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Editor's Page

ABSTRACTS AND PROGRAMMING

Members are to be congratulated on the way in which they submitted their abstracts for the Spring meeting. There were very few violations of the rules and the Form A's were in good shape for direct reproduction. We would, however, like to call your attention to a few points that speed up the task of programming.

Since the Federation no longer prints the names of sponsors who are not co-authors (intro. by), it is imperative that the sponsor, a member of the Society, sign the Form A.

It speeds up the process of programming if authors indicate in the upper left hand corner of the copies of the abstracts, the session they prefer. It helps considerably in programming if the abstract is written in such a fashion as to indicate clearly the major thesis of the work, and thus the major field of interest. A few abstracts give just a summary of data including many variables without indicating the major purpose of the work. In borderline cases these abstracts are difficult to program unless the programmer knows the author and his field of interest.

We hope that the program arrangement and particularly the sequence of papers within sessions were improvements over previous years. This year the Executive Secretary had the excellent assistance of several physiologists in the Washington area. Experts in various sub-areas of physiology were called in to arrange the papers in sessions and in sequence within sessions. We wish to thank these individuals for their kind assistance.

The Executive Secretary would welcome any comments or suggestions on the programming.

PAYMENT OF DUES

Persons elected to membership in the Society at the April meeting officially become members on July 1 and their dues start from that date. Those elected to membership at the Fall meeting officially become members the following January 1 and their dues start from that date.

Since abstracts for meetings must be submitted before assessments are due, newly elected members may consider themselves members for this purpose immediately after election.

Yearly dues are payable in advance. Yearly dues run from July to July. Those elected at the Fall meeting first pay one half a year's dues from January to July.

Article III, Section 2 of the Bylaws states: "A 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 Spring meeting by special vote of the Council. It shall be the duty of the Secretary to notify the delinquent of his right to request reinstatement."

Section 3 states: "A member who has retired from employment because of illness or age may, upon application to the Council, be relieved from the payment of the annual member assessment."

TEACHER RECOGNITION

Many individuals and several committees interested in improving the status of teachers have discussed ways and means of recognizing and awarding teachers of outstanding ability. Most discussions have bogged down on the question of criteria for selection of deserving teachers.

It is relatively easy to recognize excellence in research and many awards including the Nobel Prizes have been granted for research achievements but little emphasis has been placed on teaching ability.

At a time when our universities are becoming overcrowded with students and are sadly lacking in enough competent teachers to adequately handle the increasing student bodies it seems appropriate to consider ways and means of improving the status and recognition of competent teachers. It is through capable, dedicated teachers that recruitment of scientists is best achieved.

There is a serious growing need for more physiologists. The Society's Career Brochure and other education ventures will undoubtedly interest many students in careers in physiology. However, past evidence is overwhelming in indicating that most physiologists received their inspiration from dedicated teachers. We need to place our efforts in the direction of the teacher if we are to succeed in our endeavors in the field of recruitment.

What can be done? Much is now being done in many quarters to improve the economic status of teachers. Little is as yet be-

ing done to improve the cultural and social recognition of the teacher. A few university medical schools are recognizing distinguished performance in medical teaching by awarding certificates and granting additional annual stipend. One such school is the University of Minnesota where in 1960 two of our APS members, Maurice B. Visscher and Owen H. Wangensteen received such awards "for exemplary achievement in teaching and research as members of the faculty and for steadfast devotion to the medical school, the University and to medical education."

Could this type of recognition be fostered in our colleges? There are a few universities that have received small grants from foundations to be used for awards to individual members of the teaching staff in recognition of distinguished teaching. More needs to be done. Some have suggested that the criteria might include such items as the quality of the courses taught; the number of students directly influenced to continue in graduate work; laboratory instruction techniques; etc.

Can a national organization like the APS do anything directly? We now select an outstanding young man as the Bowditch lecturer each year in recognition of his research achievements. Can we also have some form of recognition for an outstanding college teacher?

Ideas on this general subject of teacher recognition are solicited.

1961 FALL REFRESHER COURSE

It was planned to have a refresher course on the teaching of endocrinology but it was found that there was a conflict in timing between the Fall meeting and the Laurentian Hormone Conference, thus many people we wished to have on the program would not be able to attend both meetings.

We are planning a refresher course on the teaching of radiobiology, the utilization of radioactive isotopes, and isotope techniques. Dr. C. A. M. Hogben will be in charge of the course.

ACTIONS TAKEN AT APS BUSINESS MEETINGS

April 11 and 13, 1961

ELECTIONS. H. S. Mayerson was elected to the position of President-Elect. J. R. Pappenheimer was elected to a four-year term on Council. All those nominated by Council were elected to membership. (See Newly Elected Members -- this issue.)

BYLAWS. After a prolonged discussion the following Bylaw changes were passed by more than the required three-fourths majority vote.

ARTICLE V. Publications

Section 2. A Publications Committee, composed of three members of the Society appointed by the Council shall be responsible for the management of all of the publications of the Society; the Managing Editor, Executive Secretary and President of the Society shall be members ex-officio, without vote. The Committee shall have the power to appoint a Managing Editor and editorial boards for the Society's publications. The term of each member of 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. The Committee shall present an annual report on publications and policies to the Council for approval and an annual budget to the Finance Committee for its approval.

ARTICLE VI. Committees and Representatives

Section 1. The Council may appoint such special and standing committees as it deems necessary or that are voted by the Society.

The Council may name members of the Society as representatives to other organizations whenever it deems such action desirable.

Section 2. A Finance Committee, composed of three members of the Society appointed by the Council shall receive budget proposals annually from the Committees, the Council and the Executive Secretary of the Society

and shall determine the annual budget, reserve funds and investments of the Society, subject to approval by the Council.

The capital fund of the present Board of Publication Trustees (defined as the investments and unencumbered funds of that Board as of April 1, 1961) shall be a reserve fund for publications and may be used by the Publications Committee to finance new or established publications without authorization of the Finance Committee (though subject to approval by the Council). The Finance Committee shall not approve 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 the value of it). Annual income from the investment of the fund may be used for any of the activities of the Society including publications.

The term of each member of the Finance Committee shall be three years; a member may not serve more than two consecutive terms. The Managing Editor, the President and the Executive Secretary shall be ex-officio members, without vote. The Council shall designate the Chairman of the Committee who shall be an ex-officio member of the Council, without vote.

The Council recommended changes and amendments to ARTICLE II. Officers, pertaining to the establishment of a nominating committee for election of councilors and to enlargement of the Council, were defeated.

The Council recommended changes in ARTICLE VIII. General, relative to permitting a vote on Bylaw changes at the Fall meetings, were also defeated.

Complete Bylaws, Committees, etc. will be published in the November issue of THE PHYSIOLOGIST and the September issue of FEDERATION PROCEEDINGS (Directory issue).

FEDERATION. At the 1960 Spring business meeting the Society membership requested the Council to make a study of the "value to the Society of the annual meeting of the Federation and the relation of the Society to the Federation including financial relations and possible alternative activities of the Society." The

results of part of this study were published in the February 1961 issue of THE PHYSIOLOGIST. The Central Office of the Society and the Federation Office are now analyzing the attendance records at the 1961 Spring meeting, including crossover attendance at various sessions by the various society members. At least part of this analysis with suggested alternatives for the Spring meetings will be available at the time of the APS Fall business meeting. It was announced that this subject will be one of the major orders of business at the Fall business meetings in Bloomington.

USE AND CARE OF ANIMALS. The Society members unanimously passed the following resolution.

The American Physiological Society urges the Congress to defeat H.R. 1937 and H.R. 3556. The members of the American Physiological Society are deeply sympathetic with measures designed to assure humane treatment of laboratory animals, and they continue to work as scientists and through their professional organizations to maintain humane standards.

We believe that the provisions of H.R. 1937 and H.R. 3556 would tremendously increase the administrative work of scientists and, while increasing the cost, would reduce the ability of scientists to do productive research and effective teaching.

We believe that the object of humane use of laboratory animals in the best interests of both man and animal can be attained by making funds available to improve housing and care of animals needed for research and teaching. Therefore, we urge that the Congress, by joint resolution of the Senate and House of Representatives, encourage the use of existing funds for improving animal facilities and care and leave the maintenance of standards to the scientists, their universities and local and state authorities.

It was urgently requested that members write or talk to their Congressmen concerning federal legislation relative to animal care (a separate mailing to all members regarding this matter has been made.)

An appeal was made for any member who has specific case evidence of impediments to scientific research under the British law to forward such information to Dr. A. B. Otis, Dept. of Physiology, Univ. of Florida College of Medicine, Gainesville, Fla.

SPRING MEETING STATISTICS

Total attendance 12,569

270 sessions plus continuous motion picture session

49 of the 270 sessions were Intersociety Sessions

14 movies, 10 of which were from APS members

29 sessions running simultaneously

2815 papers given

APS received 812 abstracts from members

APS transferred 172 papers to Intersociety Sessions

APS transferred 59 papers to other societies

APS received 19 papers transferred from other societies

APS programed 60 sessions with 621 papers

APS had 5 to 7 sessions running simultaneously

Growth of Federation Meeting

In 1957 there were 190 sessions with 1948 papers.

In 1961 there were 270 sessions with 2815 papers.

If the meeting continues to grow at the rate it has in the last five years, in 1966 there will probably be about 1000 more papers than in 1961. Something must be done to revamp the meetings before this unmanageable situation occurs. The time of the meetings must be lengthened or some other solution found. If any member has any suggestions, please send them to the Editor in the form of letters that can be published for other members to read.

MEMBERSHIP STATUS

April 1961

(Including those elected at the April meeting)

Active members	1924
Retired members	122
Honorary members	16
Associate members	<u>127</u>
	<u>2189</u>

SUSTAINING ASSOCIATES

Abbott Laboratories, Inc.	The Norwich Pharmacal Co.
Ayerst Laboratories	Charles Pfizer and Co., Inc.
Burroughs Wellcome & Co., Inc.	Riker Laboratories, Inc.
CIBA Pharmaceutical Products, Inc.	A. H. Robins Co., Inc.
Ethicon, Inc.	Sherman Laboratories
Grass Instrument Co.	Smith Kline & French Laboratories
Harvard Apparatus Co.	E. R. Squibb and Sons
Hoffman-La Roche, Inc.	The Upjohn Co.
Eli Lilly and Co.	Wallace Laboratories
McNeil Laboratories, Inc.	Warner-Lambert Pharmaceutical Co.
Merck, Sharp & Dohme Research Laboratories	Wyeth Laboratories, Inc.

DEATHS SINCE SEPTEMBER 1960

Norman R. Blatherwick (R)	Valy Menkin
Worth Hale (R)	Karl E. Paschkis
Joseph W. Jailer	G. Canby Robinson (R)
Leo Loeb (R)	

50-YEAR MEMBERS

Harold C. Bradley (R)	Frank P. Knowlton (R)
R. G. Hoskins (R)	George H. Whipple (R)
Israel S. Kleiner	

NEWLY ELECTED MEMBERS

The following, nominated by the Council, were elected to membership in the American Physiological Society at the Spring meeting, 1961.

FULL MEMBERS

ALKJAERSIG, Norma K.: Res. Asst. Prof. Int. Med., Washington Univ., St. Louis.

BATSEL, Henry L.: Physiologist, USA Med. Res. Lab., Fort Knox.

BECHTEL, Aaron A.: Instr. Physiol., Hahnemann Med. Coll.

BEN, Max: Sr. Scientist, Warner-Lambert Res. Inst., Plainfield, N.J.

BEZNAK, Margaret: Prof., Head Dept. Physiol., Univ. of Ottawa.

BUCHWALD, Nathaniel A.: Assoc. Res. Anatomist, UCLA Med. Ctr.

CASCARANO, Joseph: Asst. Prof. Pathol., New York Univ.

COFFMAN, Jay D.: CV Res. Lab., Massachusetts Mem. Hosps.

COLTNER, Norman A., Jr.: Asst. Prof. Physiol. & Biophys., Ohio State Univ.

CURRAN, Peter F.: Assoc. in Biophys., Harvard Med. School.

DEHNEL, Paul A.: Asst. Prof. Zool., Univ. of British Columbia.

DUNCAN, Leroy E., Jr.: Senior Res. Staff, NHI, NIH.

FREEMAN, Walter J. III: Asst. Prof. Physiol., Univ. of California, Berkeley.

FRIEDBERG, Wallace: Biologist, Oak Ridge Natl. Lab.

GERTLER, Menard M.: Assoc. Prof. & Dir. Res., New York Univ.

GREENE, Leon C.: Sr. Physiol. Pharmacol., Smith Kline & French Labs.

HANSEL, William: Assoc. Prof. Animal Physiol., Cornell Univ.

HENDLER, Edwin: Supervisory Physiol., Naval Air Material Ctr., Penna.

HOROWICZ, Paul: Asst. Prof. Biophys., Washington Univ., St. Louis.

HOUPT, T. R.: Asst. Prof. Physiol., Univ. of Pennsylvania.

ISSEKUTZ, Bela: Head, Dept. Biochem., Lankenau Hosp.

JANOFF, Aaron: Instr. Pathol., USPHS Postdoctoral Fell., New York Univ.

JORDAN, Paul H., Jr.: Assoc. Prof. Surg., Univ. of Florida.

KELSO, Albert F.: Prof., Chrmn., Dept. Physiol., Chicago Coll. Osteopathy.

KENNEDY, Donald: Assoc. Prof. Zool., Syracuse Univ.

LEMONDE, Andre V. J.: Res. Assoc. Biochem., Laval Univ., Quebec.

MACEY, Robert I.: Asst. Prof. Physiol., Univ. of Illinois.

MELTON, Carlton E., Jr.: Asst. Prof. Physiol., Univ. of Texas.

MEYER, John S.: Prof., Chrmn., Dept. Neurol., Wayne State Univ.

RAPAPORT, Elliot: Assoc. Prof. Med., Univ. of California.

ROHEIM, Paul S.: Instr., Dept. Med., Albert Einstein Coll.

ROLF, Doris B.: Res. Asst. Prof. Physiol., Washington Univ., St. Louis.

SALMOIRAGHI, Gian C.: Acting Asst. Chief, CNRC, St. Eliz. Hosp., Wash., D.C.

SCARBOROUGH, William R.: Chief, CV Sect., Bur. Aviation Med., Wash., D.C.

SHOEMAKER, William C.: Asst. Prof. Surg., Dir. Exptl. Surg., Michael Reese.

SPENCER, Herta: Res. Div., Neoplastic Dis., Montefiore Hosp.

SPENCER, William A.: Dir., Texas Inst. Rehab. & Res., Houston.

STAMM, John S.: Head, Exptl. Psychol. & Neurophysiol., Inst. Living, Hartford.

STORER, Edward H.: Assoc. Prof. Surg., Dir. Exptl. Labs. Surg., Univ. of Tennessee.

SURAWICZ, Borys: Asst. Prof. Exptl. Med., Univ. of Vermont.

SWANK, Roy L.: Prof. Neurol., Univ. of Oregon.

SWENSON, Melvin J.: Prof., Head Dept. Physiol. & Pharmacol., Iowa State Univ.

TEXTER, E. Clinton, Jr.: Asst. Prof. Med., Northwestern Univ.

THOMPSON, Richard F.: Asst. Prof. Med. Psychol., Univ. of Oregon.

TRIANTAPHYLLOPOULOS, Demetrios: Res. Assoc. Physiol. & Pharmacol., Univ. of Alberta.

WAYNER, Matthew J., Jr.: Assoc. Prof. Physiol., Syracuse Univ.

WENZEL, Bernice M.: Acting Asst. Prof. Physiol., UCLA Med. Ctr.

Williams, Clyde M.: Instr. Med., Univ. of Pittsburgh, Tech. Dir. Radioisotope Lab.

WOLBARSHT, Myron L.: Physicist, Physiol., Naval Med. Res. Inst., NNMC.

YAMADA, Samuel I.: Prof. Pharmacol., Univ. of Manitoba, Winnipeg.

YOUNG, Donald R.: Head, Performance Lab., QM Food & Cont. Inst., Chicago.

ASSOCIATE MEMBERS

EBERSTEIN, Arthur: Physiol. Div., Inst. Muscle Disease, New York.

JACKSON, Richard T.: Asst. Prof. Biol. Sci., Loyola Univ., New Orleans.

LUKIN, Larissa: Asst. Prof. Physiol., Ohio State Univ.

NEWMAN, Bertha L.: NIH Postdoctoral Fell., Univ. of Washington.

RIEDESEL, Marvin Leroy: Asst. Prof. Zool., Univ. of New Mexico.

SCHLEGEL, Jerry F.: Tech. Asst. Physiol., Mayo Clinic.

STEPHENSON, Elizabeth W.: Teaching Fell. Physiol., George Washington Univ.

FUTURE MEETINGS

1961 - Fall Meeting, Univ. of Indiana, Bloomington, Ind., Sept. 5-8; Dr. Sid Robinson, Local Committee

1962 - Spring Meeting, Atlantic City, N.J., April 16-21

1962 - Fall Meeting, Univ. of Buffalo, Buffalo, N.Y. with the Canadian Physiological Society, Sept. 4-7 (tentative); Dr. Hermann Rahn, Local Committee. 75th Anniversary of the American Physiological Society

1963 - Spring Meeting, Atlantic City, N.J., April 15-20

1963 - Fall Meeting, Univ. of Miami, Coral Gables, Fla., Sept. 3-6; Dr. Gordon Ring, Local Committee

1964 - Spring Meeting, Chicago, Ill., April 13-18

1964 - Fall Meeting, Brown Univ., Providence, R.I. 200th Anniversary of Brown Univ., Sept. 8-11
Dr. Walter Wilson, Local Committee

BOWDITCH LECTURE

Dr. John A. Clements has been selected by President Comroe to give the Bowditch Lecture at the Fall meeting. The title of his lecture will be "Studies of Surface Phenomena in Relation to Pulmonary Function."

Dr. Clements received his M.D. degree from Cornell in 1947. His major research interest is pulmonary physiology. He was at the Cardiovascular Research Institute of the University of California Medical Center, but now is with the Clinical Investigation Branch of the Medical Research Directorate, Army Chemical Center, Maryland.

GROWTH OF APS--1956-1961

As of March	Membership					
	1956	1957	1958	1959	1960	1961
Active Members	1406	1470	1549	1621	1724	1878
Retired Members	104	104	116	119	121	120
Honorary Members	12	12	12	11	16	16
Associate Members	-	-	-	-	59	120
Sustaining Associates	-	-	-	-	-	15
	<u>1522</u>	<u>1586</u>	<u>1677</u>	<u>1751</u>	<u>1920</u>	<u>2149</u>

Fiscal Year	Finances (General Fund only)					
	1956	1957	1958	1959	1960	Totals
Income	25,444	19,002	26,373	30,723	42,245	
Expenses	<u>24,552</u>	<u>18,757</u>	<u>21,570</u>	<u>21,446</u>	<u>20,402</u>	
Excess of Income over Expenses	892	245	4,803	9,277	21,843	= 37,060
On hand, January 1956						6,399
Accumulated interest on savings						1,205
Total accumulated reserves, January 1961						\$ 44,664

NEW ACTIVITIES--1956-1961

1. Associate membership established
2. Sustaining associates established
3. Compulsory subscription to an APS journal instituted for regular active members
4. Bowditch Lectureship established
5. Handbook of Physiology series established
6. THE PHYSIOLOGIST established
7. New Executive Secretary-Treasurer appointed with increased duties of Central Office such as arranging Spring program and handling details for Council and committees.
8. Education Committee activities
 - a. Summer research training program for college teachers
 - b. Publication of career brochure
 - c. Course for physicians
 - d. Visiting lecturers to small colleges
 - e. Selected laboratory experiments in general physiology compiled and published

Most of the previously established (before 1956) activities have been continued.

INVITATION TO THE FALL MEETING

Indiana University, Bloomington, Indiana -- September 5-9, 1961

All members of the Society are cordially invited to attend the meeting and bring their families and friends. Bloomington is a town of 28,000 located in the heart of the limestone belt in the picturesque hills of southern Indiana.

The refresher course will be offered on Tuesday, September 5, on the "Teaching of Radiobiology" and the scientific sessions are scheduled for Wednesday and Thursday, September 6 and 7. Activities during these three days will include a tea, barbecue, a "smoker," the sixth annual Bowditch lecture, and the annual dinner of the Society with the address of the retiring President. A program, including symposia and demonstrations at the Indiana University Medical Center, in Indianapolis, is being planned for Friday, September 8.

Guests will be housed on the University campus at Bloomington, in the Indiana Memorial Union (which will accommodate 300 guests in air-conditioned rooms) and in modern, comfortable dormitories. There are also hotels and motels for those who prefer them.

Commercial transportation to Bloomington includes Lake Central Airlines, the Monon Railroad, and Greyhound Bus. Indianapolis, 50 miles north of Bloomington, is served by most of the major airlines and the Pennsylvania and New York Central Railroads. Airline service and frequent bus service are available between Indianapolis and Bloomington.

The notices, with information and reservation forms are being mailed to members. The deadline for abstracts of 10-minute papers to be given will be June 21 and these will appear in the August issue of *THE PHYSIOLOGIST*.

The University's recreational facilities, including swimming pools, golf courses, bowling alleys, etc. will be open to the guests. The Ladies' Committee is arranging a trip to historic Brown County where guests will visit the art galleries and quaint shops and have lunch at the Abe Martin Lodge in the Brown County State Park.

The local committee is looking forward to your coming and we extend to each of you and your guests our famous Hoosier hospitality.

SUMMER RESEARCH TRAINING PROGRAM

The Education Committee has completed a five-year program, supported by the National Science Foundation and the National Heart Institute, of administering summer research training grants to college teachers. The program was discontinued, since several organizations, including the granting agencies, have now developed programs to assist the college teacher. The American Physiological Society is proud of the fact that it has pioneered in this particular field and made others aware of the needs of the college teacher.

The following is a summary of the five-year report, which is available on request from the office of the Executive Secretary.

Scope of Program

Out of 305 applications there were 171 summer training grants awarded to 136 individual teachers from 122 different colleges. There were 27 who received aid for two summers and 4 who received aid for three summers. There were 94 different hosts in 55 different institutions, several taking more than one teacher and serving more than one summer.

Teacher Benefits

Hosts indicated that all participating teachers benefited in some measure from the program, generally by a rejuvenated interest. Visiting Education Committee members stated that only 5 teachers probably received very little benefit because they did not take full advantage of the opportunities. They further stated that only 4 out of the 94 teachers visited were considered to lack enough basic training to profit from the program. These were teachers who had not as yet obtained their doctorate. Most teachers felt that the stimulating atmosphere of a research laboratory and the opportunity to learn new techniques were the greatest benefits of the program.

Research in Colleges

Seventy per cent of the teachers were considered by the hosts to have good or excellent research ability. Eighty per cent of the teachers, on leaving the research environment, said they planned to do some research at their home institutions. Sixty-six per cent are now actually doing research as evidenced by having research grants. The others are not doing research; a few because of no interest, but most because of a negative attitude

on the part of the college administration and lack of time and facilities. Fifty per cent of the colleges now encourage research by the teacher and the incorporation of student assistance.

Publications

Sixty-two hosts indicated publications would result from the teachers' summer work. The total number of papers actually published is 65 with 34 more in press or in preparation.

Changes in Colleges

Colleges are improving conditions (space, facilities, and time for research) in order to retain their good teachers. Many of those who are not improving conditions for their teachers are losing them to institutions which do believe that some research does improve teaching. Salaries in general have increased over the last three years but the differential between salaries of the beginning teacher (instructor) and those of the experienced teacher (professor) is not as great as in many professions. Colleges must now meet a higher market price for new teachers.

Graduate Students and Recruitment

From the 122 colleges there have been approximately 1000 biology students who have gone to graduate school (exclusive of medicine and dentistry) in the last four years. Of this number the teachers participating in this program have been directly instrumental in recruiting 278 for graduate school.

College Needs

There is still need for professional organizations to educate and influence small college administrations to the advantage of faculty participation in research in order to keep teaching alive and up-to-date. Many college teachers, particularly those of small colleges in isolated areas, need not only research refresher experience but specialized course refreshers.

Conclusions

The program can be said to have accomplished the following:

1. Stimulation of more research in colleges
2. Modernization and upgrading of the teaching of physiology
3. Recruitment aided by stimulation of more students to enter graduate school
4. Problems of small colleges brought to the attention of large university research centers.

SURVEY OF PROFESSIONAL INCOME OF PHYSIOLOGISTS ON MEDICAL SCHOOL FACULTIES

J. H. COMROE, JR.

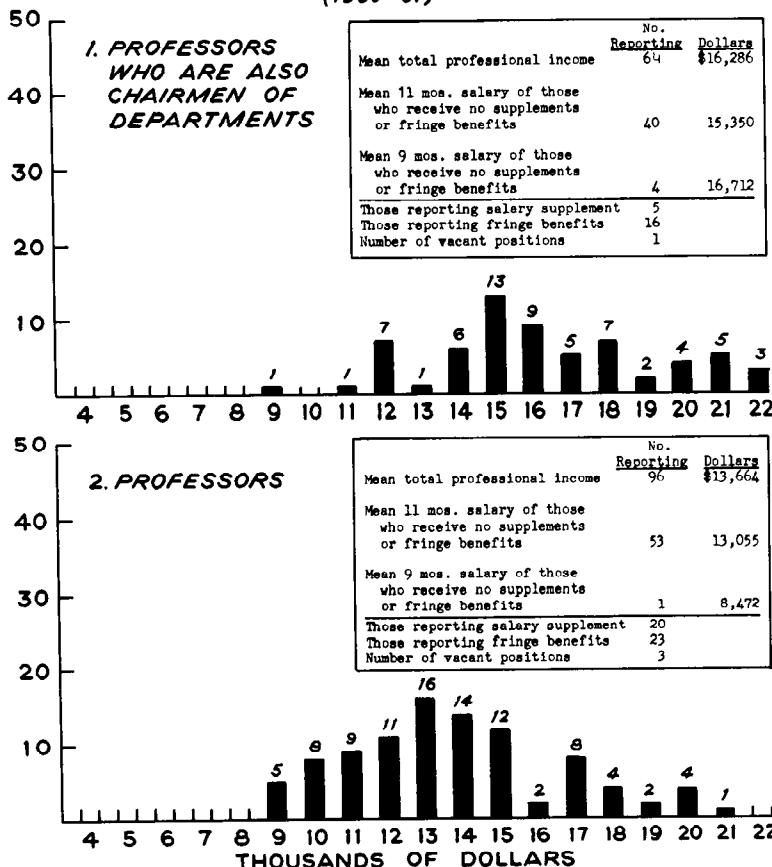
In December 1960, we sent the following questionnaire on professional income to physiologists on medical school faculties:

Check rank <input type="checkbox"/> Professor <input type="checkbox"/> Assoc. Prof. <input type="checkbox"/> Asst. Prof. <input type="checkbox"/> Instructor							
This position is <input type="checkbox"/> filled <input type="checkbox"/> unfilled. Check if also Chairman of Department <input type="checkbox"/>							
Total Professional Income from all sources for 12 mo. ¹	Regular University Salary for			Regular Salary or Supplement for			Value of Special Fringe ³ Benefits
	9 mo.	11 mo.	12 mo.	Summer Teaching	Summer Research	Other ²	
¹ Do not include occasional honoraria for lectures, service on USPHS Study Sections, etc. Do not include royalties or private income.							
² Include regular professional income from teaching or research in other departments or schools and from regular lectures or consultation at VA hospitals, etc.							
³ Enter special benefits only (omit University payment of Social Security and one-half of contribution to retirement annuity).							

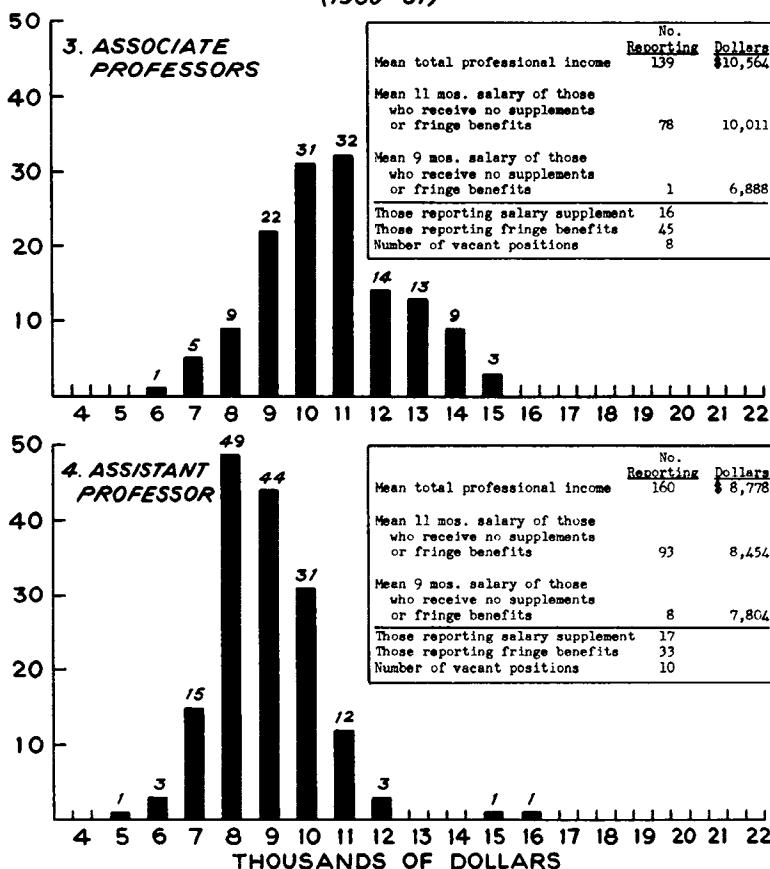
The graphs show the actual total professional income reported in column 1 except that in the case of physiologists who receive only a nine-month salary (and have no additional supplement for summer research or teaching) their total income was increased by 2/9. There was no adjustment of salaries of physiologists who receive salaries for summer teaching or research; these are included in their total professional income.

Note: Salary scales for university physiologists on non-medical school faculties are not included, since these are listed in detail in the Bull. Am. Assoc. Univ. Profs. 46:No. 2, 1960.

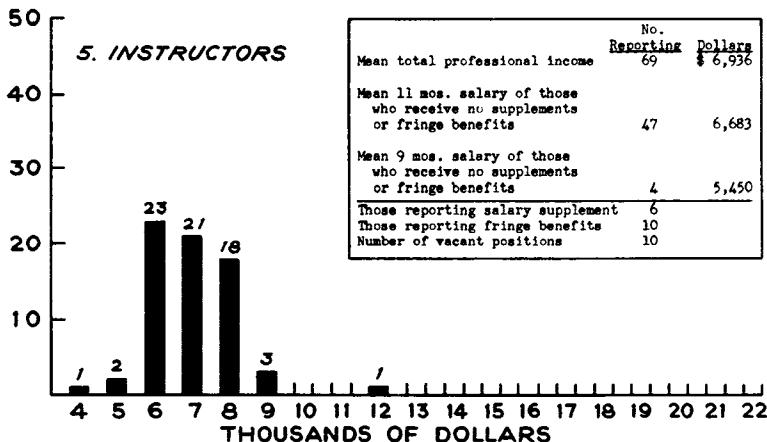
**PROFESSIONAL INCOME OF
MEDICAL SCHOOL PHYSIOLOGISTS
(1960-61)**



**PROFESSIONAL INCOME OF
MEDICAL SCHOOL PHYSIOLOGISTS
(1960-61)**



**PROFESSIONAL INCOME OF
MEDICAL SCHOOL PHYSIOLOGISTS
(1960-61)**



PRESIDENT-ELECT TOUR

H. W. DAVENPORT

Because I had just made an extensive tour as councilor, I decided not to make a formal tour. Instead, I took the opportunities afforded by invitations from three colleges and a university to obtain some information on recruitment into graduate work in physiology. I visited Albion College, Kalamazoo College, Kenyon College, and the department of physiology at the new medical school of the University of Kentucky. The three colleges have strong undergraduate programs in biological sciences, but they have no graduate schools. The department at Kentucky is responsible for undergraduate as well as graduate teaching.

I was excited and encouraged by what I saw. Each of the colleges has a small but alert student body. Although the faculties are small as well, the departments are very lively places. At two colleges, the faculty research is strongly supported by outside granting agencies with the result that excellent research equipment is available for student use. The staffs have their own research programs in which students participate, and it is the rule that senior students do research projects of their own. The projects, are of course, more generally biological than physiological, but they give the students excellent experience in research methods and in independent work. The students are happy in their work, and they seem to be on good personal terms with their instructors.

Although a fairly large portion of these students are headed for medicine, they are by no means narrow in outlook. Treated properly in medical school, they represent a reservoir of ability from which physiologists or physiologically oriented clinicians can be drawn. My conclusion is that those of us who teach in medical schools should do everything we can to encourage students who get a good start in such colleges, and we should use what influence we have to mitigate the frequently deadly nature of the first year curriculum. We should cultivate our relations with local colleges, giving help where we can, and avoiding any taint of patronage. There are good men teaching good students in good colleges, and if we fail to build on this foundation it is our fault.

SOCIETY PUBLICATIONS

REPORT FOR THE YEAR 1960

The Managing Editor submits annually a written report to the Board of Publication Trustees on the Society journals and other publications. The following excerpts from the 1960 report will be of interest to APS members.

AMERICAN JOURNAL OF PHYSIOLOGY and JOURNAL OF APPLIED PHYSIOLOGY

The number of papers received during the year for the two journals showed an increase of 129 over 1959; the number published, an increase of 33. Fewer papers were published in the AJP in 1960 than in 1959, owing to an increase in the number of those rejected and those requiring major revision. The number of papers published in the JAP showed an increase of 60 over 1959, including twice the number of Special Communications.

An unusual number of manuscripts was referred to special editors during the year, often because we did not have an editor specifically competent in the field. The names of these referees appear in the November issue of the JAP and in the December issue of the AJP.

A "Letters to the Editor" section was published for the first time in the December issue of the AJP. The section was started on an experimental basis and will be discontinued if it proves unproductive. It will serve for corrections unsuitable as corrigenda, and conceptual material -- all related to papers published in one of the two journals - and will be carried in the June and December issues of AJP only.

Page proof of abstracts of papers in both journals go regularly to Biological Abstracts, International Abstracts (London), Institut neuchtnoi informatzii (Moscow), and the Library of Congress, Science and Technology Division. Tables of contents go to Current Contents (Philadelphia), CIBA (Switzerland), and the Index Medicus.

There was a slight increase in the number of member and nonmember subscriptions to both journals. The AJP has a total of 2,933 subscribers; the JAP, 1,971.

The following members accepted appointment to the Editorial Board during the year: W. R. Adey, A. C. Barger, L. M. Beidler,

H. S. Belding, W. J. Bowen, R. W. Brauer, W. A. Briscoe, E. B. Brown, Jr., L. D. Carlson, J. A. Clements, C. F. Code, J. O. Davis, V. P. Dole, I. S. Edelman, Robert E. Forster, Roy P. Forster, W. F. Ganong, A. Grollman, M. I. Grossman, Allan Hemingway, B. F. Hoffman, C. A. M. Hogben, F. Hollander, E. Knobil, H. C. Lawson, V. Lorber, W. D. Lotspeich, W. H. Marshall, J. Mayer, J. Mead, L. H. Peterson, R. W. Ramsey, J. W. Remington, J. S. Robertson, E. A. Sellers, J. W. Severinghaus, R. H. Shepard, C. W. Sheppard, C. A. Terzuolo, C. D. West, J. W. Woodbury and E. E. Selkurt, Consultant Editor.

PHYSIOLOGICAL REVIEWS

Twenty-four papers were published during the year - 18 were invited by the American Board and 6 by the European Editorial Committee; 4 papers were volunteered and rejected.

The Proceedings of the Symposium on Central Nervous System Control of Circulation, held in Washington, November 1-3, 1959, was published as Supplement No. 4 to the Journal and distributed with the April issue. The Symposium was sponsored by the Division of Medical Sciences, NAS-NRC, and supported by a grant from the National Heart Institute.

The number of paid subscriptions at the close of the year was 4,841, including 1,297 member subscriptions.

The following members accepted appointment to the Editorial Board: C. McC. Brooks, T. H. Bullock, D. J. Ingle, M. G. Larabee, W. L. Nastuk, D. Stetten, J. V. Taggart, A. E. Wilhelmi.

THE PHYSIOLOGIST

Volume III was published during the year, with a total of 378 pages.

The May issue carried four articles of special interest to editors and authors: "American Physiological Society Publications - History and Policy" by Maurice B. Visscher (Chairman of the Board of Publication Trustees, 1954-1959); "American Physiological Society Journals: Editorial Procedures and Practices" by the Managing Editor; "New Style Manual for Society Journals"; "Page Charges in APS Journals."

The abstracts for the Society Fall meeting were published in the August issue.

The number of paid nonmember subscriptions at the close of the year was 219. There were 331 single copy sales, including those sold at the Fall meeting.

FINANCES

Due to the increasing costs of manufacture and services, the Journals operated at a loss in 1960. The total income for the four periodicals was \$281,970; the total expenses were \$306,402, showing a deficit of \$24,432. The income from investments, \$24,179, however, was used for operations and it was not necessary to use accumulated reserves to meet the deficit.

HANDBOOK OF PHYSIOLOGY

Section 1, Neurophysiology

Volumes II and III were issued during the year, and volume I was reprinted. Sales, both domestic and foreign, on all volumes have far exceeded our expectations. The Williams & Wilkins Co. has promoted and distributed all volumes, except those sold to members of the Physiology Society.

The total number of pages published in the three volumes was 2,014. Volumes I and II carry an author and subject index and volume III a cumulative index prepared by Dr. Williamina Himwich.

Section 2, Circulation

Manuscript for volume I, except for five chapters, was in the hands of the editors, Drs. Hamilton and Dow, at the close of the year. The volume is scheduled for publication in the late Fall of 1961.

Future Sections

Editors have been appointed as follows:

Respiration - Wallace O. Fenn and Hermann Rahn

Adaptation to Environment - D. B. Dill

Adipose Tissue - Albert E. Renold

Intermediate Metabolism - Carl Cori

Physiology of the Alimentary Canal - Charles F. Code

GENERAL

Style Manual

The APS journals are among 76 journals which have officially adopted the "Style Manual for Biological Journals," prepared by the Conference on Form and Style of the Conference of Biological

Editors, and published in December, 1960. An important change for our journals will be the use of the abbreviations of periodicals listed by The Chemical Abstracts Service, rather than those listed by the Quarterly Cumulative Index Medicus.

A copy of the Manual has been sent to each member on the editorial boards and a check sheet is being prepared, citing pages and sections in the Manual, for the editor's use in the review of papers.

Although the Manual represents compromises, since it is the work of many editors, it will probably be adopted as standard usage by most biology journals in this country. Revised and future editions of the book are planned and the Conference of Biological Editors welcomes comments by users.

Policy on Care and Use of Animals

The editorial rate sheet was revised during the year to carry a question on the violation of the APS Guiding Principles in the Care and Use of Animals. The question was raised on several papers and some were rejected on these grounds. All questionable papers were reviewed by at least two editors and a member of the BPT.

Page Charges

We are tentatively planning a system of page charges for the AMERICAN JOURNAL OF PHYSIOLOGY and the JOURNAL OF APPLIED PHYSIOLOGY beginning with the July 1961 issues. The plan recommended is to, a) give no consideration to a page charge until the manuscript is accepted; b) charge \$20 per printed page; c) eliminate excess charges (for tables, figures, formulas) to authors except for papers heavily documented; d) give authors who accept the page charge 100 reprints free, or a credit allowance on orders for more than 100; e) charge authors who cannot accept the page charge the full price for reprints; f) make an allowance of \$5.00 for author alterations in proof.

Paper Tests

The papers used in our journals and in the HANDBOOK were tested during the year by the Document Restorer at the Virginia State Library in Richmond. The object of the tests was to evaluate the potential usability and lasting quality of our book papers. The test data showed that each has good folding endurance and low tear resistance.

Coding of Articles

The Managing Editor is still exploring, with other editors, the possible use of code terms to classify and index the contents of journal articles. So far we lack a general acceptable dictionary of categories and nothing can be done until a suitable classification system is set up world wide. Meanwhile we are exploring the possibility of publishing at the end of the abstract one or two lines of "key word or term" indicia items to be suggested by authors and then edited to some standardized form.

ANIMAL CARE PANEL MEETING

Boston will be the site of the 12th Annual Animal Care Panel Meeting, September 27-29, 1961. The ACP is an organization of individuals professionally engaged in the production, procurement, care, management, and use of laboratory animals and of institutions interested in these areas of research and animal care.

Attendance at the three-day meeting at the Statler-Hilton Hotel is expected to reach the 800-mark and will include dealers, breeders, and manufacturers as well as those in charge of laboratories across the country.

T. C. Jones, D.V.M., clinical associate in pathology, Harvard Medical School and pathologist, Angell Memorial Animal Hospital, is serving as program chairman for the meeting. Henry L. Foster, D.V.M., President, Charles River Breeding Laboratories, is chairman of local arrangements.

The American Board of Laboratory Animal Medicine, the Laboratory Animal Breeders' Association, and the Allied Trade Association will hold simultaneous sessions at the meeting.

WILLIAM TOWNSEND PORTER*



The Society owes a great deal to William Townsend Porter. He started the AMERICAN JOURNAL OF PHYSIOLOGY assuming all financial obligations personally; established the first laboratory of physiology west of the Atlantic seaboard at St. Louis Medical School, now Washington University; founded the Harvard Apparatus Company; and originated the Porter Fellowship. He was the only honorary president of the American Physiological Society, receiving this honor in 1938 at the semi-centennial celebration in Baltimore. Dr. Porter served as toastmaster on this occasion and when introduced, President Walter E. Garrey, among other tributes, said the

following: "As the first managing editor of the AMERICAN JOURNAL OF PHYSIOLOGY he placed it on the highest scientific and literary plane. For those of us beginning to contribute at that time, I might almost say he taught us how to write - and made us like it. I for one will ever be grateful for his pertinent advice and constructive criticism. Interested always in the development of laboratory teaching, Professor Porter made the designing of apparatus a hobby and through his foundation of the Harvard Apparatus Company he made it possible for American physiological laboratories to obtain apparatus adequate to their needs and at prices within their means. Through his generosity these two foundations are now operated not only for the intellectual but also for the material advantage of the American Physiological Society. They have made possible the establishment of the annual Porter Fellowship. Few indeed are the men who have had American physiology so near the heart."

The reality of this devotion is indicated by a paragraph from a letter which Professor Porter wrote to Professor A. J. Carlson: "To me physiology is a religion. The AMERICAN JOURNAL OF PHYSIOLOGY, the Fellowship of the American Physiological Society, and the Harvard Apparatus Company are votive candles, burning with a steady flame on the high altar of faith."

*Editor's Note: It was felt that many of the younger members might like to know more about the person who originated the Porter Fellowship. Much of the material for this biographical sketch was taken from two sources, the History of the American Physiological Society by Walter J. Meek and an article in the Harvard University Gazette of 1949 by Shattuck, Trimble and Landis.

This devoted physiologist was born on September 24, 1862, in Plymouth, Ohio, the son of Dr. Frank Gibson Porter and Martha Townsend Porter. Both parents died before he was seventeen years of age and to complete his education he had to support himself by working long hours at night.

After receiving his degree in medicine from the St. Louis Medical College in 1885, he spent a year in postgraduate study divided between the Universities of Kiel, Breslau, and Berlin under the tutelage of Fleming, Heidenhain, and Hurthle. In 1888 he was appointed professor of physiology in the St. Louis Medical College and established the first laboratory of physiology west of the Atlantic seaboard. From this laboratory he published in British, German, and American journals, a series of papers on the structure of Ranvier's nodes, on intracardiac pressures, on the effects of ligating the coronary arteries, and also a series of monographic and statistical descriptions of child growth and mental development.

In 1893 he married Alma Canfield Sterling of St. Louis. In the same year he was called to Harvard Medical School under Professor Bowditch. He was assistant professor till 1898, associate professor till 1906, then professor of comparative physiology until his retirement in 1928.

While sending the results of his numerous studies on respiration and circulation to journals abroad he repeatedly stressed the urgent need for developing in this country a proper medium for publishing the results of physiological research. When the young Physiology Society dubiously debated from 1894 to 1898 the feasibility of establishing its own journal, it was Professor Porter who resolved the problem by volunteering to undertake not only the managing editorship but also full financial responsibility.

As editor he was exacting and insisted on a high literary plane. This attribute as well as his humble attitude, can well be illustrated by the following taken from his introductory remarks at the semi-centennial celebration in 1938. 'My relation to the Society has been that of a flying buttress - I have helped from the outside in my small way. You applaud, not the intellect, but the wish to be of service. We do well to be humble, we physiologists. Originality is a mystery, inscrutable. No man knows the father of his idea. Humility, therefore, is not so much a virtue as it is the inevitable flower of an observed truth. My friends, I cannot go on until I tell you that I have this day received a fearful wound. I walked abroad for exercise. I lost my way. I found myself in a poor quarter of town. A little further on I came across

a great public school. 'Oh!' I cried, 'Here is the saving means by which these poor creatures shall be rescued. If I look about me, I may see some fruit of this wise and gracious policy.' At that moment I saw on the smooth front of a brick house on the opposite side of the street some writing in white chalk. I went toward the house. Why did no one warn me? The cheerful morn was past; the sun had shed his actinic rays and wreathed in mist was hastening to the dark and fatal night. I reached the writing on the wall. It said, 'He who reads me is a nut.' Mark the irony. Here was indeed the fruit of education. Here were seven words of one syllable. A well of English undefiled. A striking instance of the chief glory of our English tongue; its wealth of monosyllables. And I could but praise the subconscious urge of the writer to join the immortal choir who have added new words to our language; who have made the new Oxford dictionary a useful substitute for the step-ladder in a literary family. And what scorn is packed in the three letters of the word 'nut'. The Miltonic fiend intends no second stroke. It is a word unknown to Chaucer. It does not occur in the Canterbury Tales, nor in the King James version of the Bible. It is not so large as a barn door, yet it will serve. I shall never more be rid of it."

By 1914 the growing duties of the editorship of the AMERICAN JOURNAL OF PHYSIOLOGY became so heavy that Professor Porter found it necessary to resign. He turned over to the American Physiological Society an established journal of high standards and proved scientific value. The Society promptly expressed its gratitude in 1915 by dedicating volume 37 to Professor Porter in the following terms: "When physiological science in America was searching for a suitable medium for the publication of the increasing output of its laboratories and when no solution of the vexing problem seemed at hand, William Townsend Porter proposed the establishment of a new journal to be called the AMERICAN JOURNAL OF PHYSIOLOGY and offered to undertake its administration.... From its inception his ideals were high. He believed that a meritorious discovery may fail of appreciation because of the faulty manner in which it is announced to the world and that an editor may be of service to an investigator.... Time and effort and sacrifice of personal considerations have been given by him without stint.... For his unselfish labors Professor Porter deserves the thanks of American physiologists and as an expression of this gratitude, they gladly dedicate to him this volume."

Retirement in 1928 meant for Professor Porter merely the focusing of his lively energies upon still another need of American physiology. When he first came to Harvard he had been assigned the task of developing a laboratory course in physiology.

Until then, physiology had been presented to students simply in the form of didactic lectures, amplified possibly with a few stereotyped demonstrations. On the principle that the scientific method must be learned first hand in the laboratory by every serious student of science, he developed a laboratory course in physiology, with emphasis on careful observation, recording, measurement, interpretation, and direct reference to published research. His books "Introduction to Physiology" and "Experiments for Students" were published in several editions. However, his love for perfection in technique and reasoning brought him face to face with a problem then harassing all physiologists as they began to establish new research and teaching laboratories.

At this period, practically all physiological instruments had to be imported from abroad at prohibitive cost. Again Dr. Porter used his own time, ingenuity, and funds to the benefit of physiology and physiologists in general by establishing in 1901 the Harvard Apparatus Company, an independent nonprofit organization of skilled mechanics dedicated to the advancement of laboratory teaching in physiology and allied sciences. Again in 1929, the Council of the American Physiological Society expressed its debt to Dr. Porter by recording that "there is no one agency, during recent years, which has contributed more to the development of sound teaching in experimental physiology in this country than the Harvard Apparatus Company."

Nor did his contributions stop here. Since he would not accept any salary for himself, this avocation of his produced by 1920 a modest annual surplus which Dr. Porter used to establish an annual research fellowship in physiology. The choice of fellows and the administration of the fellowship were entrusted to the American Physiological Society, which later named it, in his honor, the Porter Fellowship in Physiology.

Up to the last moment before his final illness and death on February 16, 1949, Dr. Porter was trying to find ways to assure continued funds for training young investigators. William Townsend Porter was a benefactor whose influence will long be felt through the Porter Fellows whose training in research he made possible.

DO YOU KNOW YOUR ABC's?

Much of the "lingo" in Washington offices and in some other offices is reduced to the initials of organizations, etc. This has become so common that the uninitiated often have difficulty in understanding conversations in committee meetings, and in some cases the written material in correspondence. The following are some of the initial abbreviations used most commonly. This is by no means a complete list.

AAAS	- American Association for the Advancement of Science
AAI	- American Association of Immunologists
ACS	- American Cancer Society
ACS	- American Chemical Society
ADI	- American Documentation Institute
AEA	- American Entomological Association
AEC	- Atomic Energy Commission
AFB	- Air Force Base
AFIP	- Armed Forces Institute of Pathology
AIBS	- American Institute of Biological Sciences
AIN	- American Institute of Nutrition
AIP	- American Institute of Physics
AJP	- American Journal of Physiology
AMA	- American Medical Association
APA	- American Psychological Association
APS	- American Physiological Society
ASBC	- American Society of Biological Chemists
ASEP	- American Society for Experimental Pathology
ASPET	- American Society for Pharmacology and Experimental Therapeutics
BOB	- Bureau of the Budget
CBE	- Conference of Biological Editors
CCICMS	- Council for the Coordination of International Congresses of Medical Sciences
CIA	- Central Intelligence Agency
CSC	- Civil Service Commission
DOA	- Department of Agriculture
DOD	- Department of Defense
FASEB	- Federation of American Societies for Experimental Biology
FBI	- Federal Bureau of Investigation
FCC	- Federal Communications Commission
FDA	- Food and Drug Administration
FID	- International Federation for Documentation
FOA	- Food and Agriculture Organization (of United Nations)

GPO	- Government Printing Office
GSA	- General Services Administration
HEW	- Department of Health, Education and Welfare
ICC	- Interstate Commerce Commission
ICSI	- International Conference of Scientific Information
ICSU	- International Council of Scientific Unions
IFLA	- International Federation of Library Associations
IGY	- International Geophysical Year
IRO	- Information Retrieval Organization
IRS	- Internal Revenue Service
IUBS	- International Union of Biological Sciences
IUC	- International Union of Chemistry
IUPS	- International Union of Physiological Sciences
JAP	- Journal of Applied Physiology
JBC	- Journal of Biological Chemistry
NAS	- National Academy of Sciences
NBS	- National Bureau of Standards
NCI	- National Cancer Institute
NEA	- National Education Association
NHI	- National Heart Institute
NIAID	- National Institute of Allergy and Infectious Diseases
NIAMD	- National Institute of Arthritis and Metabolic Diseases
NIDR	- National Institute of Dental Research
NIH	- National Institutes of Health
NIMH	- National Institute of Mental Health
NINDB	- National Institute of Neurological Diseases and Blindness
NMC	- National Medical Center
NMRI	- Naval Medical Research Institute
NRC	- National Research Council
NSF	- National Science Foundation
PRV	- Physiological Reviews
SAB	- Society of American Bacteriologists
SEBM	- Society for Experimental Biology and Medicine
SGP	- Society of General Physiologists
UDC	- Universal Decimal Classification
UNESCO	- United Nations Educational, Scientific and Cultural Organization
USPHS	- U.S. Public Health Service
WHO	- World Health Organization

PHYSIOLOGY IN EARLY AMERICA

C. I. REED

Recent comments occasionally heard among physiologists indicate that many of them are inclined to regard lightly the intellectual worth of some of the early Americans who tried to think physiologically. However, it must be recalled that the latter lived and thought in a day when scientific thinking was still not very respectable; when the social, economic and political environment was violently practical; when technically trained colleagues were few and far between; when background knowledge was scanty; when publication media were completely lacking; and when research facilities as we know them today were undreamed of. The wonder is that anyone even dared to do any original thinking except in political areas. Consequently, the few to be discussed here must be evaluated in relation to their day rather than to ours.

Jean Fernal's conception of physiology as the science of functions and phenomena of living things was first announced in 1554, but it was not until 1725 that the first curricular recognition of physiology was given when Andrew Sinclair was appointed professor of the Institutes of Medicine in the University of Edinburgh. Another 65 years were to elapse before a similar step was taken in America in the appointment of Caspar Wistar to an identical title in the newly organized medical school in the University of the State of Pennsylvania. There had been agitation for a medical school in the Colonies as early as 1640 but it was not until 1765 that John Morgan, with the collaboration of William Shippen, established a medical faculty under the College of Philadelphia, later to be merged with and replaced by the University of the State of Pennsylvania, 1789-1791. Since Shippen was designated as professor of anatomy, it is a fair assumption that he also taught physiology, as that was a rather usual combination until mid-nineteenth century. Around 1740, Dr. Thomas Cadwallader had initiated public lectures on anatomy and physiology which were very popular for about 20 years.

Leaving the more formal aspects of the discipline for the moment, attention is directed to a few individuals who had previously given some evidence of physiological understanding beyond and above that of their contemporaries. Their scientific contributions have long since become submerged and absorbed into the general matré of knowledge or replaced by more complete and exact knowledge, but the fact that they did display originality of thinking deserves recognition.

John Winthrop, Jr. (1606-1676) was educated as a chemist whose efforts were directed to metallurgy, the first refiner in the Colonies. Later his astronomical contributions brought election to the Royal Society, the first American so honored. He studied assiduously the works of Paracelsus and others then available and became a practical health advisor, though he never practiced medicine for pay. His writings reveal a modern conception of physiological hygiene.

John Lining (1708-1760) of Charleston, South Carolina, during the entire year of 1740 carried out metabolic observations comparable to those of Sanctorius but much more complete. The data were published by the Royal Society in 1743. A dissertation on yellow fever was published in Edinburgh in 1756.

John Mitchell (? -1768) was elected to the Royal Society in 1746 in recognition of studies in biology and electricity - the latter in conjunction with Franklin. Another paper on the preparation and use of various kinds of potash was published in 1748; another on the "Causes of Different Colors of People in Different Climates" had appeared in 1743. In a field far removed from these, he prepared a map of the Colonies so exact that it is sometimes still used in litigation over boundaries. What might such a man have accomplished with modern facilities for investigation!

Zabdiel Boyleston (1679-1766) deserves credit along with Jenner for modern control of smallpox. In 1723, he was elected to the Royal Society for his methods of eradicating a smallpox epidemic in Boston three years earlier. He did this at great risk because of superstition that whipped up mob violence directed at him. Objections have been raised against his inclusion in this category, but objectors overlook the physiological nature of epidemiological principles.

John McClurg (1746-1823) anticipated Lavoisier by several years when he published, in 1770, a paper entitled "De Calore." It was submerged in subsequent political and military activities, to be resurrected about 1795 by Rush, by which time the great French martyr's work had become well established.

In the entire colonial period, however, the most erudite personality was Benjamin Franklin (1706-1790). His historical eminence is based mainly on accomplishments unrelated to the main theme of this discourse, but he made contributions of considerable significance for that day by studies on diet, temperature control, blood flow, perspiration, sleep, nyctalopia, deafness, lead poisoning, gout, residual postmortem infection, smallpox, mesmerism, electrotherapy, vital statistics, and paleontology.

He is said, also, to have invented bifocal lenses and a flexible catheter. The indirect importance of his electrical investigations cannot be overevaluated. Most of his other work was buried in the more pressing events of his later life. In continental intellectual circles, he was the most highly honored of any American before 1800.

Returning to the more formal status of physiology, we find that Peter Middleton was named professor of physiology and pathology in the new medical department of Kings College (Columbia) in 1767, continuing in that capacity until his death in 1781, after which the Chair was not maintained. This is the first official recognition of either discipline. Middleton had no special training and little is known of his academic career.

After the death of John Morgan in 1789, Benjamin Rush, who had at the age of 24, joined Morgan and Shippen in 1768 as professor of chemistry, then became professor of theory and practice of medicine in the newly organized and combined faculty, and Caspar Wistar (memorialized in Wistar Institute) became professor of chemistry and of the Institutes of Medicine. The latter title was the official designation of the Chair of physiology in the University of Pennsylvania until 1878 when it was changed to the present one. Thus, the oldest continuously functioning department of physiology originated in the oldest medical school. After two years, Wistar transferred to anatomy, continuing there until his death in 1818, while Rush succeeded to the Institutes until 1813. Benjamin S. Barton, Nathaniel Chapman (first President of the American Medical Association), Samuel Jackson, and Francis Gurney Smith succeeded to the Chair in turn. Smith bears the distinction of instituting in 1875, one of the first student teaching laboratories, and probably the first permanent installation, although there had been temporary developments for a decade or more in that direction. Harrison Allen served as professor of physiology from 1875 to 1885, overlapping Smith's term as professor of the Institutes by three years. It is not clear now just why this duplication occurred. Where the two titles co-existed in most other institutions, it is now assumed that the Institutes embraced material assigned today to biochemistry and pharmacology. Allen later became professor of zoology in the University while E. T. Reichert brought the department up to the modern period. Doubtless there are other physiologists living who will remember Reichert.

Benjamin Rush published original work mainly in clinical fields after his thesis but several of his student apprentices undertook experimental investigations of modern genre. John Richardson Young published a thesis in 1803 announcing that acid is a

regular constituent of gastric juice. Oliver H. Spencer, a fellow student, extended and confirmed this work. Both used human subjects. Two years later, Thomas Ewell undertook the first experiment in America on a canine subject by isolating a loop of ileum and filling it with a mixture of boiled meat and pig gastric juice. After three hours *in situ*, the sequence of digestive processes was demonstrable.

Physiology was not recognized formally in Harvard until more than 60 years after the formation of the medical faculty in 1782. In 1798, Nathan Smith, one of the most able and versatile of American physicians in this period, undertook the operation of the entire medical curriculum in Dartmouth College, apparently doing a good job with each discipline. In addition, he was a "circuit riding professor," traveling to Bowdoin College, Yale, University of Vermont, and Jefferson Medical College. After Smith, the next important physiological personage at Dartmouth was Oliver Wendell Holmes, who served as professor of anatomy and physiology from 1838 to 1841, returning then to Harvard to a similar position newly formed in that school.

The most brilliant of Rush's students was Charles Caldwell (1772-1853) who was prompted by Rush in 1793 to translate and enlarge Blumenbach's *Physiology*, probably the first advanced text to be published in America. He was very well-informed on the existing technical knowledge and constructively critical in evaluating data. Unfortunately, he was also very certain that his own knowledge was final so he made little effort to add to it. In disfavor with both Rush and Wistar he failed in appointment to the medical faculty, but in 1810 he became professor of natural history (general biology) in the College. Eight years later, an upheaval in the medical faculty of Transylvania University, in Lexington, Kentucky, which had been organized in 1799, left an opening which he was called to fill with the titles of professor of the Institutes, of physiology, (sic), of botany, and of *materia medica*. What a man! Somehow, he secured large funds which he expended on a trip to buy books and equipment in Europe. He evidently dealt wisely for the scientific and medical library in Transylvania was one of the best in the country until mid-century.

Up to 1820, there were 14 medical schools established, all associated with an academic institution except Maryland, where the medical school was the only part of the institution for several years after chartering. In most of them, someone held a title relating to physiology, but only Wistar could be considered as specially prepared. After receiving a degree in Philadelphia he secured another in Edinburgh, giving some time to special study of physiology with James Gregory. John Morgan had done special

work with Robert Whytt and later had worked with the Hunters in London. Finally he went to Italy for conference with the aging Morgagni, who praised his new method of preserving tissues for study, but he made no effort to introduce any further investigation in the new medical school in Philadelphia. Benjamin Rush had studied under William Cullen, Whytt's successor. He alone, stimulated briefly, scientific investigation as already noted.

For over a century, "physiology" was commonly linked with some other disciplinary title, often in subordinant sequence. All of those holding professorial appointments in any discipline also practiced medicine with the single exception of Benjamin Silliman I, who had attended medical lectures in both Philadelphia and Edinburgh. He elected to confine his attention to chemistry, becoming the first really able American chemist. On the Yale medical faculty, he taught chemistry and geology. The rationale for the latter lies in the attention then being given to drugs of mineral origin, destined to culminate a few years later in the emergence of the physio-medical cult which supported three schools for a time.

The medical curriculum which John Morgan envisioned was fated not to materialize for another century. Up to 1810, many of those attending medical school regarded this as a finishing process because many had already been licensed under apprenticeship to practice; since degrees were not required they did not pay the extra fee for a degree and diploma. As late as 1832, Oliver Wendell Holmes practiced for several years before qualifying for a degree.

Up to 1825, faculty members received directly the fees paid by those attending lectures. As noted above, they practiced as a primary activity and for income, since no school could afford to offer financial inducement for full-time devotion to teaching.

Before 1820, all medical schools upheld a rather high level of professional ethics. About that time proprietary schools began to appear with accelerating frequency, and persisted for nearly a century. Some of them tried to maintain a high order of professional proficiency, and despite the malodorous reputation that has come down to us, they did form the basis for the "Period of Expansion of Medical Education" which continued until after the Civil War. It is claimed that more than 400 medical schools have operated in the United States and Canada for periods of two years or more. Physiology was treated variously in these schools, often ignored entirely. Some of the best schools of today originated in this secondary period. More frequently, educational institutions not only accepted medical faculties, but invited them.

Space does not permit pursuit of this theme in this presentation. A later account will take up the story after 1820. No marked specialization in physiology occurred until after mid-century. The time allotted in the curriculum varied from four weeks to six months. Textbooks of modern quality began to appear both in America and by importation. And more frequently, research of modern type produced literature of value and importance.



TITLES OF PAPERS

"Biological Abstracts," with support from the National Science Foundation, is making an experimental trial of a quick indexing system called "Biological Abstracts' Subjects in Context" (BASIC). The new "Index Medicus" of the National Library of Medicine also depends heavily on descriptor terms in titles for use in its subject index.

All abstracting, bibliographic, and indexing media plead for short as well as specific and descriptive titles of papers in primary research journals. There is general agreement that "short" should mean about 80 characters and spaces as a maximum length. The title heads for the AMERICAN JOURNAL OF PHYSIOLOGY and the JOURNAL OF APPLIED PHYSIOLOGY were designed to allow a maximum of 85 to 90 characters and spaces.

The implications for the editors of biological journals are that they are urged to be rigorous in requiring specific, descriptive but short titles, pruned as much as possible of non-informative words. Many examples of titles containing useless, non-contributory words can be found in the program and abstracts for the Federation Meetings, despite some editing of titles in the program. An extreme example several years ago was the 74-word title of a paper and abstract submitted for FEDERATION PROCEEDINGS, most of which was repeated in the first part of the abstract. (This title was edited to about 12 words, perhaps retaining as much meaning as originally.) Hopefully, the proportion of informative words with index significance in titles can be raised from 63% to perhaps 85%.

The following summary, reprinted from Biological Abstracts (Vol. 35 (20) Oct. 15, 1960), gives some interesting data from the BA study.

SOME WORDS FROM THE WISE . . .

Recently we've been making a study of the qualitative and quantitative nature of the titles of biological research articles to see just how well they reflect the contents of the articles they entitle and whether or not they might serve as the basis for a new type of supplementary subject index. One of the by-products of this study is a sort of lexicon of "basic English for biologists" as determined by usage rather than design. Although it is, of course, impossible to reproduce the entire lexicon, it seemed to us that you might find interesting a sampling of some of the information we have collected.

In our study, 750 titles chosen at random from all fields of biology were subjected to a detailed review. We considered length of titles and word-size; we considered the different words used, their use-frequency, their cognates, the parts of speech they represented; and, finally, we considered the degree with which the various words represented the contents of their pertinent abstracts.

We found, first, that titles varied from one to forty-one words in length. To our relief, however, a distribution table showed that despite this great spread, the mode was but eight words and even the arithmetical mean was only about 10.5 words.

The authors of our titles in writing the 750 studied used 2,575 "different" words for a total of 7,755. Further, although only "31" different prepositions, conjunctions, articles and pronouns were used, they were used frequently and accounted for 2,826 (36%) of the total number of words used. These words and their use-frequencies follow:

of	886	from	42	at	5	about	1
the	658	for	41	which	4	each	1
in	341	its	16	among	3	his	1
and	284	as	16	or	3	we	1
on	184	during	14	those	3	they	1
a(an)	152	after	12	into	2	them	1
to	67	between	11	upon	2	this	1
by	65	against	6	it	2		

The remaining 2,544 different words--nouns, adjectives, verbs, adverbs--tend to have more specific meanings in themselves and average a use-frequency of 1.9 times each. Of these, 2,544 different words 1,508 are used but once, while some of the others--often of less specific meaning--enjoy a considerable popularity with the authors of biological titles. The 26 "most popular" of these more informative words are:

study(-ies)	101	bacteria	19	observations	16
effect(-s)	57	growth	19	species	16
virus(-es)	50	human	19	<u>Escherichia</u>	15
cell(-s)	30	activity	18	coli	15
some	24	strain(-s)	18	method(-s)	15
disease	23	acid	17	mouse(mice)	14
experimental	22	development	17	response(-s)	14
infection	21	tissue(-s)	17	soil(-s)	14
plant(-s)	20	treatment	17		

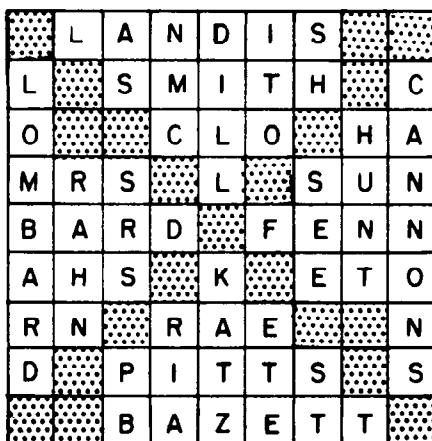
(At this point one is tempted to essay a typical, average kind of title; something like "Some studies on the effect of viruses in cell disease," perhaps?)

How about the length of words? The article, "a", is, of course, the shortest word in any list. The longest word of our sample--psittacosis-lymphogranuloma--contained 27 characters. Although it can hardly be said that our authors favor one- or two-syllable Anglo-Saxon words they do use multisyllabic words sparingly and tend to steer a middle course as the following table indicates.

Number of Characters	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Number of Words	140	1611	1117	398	590
Number of Characters	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
Number of Words	579	692	569	555	468
Number of Characters	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>
Number of Words	344	285	181	85	52
Number of Characters	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>
Number of Words	24	15	18	14	3
Number of Characters	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>
Number of Words	3	2	2	2	0
					<u>27</u>
					1

How do titles reflect the contents of articles? On the basis of a comparison of title words with the Subject Indexes of "Biological Abstracts" it was found that 3,074 of the total had index significance and a considerable degree of specificity. Thus, of the 7,755 words used, 39% tend to reveal in some detail the article content. If we eliminate from the total those prepositions, conjunctions, articles and pronouns that convey little specific information by themselves those words with index significance rise proportionately to 63%.

**ANSWER TO CROSSWORD PUZZLE
(IN FEBRUARY ISSUE 1961)**



ACROSS

1- Past President of APS
 8- Name known in renal physiology
 10- Insulation unit
 11- Expression of glee
 12- Lady of the house
 15- Source of heat
 16- Past President of APS
 17- Past President of APS
 18- Expressions of surprise
 20- A theater in WW II
 21- Nurse
 22- Female name
 24- Past President of APS
 26- Past President of APS

DOWN

2- Since
 3- Medical installation in Wash. D.C.
 4- Past President of APS
 5- Jewish Territorial Organization
 6- Silence!
 7- Bearded Past President of APS
 9- Past President of APS (possessive)
 11- Secretary APS 1908; to seek
 13- Member of B.P.T.
 14- Elders
 15- Observe
 19- Past President of APS
 22- Narrow inlet
 23- French summer
 24- Lead
 25- Thoroughfare