the periphery of the 1-cm² aperture (to reduce edge damage) and by connecting the half-chambers by firmly tightening the end screws.
4. Connect the oxygen tubing to the needle jets protruding from the chamber.
5. Add 10 ml frog Ringer solution to each side of the chamber. Check for leaks from one half-chamber to the other and from the chamber to the platform. **Do not proceed if leaks are in evidence.** Call the instructor. Gas bubbles should be visible in both half-chambers. Open stopcocks just before adding solution.
6. Each chamber will be connected to two identical multimeters for measurement of voltage (PD) and short-circuit current (I_{SC}). For the voltage developed across the frog skin, place the pair of saturated KCl-filled calomel electrodes into the open end of the vials at the chamber top and add some saline to the vials. The vials are connected to the chamber solutions via agar-saline-filled bridges (Pasteur pipettes). Plug the calomel electrodes into the red-and-black sockets in the upper right corner of the multimeter. Press the V button for a digital readout from 0.0 to 100.0 mV. Frog skin should develop a PD (musocal side negative) of about −15 to −60 mV in the first 30 min.
7. Assign one member of the group to follow the PD of the frog skin throughout the experiment. Record values every 15 min.
8. After the PD has reached a near steady state (or 30 min, whichever is less), proceed to short-circuit the tissue. Connect the alligator clips to the metal snaps of the carbon electrodes at the terminals of the chamber. The carbon rods are imbedded in agar-saline that is in electrical contact with the bathing solutions. The shorting leads are plugged into a variable-resistance box on the side labeled CELL. The opposite, BATTERY, side of the box is attached to a 6-V battery or external current source. Attached in series across the resistor box are leads for measurement of current. Connect these leads to the black-and-white plugs in the upper right corner of the second multimeter. Current can be applied to the chamber in variable amounts by turning the resistor box knob clockwise from the OFF position. As the knob is rotated, the absolute magnitude of the **voltage should fall.** If the voltage rises, reverse the connection of clips to the carbon electrodes. Continue to apply current until the voltage is 0.0 ± 1.0 mV. [With too much current the sign of the voltage will reverse (− to +) and the magnitude will increase.] Press the I button for a digital readout of I_{SC} from 0.0 to 500.0 μA. Frog skin should require 20-80 μA for short-circuiting.
9. Assign one member of the group to follow the I_{SC} of the chamber throughout the experiment. **It is important to maintain the short-circuit state by constantly adjusting I_{SC} to keep the voltage at 0 ± 1 mV.** Record I_{SC} value every 15 min.
10. The instructor will add a small aliquot (50 μl) of radioactively labeled sodium (60 μCi ^{22}Na/ml) to the mucosal side of one flux chamber and the same amount (3 μCi) to the serosal side of the paired flux chamber. **Cover this "hot" side incompletely** (pressure equilibration) **with radiactive tape and leave until end of experiment. Extreme caution** should be observed in handling ^{22}Na samples, because this is a gamma-emitting and long-lived radioisotope the rays of which penetrate virtually all materials.
11. After about 15 min for approaching isotopic steady state, the experimental measurement of flux may be started. At zero time, the entire contents of the unlabeled or *weak* side are removed by a syringe labeled WEAK and 10 ml fresh frog Ringer are used for replacement. **Be careful not to pull syringe apart.** Empty the syringe into a vial labed WASTE. Take care **not to contaminate** Ringer solution by touching chamber solution with filling syringe labeled RINGER.
12. Assign one member of the group to be in charge of collecting and replacing contents of weak half-chamber every 15 min throughout the experiment.
13. Just **before** collecting samples, the PD and I_{SC} should be recorded. The PD can be obtained by momentarily (10 s) disconnecting one of the shorting leads from the CELL plug of the resistor box. Restore the connection immediately.
14. At 15, 30, and 45 min, the contents of the weak half-chamber will be removed into the appropriate vials and replaced (at 15 and 30 min) with fresh frog Ringer solution. **Do not confuse mucosal and serosal contents in collecting.** Place first collection from mucosal side in a vial labeled M-15, the second, M-30, and so forth.
15. At 60, 75, and 90 min, repeat steps 13 and 14 in the presence of vasopressin (antidiuretic hormone). The replacement solution at 45, 60, and 75 min should be 10 ml frog Ringer + vasopressin (1.0 U/ml).
16. At 105, 120, and 135 min, repeat steps 13 and 14 in the presence of ouabain. The replacement solution at 90, 105, and 120 min should be 10 ml frog Ringer + ouabain (5×10^{-4} M).
17. At 135 min, collect *weak* sample and then add 10 ml frog Ringer to vial labeled BCK (background) and 9 ml of the same solution to vials labeled HOT MUCOSAL or HOT

SEROSAL. Call instructor to obtain 1-ml *hot* aliquots for counting. (Dilution of *hot* samples is necessary for optimal counting conditions on a gamma counter, generally $< 10^6$ dpm; 1 μCi = 2.2×10^6 dpm.)

18. All samples are taken to a gamma counter for radioactivity determinations. From a ^{22}Na standard of 0.3 μCi, the ratio cpm/dpm $\times$ 100 represents the percent counting efficiency of the system. Determine the efficiency. Standard and *hot* samples are counted for 1 min each and *weak* samples, for 10 min each. Counting errors (possibly $\pm 1\%$) are proportional to the square root (10^2) of the total counts (10^4); therefore *weak* samples need more counting time for accuracy.

CALCULATIONS

1. Frog skin behaves as a linear ohmic resistor over a considerable range of voltage. Thus the electrical resistance (R) can be calculated from the ratio PD/I_{SC} for each time and treatment period. (Convert μA to mA and use mV to get R in $\Omega \cdot cm^2$.) Prepare a table showing time, treatment, PD, I_{SC}, and R. How would the electrical parameters be expected to change with stimulation and inhibition of active sodium transport?
2. Calculate sodium fluxes from the radioactivities of the collected samples. First subtract the background cpm from both *weak* and *hot* samples. Then, to convert cpm to flux units ($\mu eq \cdot cm^{-2} \cdot h^{-1}$):

$$\text{Flux (m}\rightarrow\text{s)} = \frac{\text{corrected } \textit{weak} \text{ S cpm}}{\text{corrected } \textit{hot} \text{ M cpm} \times 10} \times \frac{84.6\ \mu\text{eq/ml} \times 10\ \text{ml}}{1\ \text{cm}^2 \times 0.25\ \text{h}}$$

(one flux chamber)

$$\text{Flux (s}\rightarrow\text{m)} = \frac{\text{corrected } \textit{weak} \text{ M cpm}}{\text{corrected } \textit{hot} \text{ S cpm} \times 10} \times \frac{84.6\ \mu\text{eq/ml} \times 10\ \text{ml}}{1\ \text{cm}^2 \times 0.25\ \text{h}}$$

(paired flux chamber)

$$\text{Net flux (m}\rightarrow\text{s)} = \text{flux (m}\rightarrow\text{s)} - \text{flux (s}\rightarrow\text{m)}$$

Prepare a table showing time, treatment, mucosal-to-serosal flux, serosal-to-mucosal flux, and net flux. How would flux values be expected. to change with stimulation and inhibition of active sodium transport?

3. Active sodium transport across the frog skin is the principal source of the I_{SC}. Convert the I_{SC} to flux values using the identity, 1 $\mu A \equiv 0.0373\ \mu eq/h$. Calculate the fraction, net flux (mucosal-to-serosal)/I_{SC}, for each time and treatment period. How would this fraction be expected to change, if at all, with stimulation and inhibition of active sodium transport?

RESULTS

A class of first-year graduate students obtained the results shown in Table 1. The undirectional flux of sodium from mucosa to serosa exceeded the opposite unidirectional flux by a factor of 20 as was found originally by Ussing and Zerahn (2). The net flux of sodium was increased (73%) by a stimulant, vasopressin, and decreased (56%) by an inhibitor, ouabain. Changes were relatively large and rapid for this type of study.

TABLE 1. Sodium Fluxes in Frog Skin

	Time Period, min	Fluxes, $\mu eq \cdot cm^{-2} \cdot h^{-1}$		
		m→s	s→m	Net m→s
Control	0-15	1.66	0.06	1.60
Control	15-30	2.02	0.12	1.90
Control	30-45	2.19	0.11	2.08
Vasopressin	45-60	2.31	0.15	2.16
Vasopressin	60-75	2.95	0.16	2.79
Vasopressin	75-90	3.74	0.15	3.59
Ouabain	90-105	2.72	0.15	2.57
Ouabain	105-120	1.33	0.14	1.19
Ouabain	120-135	1.07	0.15	0.92

Fluxes: m→s, mucosal-to-serosal; s→m, serosal-to-mucosal.

REFERENCES

1. Sernka, T.J., and H.B. Battarbee. Painless pithing. *Bioscience* 26: 596, 1976.
2. Ussing, H., and K. Zerahn. Active transport of sodium as the source of electric current in the short-circuited isolated frog skin. *Acta Physiol. Scand.* 23: 110-127, 1951.

FROM THE EDITOR

The continuing appearance of new journals, most of which are dedicated to progressively narrowing fields, is an expression of intensifying scientific specialization. Not all new journals are focused on a very limited area. The first issue of one, which came to me, is *Clinical Physiology* (vol. 1, no. 1, Feb. 1981). The brief introduction by John Wahren (Stockholm), the Editor, warrants being brought to your attention.

Clinical physiology is a new clinical discipline which has gradually emerged in the Scandinavian countries during the last 25 years. It is concerned primarily with physiology applied to clinical problems in cardiology, pulmonary medicine, nephrology, gastroenterology, endocrinology and metabolism, angiology and intensive care medicine. Clinical physiology also deals with physiological aspects of occupational medicine, sports medicine and rehabilitation. Because of the increasing scientific activities in the field of clinical physiology in Scandinavia, a need has been felt to represent these activities in an independent scientific journal. The sponsor of this new publication, the Scandinavian Society of Clinical Physiology, wishes to encourage a scientific approach to clinical research by providing a forum for scientific reports and debate pertinent to human physiology and disease.

The new journal will not be limited to contributions from Scandinavia alone but invites scientists from all over the world, interested in physiological and pathophysiological aspects of medicine to contribute original papers. The scientific standard and quality of the journal will be guaranteed by the international group of renowned scientists who have agreed to serve on the editorial board. The initial responses to the new journal have been very positive and promising and we are hopeful that this attitude will be reflected in the quality of the papers submitted to the journal and in an increasing circulation.

Stockholm, February 1981

JOHN WAHREN
Editor

CURRENT TRENDS IN PHYSIOLOGY TEACHING IN FINLAND

O. Hänninen, J. Leppäluoto, and D. Stenberg
Departments of Physiology
Universities of Kuopio, Oulu, and Helsinki, Finland

At the end of the 1960s discussion about educational reform started in the Finnish universities. There was a general feeling that some of the curricula were not working adequately. Only a small minority of the students admitted to faculties of humanities actually finished their studies. In the natural sciences the success rate was higher, but it took approximately seven years for a student to achieve the Master of Science degree. The practicality of these studies was questioned, since interview studies in industry, for example, indicated poor relevance of the curricular content to needs of society. In the medical faculties it was questioned whether the students admitted were too science-oriented and whether the curriculum overemphasized hospital medicine at the expense of public health. The medical curriculum was also considered to lack provision for deepening knowledge and skills in any particular subject. The barriers between the different faculties appeared to inhibit collaboration in both teaching and research (1). These discussions led to establishment of a number of general (2) and specific state committees on academic education. Thus there were committees on medical education (3), on postgraduate and continuing medical education (4), on education in dentistry (5), and on education for the biologist (6). Realization of the various proposals is currently going on in Finland, and a number of adjustments have been made in the teaching of physiology.

OUTLINE OF THE GENERAL REVISION OF UNIVERSITY STUDIES

During the last three to four years a nearly complete course of revision of university studies has been accomplished in Finland. The main aim has been to increase the practical usefulness and the social relevance of academic studies.

In medicine and dentistry this change has brought the social sciences into the various curricula. Another major change in the obligatory program has been the addition of a short thesis on a topic chosen by the student.

In pharmacy the revision has led to the addition of human biology and social sciences to the curriculum. Furthermore, the length of the curriculum for provisor diploma has been shortened to five years by intensifying the theoretical part of the studies and shortening the period of training in commercial pharmacies.

In the natural sciences the addition of social sciences into the various curricula has been the major new element. The total length of time spent in the studies has been shortened to four years by lengthening the academic year and removing material considered less important from the program. The basic study elements have been converted to shorter units, and the practicality of the subject material has been emphasized.

Currently the revision of academic studies is being extended to postgraduate education and training. This means the addition of certain obligatory courses and elective methodological courses to the specific subject-oriented study elements. All these mean rationalization of postgraduate education in natural sciences and pharmacy and an increase of study volume in medicine and dentistry. In spite of the formal courses, the most important element in postgraduate education and training will remain the personal research work and dissertation.

PHYSIOLOGY TRAINING IN VARIOUS CURRICULA

Physiology courses for medical students in Finland are available in five universities (Helsinki, Kuopio, Oulu, Tampere, and Turku); physiology for dentistry students is given in four of these five universities (Tampere excepted). The Veterinary College (Helsinki) has its own physiology teaching. In the University of Jyväskylä a Department of Exercise Biology is responsible for physiology courses for students of physical education. Science students have physiology courses in the University of Helsinki, Joensuu, Kuopio, Oulu, and Turku. Pharmacy students have a course in physiology in the Universities of Kuopio and Helsinki (Fig. 1).

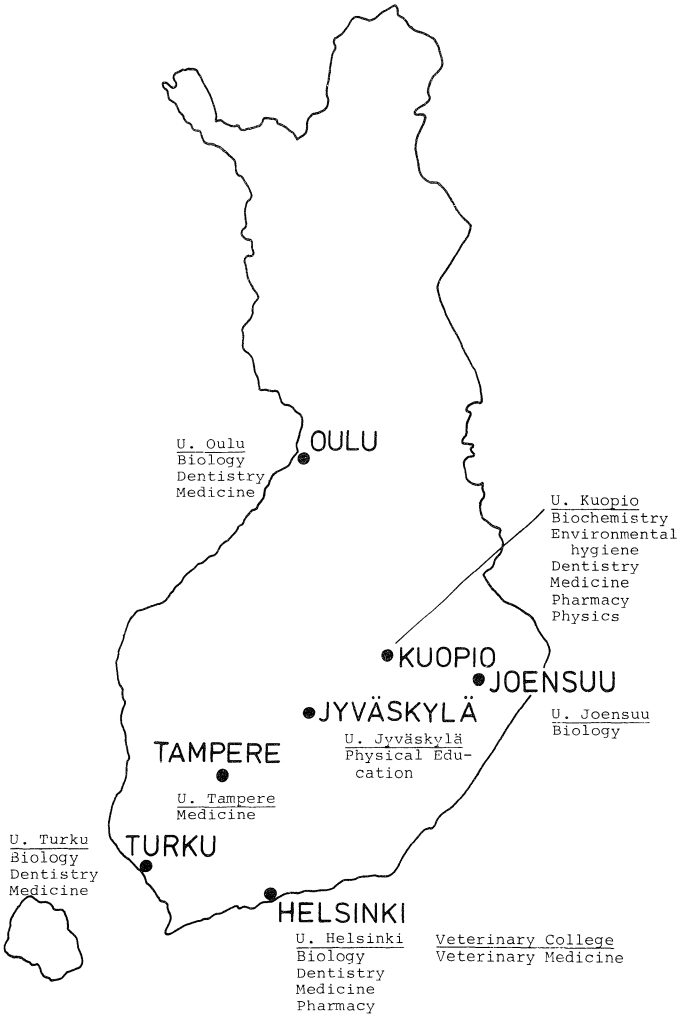


Fig. 1. Teaching of physiology in various curricula in different universities in Finland.

Development toward integration of different disciplines has taken place in medical education. In physiology at least, some integrated courses are now conducted in the Universities of Helsinki, Tampere, and Turku. Teaching of physiology is fully integrated with other relevant subjects in the University of Kuopio. The main part of physiology is taught with anatomy, biochemistry, and microbiology in a so-called human biology course. In Kuopio medical students take a longer course in human biology, whereas pharmacy and science students take a shorter course. Dentistry students also participate in the shorter course, but they have an additional course in oral anatomy and physiology and related matters. In the University of Kuopio physiologists contribute also to the teaching of cell biology and pathophysiology (Fig. 2).

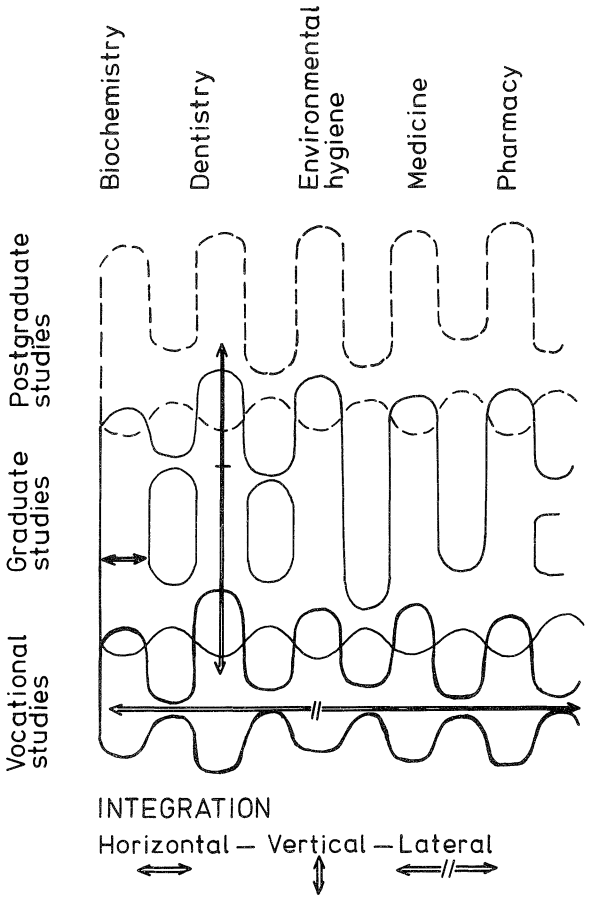


Fig. 2. Schematic presentation of the integrated teaching system at graduate and postgraduate level in the University of Kuopio. Some curricula for vocational diplomas are conducted in the facilities of the University of Kuopio in collaboration with the local School of Nursing. Horizontal integration indicates topic-oriented teaching; e.g., human biology is taught where physiology is taught together with anatomy and biochemistry. Lateral integration (anastomoses between the curricula) denotes common educational elements between different curricula; i.e., common courses of physiology in the curricula of biochemistry, environmental hygiene, and pharmacy in the graduate studies, and, for example, a common course on research planning in the phase of postgraduate education. Vertical integration indicates that some courses of vocational education may be accepted as a part of the graduate programs. The overlapping of graduate and postgraduate phases also means that by participating in various courses and research work a student can start postgraduate education before actual graduation.

In the older universities in Finland there are two or three separate units for teaching and research in physiology. Thus in the Universities of Helsinki, Oulu, and Turku there is a chair in human physiology in the Faculty of Medicine and chairs in zoophysiology and plant physiology in the Faculty of Mathematics and Natural Sciences. In the University of Kuopio only one Department of Physiology has been established, due to the integrated teaching approach mentioned above.

FUTURE DEVELOPMENT OF TEACHING IN PHYSIOLOGY AND RELATED SUBJECTS

Certain areas related to physiology have been badly neglected in Finland, and their advancement would therefore be necessary. One of these areas is clinical physiology. In the whole country there are no full-time university teachers of clinical physiology. At the present time teaching in clinical physiology is temporarily and unsatisfactorily arranged, and only a few medical students receive sufficient training in its methodology.

Nutrition, like clinical physiology, is a backward area of physiology and medicine in Finland (8). There is only one Department of Nutrition in the whole country, and this is in a Faculty of Forestry and Agriculture. An interview study among physicians indicated that this lack of knowledge is generally recognized (9). There is a need for extensive reeducation of physicians and a readjustment of the medical curriculum; research in nutrition should also be developed. The pattern of national dietary behavior deviates from the general recommendations for the population.

In 1978 the Parliament passed a resolution in which it asked the Government to study the usefulness of acupuncture and to apply the method to medical use. The National Board of Health established a working group (10). The Board has recommended that the teaching of acupuncture be added to medical curricula. An acupuncture course has been part of the curricula of medicine and of dentistry since 1974 in the University of Kuopio and of the curriculum of medicine since 1979 in the University of Tampere. Other physiological approaches in therapy are also planned to be included as an elective course in physiology in the University of Kuopio.

The International Federation of Sports Medicine in 1980 issued a recommendation to the World Health Organization to include sports medicine in medical curricula. Physical activity has a key position in preventive medicine, and physical training has gained wide popularity. Physicians should be able both to provide medical guidance to those who participate in training programs and to take care of the various problems that may arise during physical training.

In the University of Kuopio some of the students of environmental hygiene take industrial hygiene as their graduating subject. The Department of Physiology provides for them a course on ergonomics, which is also available as an elective course in the curriculum of medicine. Since monotonous and unphysiologically one-sided occupations are common sources of health problems, there would be a reason to have such a course available to all medical students.

Environmental problems are currently the focus of much public discussion in most of the developed and even in underdeveloped countries. Physiologists should consider starting courses in environmental physiology, at least as voluntary parts of curricula.

CONTRIBUTION OF PHYSIOLOGY TO POSTGRADUATE EDUCATION AND TRAINING

Physiology is one of the basic fields of science upon which all medical and biological research is based. Therefore, in addition to the specific training provided for future research workers in physiology proper, physiologists must contribute to the general

methodological postgraduate education. Examples of such courses can be mentioned: planning of research, laboratory animal science, physiological measurements. These courses are annually available in the University of Kuopio and have repeatedly been arranged elsewhere, for example, in the Universities of Helsinki and Turku.

This report was supported by the Finnish Academy (to O. Hänninen).

We thank Ms. Raija Holopainen for the skillful drawing of the figures.

REFERENCES

1. The Second Report of the Preparatory Committee on the University of Kuopio (Kuopion korkeakoulun valmistelutoimikunnan II osamietintö, Kom. 1969: B 61).
2. The Report of the Committee on Philosophical and Social Studies (Filosofisten ja yhteiskuntatieteellisten tutkintojen toimikunnan mietintö, Kom. 1971: A 17).
3. The Report of the Committee on Revision of Medical Curriculum (Lääketieteen opintouudistustoimikunnan mietintö, Kom. 1971: A 6).
4. Report of the Committee on Postgraduate and Continuing Medical Education (Lääkäreiden jatko- ja täydennyskoulutustoimikunnan mietintö, Kom. 1974:166).
5. The Report of the Committee on Dentistry Education (Hammaslääkärikoulutuskomitean mietintö,om. 1971: A 16).
6. Report of the Committee on Biology Education (Biotieteiden koulutustoimikunnan I osamietintö, Kom. 1976: 13).
7. Hänninen, O. The University of Kuopio. In: *Health, Higher Education and the Community. Towards a Regional Health University.* Organization for Economic Cooperation and Development, 1977, p. 211-230.
8. Leppäluoto, J., and O. Hänninen. Research areas of physiologists (In Finnish). *Suom.Laak. L.* 34: 949-950, 1979.
9. Pietinen, P., A. Ahlström, and L. Räsänen. Physicians in the nutrition education (In Finnish). *Suom. Laak. L.* 35: 2663-2667, 1980.
10. National Board of Health. Acupuncture Working Group Report 1979 No. 14.

BOOK REVIEWS

Introduction to Bioinstrumentation. C. D. Ferris. Clifton, NJ: Humana, 1978. 330 pp., illus., index, hard-cover $29.50, soft-cover $14.50.

Derived from a course on bioinstrumentation for upper-level engineers, this book has as its goal the presentation of a practical tutorial for students and life and medical scientists. Systems analysis and instrument design are stressed, rather than commercially available instruments. It is assumed that the reader has some knowledge of basic physics, electronics, and elementary differential equations.

The book is divided into six sections (second-order systems, transducers, signal processors, recording/display equipment, biotelemetery, and electrical hazards/safety). The topics in these sections are contained in 12 chapters. Mathematical analyses of hypothetical instruments are presented in an appendix. Problems and references are included.

The section on linear systems deals mainly with the three solutions to the second-order differential equation with constant coefficients. This equation describes a very large number of systems in both physics and biology. Transient and steady-state conditions are discussed. The characteristics of nonlinear systems (saturation, hysteresis, and dead zone) are also covered.

The principles of transduction, including changes in resistance, capacitance, and inductance, and of induction are presented. Thermoelectric, photoelectric, Hall effect, and magnetostrictive devices are described. A few transducers for specific events (e.g., pressure, red-cell count, hemoglobin concentration, oxygen saturation, and respiration) are described.

Techniques for environmental monitoring and the equipment used (e.g., the explosimeter, stack-plume monitor, particulate density monitors, noise meters, and illumination meters) are discussed. Information on electrodes covers devices for measuring bioelectric signals, pH, P_{O_2}, and P_{CO_2}, the nature and properties of the electrode-electrolyte interface, and metal and glass microelectrodes.

One chapter deals with amplifiers and signal processing, including topics such as input impedance, bandwidth, and distortion of short-duration pulses. Various amplifiers (AC, DC, chopper, negative capacity, and differential) and stimulus isolation techniques and noise reduction are also discussed. Methods for processing transducer signals are outlined. The types of display devices (strip chart, mirror galvanometer, plotter, and alphanumeric indicator) and the techniques for tape recording are described.

Another chapter on instrumentation systems contains an unusual collection of information, extending from descriptions of spectrophotometers to snow avalanche detection and from sensory prosthesis to X-ray and thermographic devices. Telemetery, both for location purposes and data transmission, is given broad coverage with many interesting examples. The theory underlying telemetery and considerations for antennae selection are presented.

Practical matters such as grounding, isolation, ground-current monitors, ground loop, shielding, and electrosurgery are discussed. In the appendix, there are mathematical treatments of systems response. A section devoted to problems completes the book.

Introduction to Bioinstrumentation covers an extremely wide range of topics: some covered in depth, other very large topics covered only superficially (e.g., thermography 1 1/2 pp. and X-ray 3 pp.), and a slight repetition of subjects (e.g., in transducer principles and application sections). The author has obviously strived for breadth rather than depth. Nonetheless, the inclusion of many seldom-encountered topics, such as those in the environmental area, makes this book slightly different from the many others on the subject. The book is liberally illustrated with many drawings and graphs that aid in understanding the construction and function of the instruments. Taken as a whole, the book contains a wealth of information on currently used devices and should be a good starting text for students and researchers wanting to know how their instruments work.

L.A. Geddes
Purdue University
West Lafayette, IN 47907

Growth Hormone and Other Biologically Active Peptides. A. Pecile and E. E. Müller, Eds. New York: Elsevier/North-Holland, 1980. 282 pp., illus., index, $53.75.

This volume contains manuscripts from invited speakers to The Fourth International Symposium on Growth Hormone (GH) held in Milan, Italy, on 17-19 September 1979. The book is divided into sections that deal with methods of hormone peptide research, GH chemistry, and in vitro effects, hypophyseal peptides and peptidergic neurotransmitters, and clinical aspects of GH, prolactin, and endorphin research.

Most of the articles discuss recent data and avoid extensive reviews of the past literature, which can be found in the earlier volumes of this series. However, each report contains a list of pertinent references that provide the reader with an excellent source for a more complete literature search. A comprehensive and up-to-date discussion of the regulation of pituitary prolactin secretion can be found in the paper by J. Meites.

The section on somatomedins is the most detailed of all, in keeping with the many recent developments on this subject. Somatomedins are discussed in terms of regulation, biosynthesis, release, biological activity, isolation and classification, relation to plasma binding proteins, and secretion during development. The remainder of the book consists of papers devoted to the chemistry of GH, the regulation of GH and prolactin secretion, the endorphins, and clinical aspects of human somatomammotropin.

This book has a particularly broad scope and will have its greatest appeal to endocrinologists and others with a specific interest in GH, somatomedins, prolactin, and endorphins. The biochemist will be interested in the papers on structure-functional relationships of GH, somatomedins, and endorphins. Endocrinologists and pharmacologists will find worthwhile the latest information on the biological activities of GH, somatomedins, and prolactin and discussions of the mechanisms by which they are controlled. The physician will possibly find clinical relevance in the work on GH, somatomedins, endorphins, prolactin, and placental lactogen. The papers on the phylogenetic aspects of GH and the presence of numerous neuropeptides in amphibian skin will appeal to comparative endocrinologists.

I recommend this book to those trying to keep abreast of the latest research on GH, somatomedins, and prolactin. It should also be a useful library reference, as it is the latest in a series of volumes on GH and related peptides edited by Pecile and Müller.

Lloyd J. Forman, Ph.D.
Michigan State University
East Lansing, MI 48824

Evolution and Ecology of Plankton Communities. W. C. Kerfoot, Ed. Spec. Symp. vol. 3, American Society of Limnology and Oceanography. Hanover, NH: Univ. Press of New England, 1980. xxiii + 793 pp., illus., $45.

This volume contains 66 papers by 91 authors, presented at the Third Special Symposium of the American Society of Limnology and Oceanography at Dartmouth College in August 1978. Almost all aspects of the ecology and behavior of zooplankton are dealt with; zooplankton evolution receives less attention, some of it indirect. Some of the subjects covered are behavior of zooplankters while feeding on algae or during predation; avoidance of predators; vertical migration; variations in life histories and genetic structure and their adaptive value; species composition and how it is affected by predators and other environmental factors; variations in body size, morphology, and pigmentation in relation to predation and physical factors; algal toxicity; and zoogeography. Most of the papers are concerned with freshwater zooplankton, which compose simple self-contained ecosystems that can be experimentally manipulated and analyzed, in contrast to the immensely complex and nonenclosed communities of marine zooplankton. Only six papers focused on marine zooplankton.

In contrast to some symposium volumes, this one contains uniformly well-written papers, superbly edited and organized by subject matter into 10 sections. It is clear that zooplankton research has attracted energetic and innovative investigators who are using new as well as time-tested techniques (including copepod-watching) and freely borrowing useful approaches from other scientific disciplines. Many of the recent accomplishments in research on zooplankton are ably summarized in this volume, which could serve as a textbook on the subject, and the unsolved problems pointed out by the authors forecast exciting developments in the future.

Thomas E. Bowman
Department of Invertebrate Zoology (Crustacea)
Smithsonian Institution
Washington, DC 20560

Renal Handling of Phosphate. S. G. Massry and H. Fleisch, Eds. New York: Plenum, 1980. 375 pp., illus., index, $37.50.

This book contains an in-depth coverage of the renal handling of phosphate. The 13 chapters are written by scientists who are authorities in the field of physiology and pathophysiology of phosphate metabolism. A critical evaluation of current data is given under different headings including indices for measurement of the renal handling of phosphate; sites of renal tubular phosphate reabsorption; phosphate secretion; cellular mechanisms of phosphate transport; effects of parathyroid hormone, vitamin D and its metabolites, various other hormones, urinary alkalinization, extracellular volume expansion, and calcium on the renal handling of phosphate; tubular adaptation to the dietary supply of phosphate; and finally, two chapters on renal phosphate handling in various clinical disorders. The book is well written with little overlap between sections. Although a valuable addition to any medical library, the book is recommended for those engaged in research in the field.

John A. Haas
Franklyn G. Knox, M.D., Ph.D.
Department of Physiology and Biophysics
Mayo Clinic and Foundation
Rochester, MN 55905

DECLINING POPULARITY

The May issue of *Manpower Comments,* a publication of the Scientific Manpower Commission reports:

A 1980 survey of 28,000 seniors enrolled in 1,015 public and private high schools carried out by the National Opinion Research Center for the National Center for Education Statistics found that about 80% of the seniors plan to get some kind of post-secondary education eventually, and that more than half plan to begin a college education within a year after they graduate. The results indicate a slight increase in the number of college-bound seniors compared with the number in a similar longitudinal study conducted in 1972.

Field of College Study Planned By High School Seniors

	1980	1972
Business	22%	13%
Engineering	10%	5%
Health services	8%	12%
Preprofessional	8%	—
Education	6%	12%
Computer and information science	5%	2%
Social sciences	8%	17%
Art	4%	3%
Communications	4%	2%
Vocational or technical	3%	3%
Biological sciences	3%	10%
Agriculture	2%	3%
Architecture	2%	2%
English	2%	3%
Home economics	2%	2%
Music	2%	3%
Physical science	2%	3%
Foreign language	1%	1%
Mathematics	1%	2%
Philosophy or religion	1%	1%
Other fields	4%	0.5%

The two studies also show marked differences in students' expected fields of study, confirming other reports that business has replaced social sciences as the most popular major over the decade.

It is noteworthy and alarming that the greatest decrease in interest is in Biological Sciences.